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NEW YORK, JUNE 22, 1867.

The clarifying of the juice of cane and other vegetable

substances which is to be manufactured into sirups and sugars is, in a commercial point of view, very important. The engravings represent an apparatus for doing this by chemical means which are at once simple, cheap, and effective. A description of the parts will enable any one to understand its construction and operation. On an elevated platform is a water tank, A, and the rollers, B, for expressing the juice.
Under the rollers is a trough, C, from which leads a spout or

conduit, D, to conduct the juice to the juice receptacle, E, in which revolves a perforated cylinder, having curved radial buckets on its circumference, by which means the juice is constantly stirred and lifted, and which is rotated by means of a shaft and the chain, F, leading from the rollers or from any other source of power. The juice is discharged at G, and the receptacle, E, has an airtight cover. H is the purifying box filled to the level of the pipe, I, with water, which is received through a convex perfora-ted cover, J, from the tank, A. By means of the incline of this cover and its minute perforations the water descends into the purifying box in a shower or spray. The oven, K, holds a quantity of sulphur heated by a fire beneath, the fumes or vapors of which pass in the direction of the arrows through the connecting pipe, L, into the purifying chamber where they are cleansed from impurities, and thence into the receptacle, E, by apertures in the heads of the cylinder where they mix intimately with the agitated particles of the juice and finally escape into the atmosphere through the spout, G. A sliding opening over the cylinder in E and a faucet at the bottom offer facilities for cleaning, as also does the hinged air tight cover of E and that of H, also hinged.

ruldes, D., enters the car and drives out and replaces the tations where it was employed bringing a price above the highest market figure, the molassess itself being equal to side of the central partition and of the mouth, B, or the what is called the "golden sirup." It is cheap and easily pipe E. A portion of the air received in the front end of the applied to ordinary mills, requiring no attendant but the en- pipe will continue its passage over the central partition and gineer or firemen and using but about ten per cent of the amount of sulphur formerly used in other machines. It purifies the sulphur before its vapors come in contact with

As applied to buildings this apparatus may be a straight

the cane juice, preventing clamminess or gumming, which hinders a free granulation of the sugar; thus purified it is ready to absorb all the impurities of the juice while it has none of its own to give, leaving the juice to pass into the receiver ready for the kettles. The fuel necessary to heat the sulphur is so little that its cost is hardly worthy mention. The apparatus is as well adapted to maple sap and the juice of sorghum or beets as to that of the cane.

Last patent on improvements dated April 2, 1867, issued to William A. Jordan, of New Orleans.

[See advertisement on another page.]

Graves' Ventilating Apparatus.

This invention relates to devices for ventilating railroad cars, vessels, vehicles, public buildings, dwellings, etc., and consists of one or more metal or other pipes having openings at their ends for the admission of pure air and the emission of foul air. The engraving is a view of the top of a railway car with one ventilating pipe in situ. A is a tube running along under the roof of the car, the ends projecting through the roof and having bell mouths, the interior of which are guarded by diaphragms of fine wire gauze, seen at B, for arresting dust, sparks, and other suspended impurities. Dampers or valves, C, are placed at either end for regulating and

Improved Method of Clarifying Saccharine Sirup. to above the center of the tube's diameter. On each side of this is a series of crescent shaped openings, D, in the bottom of the tube, furnished with deflectors placed in an inclined position toward either end of the pipe. E E represent vertical pipes passing through the roof, having ventilating cowls on their tops, and the portion extending into the horizontal pipe being inclined toward the deflectors, D. These vertical pipes are supplementary outlets for the foul air.

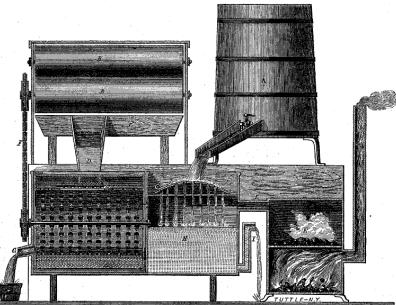
The operation is simple. It will be seen that which ever end of the car may be going forward the external air rushes

their utility in facilitating locomotion, the transmission of letters and the transportation of goods, especially in large cities. He first made some observations on the properties of air, demonstrating its weight—a column of air between forty and fifty miles high being equal to a column of water thirty-two feet, or of mercury twenty-eight to thirty inches in hight. He showed also the effects of the expansion of air, and explained how some of these properties are applied in the construction of atmospheric railroads.

In principle, an atmospheric railroad consists of an exhaust-

ed tube or tunnel through which the car or carriage is forced by expansion of the air. The idea of employing air as a motive power in this manner is not new. Many years ago it was proposed, but owing to numerous difficulties arising from the unprepared state of the public mind, and from other causes, the project was not carried into effect. Later still, atmospheric railways were constructed in England. Of these there are two forms. In one the carriage runs in a tunnel the entire way from one station to another. At one end of this tunnel there is an engine which exhausts the air, and produces thereby the motion of the carriage. To make the carriage fit into the tunnel as closely as pos-To make the carriage fit sible, there is attached to it a diaphragm made of india-rubber, with bristles appended. An example of this kind of railroad is exhibited in the Crystal Palace at Sydenham.

Another form is that in which the cars move in the open air, and are drawn by a piston pass-ing into a tube which lies by the side of the track. This is the plan of the Dalkey and Kingstown railroad, near Dublin. It long since proved a failure, as owing to the arrangement the valves in the tube, consider-



JORDAN'S CANE JUICE PURIFIER,

This simple apparatus has been in use in Louisiana for into the bell mouth, and being deflected downward by the able leakage occurs.

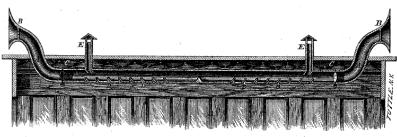
On the former plan, Mr. Needham, an American, has improved. He arranges the tunnel in the form of an irregular ellipse, and placing in the circumference a powerful air-pump he exhausts the air from one arm, when that in the other arm rushing in, forces the car forward. It was shown how, by valves and a connecting pipe, the carriage might be stopped at any point without interrupting the action of the air.

To prove the necessity of this railroad as a means of loco-

motion in cities, the lecturer showed how desirable it was as a sanitary measure that hard workingmen should have the means of going out into the country after their day's work, without losing time by traveling in inconvenient street cars. By means of this railway they could pass from the Battery to the Central Park in about four minutes. In fact the rate of speed attainable without in-convenience was at least twice that of the English express trains, which run at the rate of sixty miles an hour. It would

raised roof or skylight. In vessels it could be so applied that is of so much value. That something is nessessary to relieve the end openings could be raised high enough to keep out the increasing transportation of New York and the suburbs, he considered evident from the fact that at least five hundred thousand parcels are daily carried in this and the adjacent cities.

As a means of collecting and delivering letters, he considered that the Pneumatic Dispatch possessed unusual advantages. It has been found to work well in London, where mail bags, etc., are drawn by it round curves and up and down hill, with great economy. It is proposed that the letters be droped into lamp-post boxes, from which they are automtically withdrawn by the pneumatic car in its passage. By an ingenious contrivance the letters may be dropped at At a recent meeting of the Association for the advancement certain places without stopping, and may be collected at all of Science and Art, in the Cooper Institute, New York City, stations and lamp-posts below Forty-second street, and deliv-



GRAVES' VENTILATING APPARATUS,

For all information required apply to H. G. Heartt, 29 Commercial Place, New Orleans, La. instead of a curved pipe, and also in those cars which have a to the merchant and to the whole community, to whom time the water. It would seem to be well adapted to our monitors, at least as an auxiliary to the fan driven by steam. could be attached to cars, churches, and other places of public esort near the floor or at any desired hight, as well as near the ceiling.

The apparatus appears to be constructed on scientific principles and calculated to serve a very useful purpose. It was patented through the Scientific American Patent Agency April 16, 1867, by Robert C. Graves, Barnesville, Ohio, who may be addressed by all interested in the subject.

The Pneumatic Dispatch.

At a recent meeting of the Association for the advancement controlling the passage of the air. At the middle of the pipe of Science and Art, in the Cooper Institute, New York City, stations and namp-posts below york is a wedge-shaped partition which rises from the lower side Dr. Gilbert delivered a lecture on atmospheric railways, and ered at the post-office in six minutes

Special Correspondence of the Scientific American MACHINE TOOLS IN THE EXPOSITION

> Paris, May 14, 1867. AMERICAN MACHINE TOOLS.

The display of machine tools for metal working in the Exhibition is large, and includes quite a number of considerable novelty of design. The Americans as is so frequently the case, are able to lay claim to the greatest amount of originality in what they have brought forward, but it is not always easy to assert that their designs are decided improvements on the usual British types of machines. Messrs. Wm. Sellers & Co. have much the largest number of tools among American firms, and their tools do no little credit to our native skill. They have not unnaturally endeavored to send tools of as unusual design as possible, and on that account they attract considerable attention. The largest tool exhibited by this firm is a planing machine in which the bed is stationary and the upright framing moves along over the work. The vertical sides at the sides of the frame are provided with tool heads as well as the cross frame, so that two and sometimes three faces may be planed at once. The belt is carried on two fixed pullies, and passes around the one which is attached to the frame of the machine on its way from one to the other The position, therefore, of the movable pulley makes no difce in the length or tension of the belt. It is easy to se the facility which a stationary bed gives for bolting on fresh pieces of work while the machine is operating on another portion of the table, thus of course preventing delay in set-ting and removing the work, and no doubt this is a very important advantage. The economy of room that is secured is also equally evident, but there are few who will not involuntarily feel that a moving frame, even though as in this case furnished with a good length of base, cannot be as firm as one bolted fast to the foundations, especially when the tool is working near the top of the frame and therefore with a very considerable leverage, acting in any case on a much smaller base than that which the ordinary sliding table has, to resist jar. It may be questioned, therefore, whether the gain of time in setting work would not be overbalanced by the necessity for taking a comparatively light cut to avoid trem bling. Another novelty is a planing machine of much smalle dimensions, in which the table is provided with a rack as if it were to be driven by a pinion, but instead of the latter, a coarse threaded screw inclined at the proper angle with the center line of the machine, according to the pitch, is substituted as the motor. The reader will observe that from the nature of the surfaces in contact there can only be a bearing at any one instant on a singlé line of the surface of either o the screw or rack, and whether the power of the parts to resist would be as great as where the rubbing is extended over a much greater surface, as in the case of the screw working in a nut, or as where little rubbing at all occurs, as with the rack and pinion, is a matter on which he can form his own The driving pulleys for this planer are so placed by means of bevel gearing as to bring the bed of the machine in the same direction relatively to the line shafting as the lathes instead of at right angles to it, as in those of the ordinary construction. An example of his bolt-cutting machine is also exhibited, and the best praise that can be given to this ma chine is to notice how extensively it is used in England and how it has been copied by continental makers. A considera ble number of Seller's patent self-adjusting injectors are also exhibited. One being cut open on one side so as to display the construction and mode of operation of the instrument. Mr Sellers also exhibits a gear-cutting machine, a self-acting steam hammer of small size, and other tools and portions of machinery, all of considerable merit. Messrs. Bement & Dougherty are also represented in the Exhibition. One of their tools is a fine horizontal boring machine, a tool well known I believe in America.

OTHER ENGLISH TOOLS

The tools in the English department are models of solidity of design and excellence of workmanship. If there is any one branch of engineering in which the English particularly excel, it is in the construction of machine tools, and no on can walk through the machinery gallery of the Exhibition without being impressed with the superior judgment evi denced in the proportions of these tools compared with those by foreign makers. Messrs Sharp, Stewart & Co., of Man-chester, send a number of substantial tools, such as lathes shaping machines and slotting drills, which show good de sign and careful workmanship. There is a good driving wheel lathe with two face plates and four tool posts, two on each side of the lathe, so that a double cut may be taken on the tires of both wheels at once. Their slotting drill differs from that made in America by Messrs, Bement & Dougherty and obtained by them from Mr. Shanks in Scotland in that but one drill is used, and the work must therefore proceed more slowly. The tool is arranged quite differently from the other referred to, the drill in this case working vertically. Then there is that admirable tool so common in England, the radial drill. It saves an immense amount of time in drilling holes in large pieces of machinery, and has the additiona advantage that it may be used for boring and work for which movable crabs such as are in use with us for similar purposes would be wholly inadequate. Why have not some of our tool makers brought it out in America?

WHITWORTH'S MACHINERY.

But if we wish to see perfection of design and execution we must pass on to the space allotted to Mr. Whitworth. Of course it is easy to praise what is already acknowledged to be of merit but the verdict in favor of these tools is unavoidable. It seems impossible to designate a single part as either .co Aght or too heavy, a bearing as too large or too small, or For this property of light I propose the name of ACTINES. with the cause of education.

n, and no labor is that is done shows mature consideration wasted on unimportant parts. Among the turning lathes which he exhibits is one without any spindle at all, the work being held between two ordinary centers and rotated by a driver placed near the middle of the length of the lathe. This is a revolving drum through which the work passes, the outer edge being provided with teeth for receiving the motion of the driving pinion. Two slide rests are used, one on each side of the driver. Another interesting tool is a special one designed for planing the faces of the hexagonal shot used in Mr. Whitworth's system of ordnance. Its construction is very similar to that of an ordinary planing machine, but the slid ing table is replaced by a sliding spindle to which the shot is secured, and which has six spiral grooves cut in its surface, which give it a rotary motion as it moves forward through its bearings. Three tools are used, one above and one on each side of the upright frame, and the clutch—if so it may be called-by which the shot is held, is provided with notche properly distanced, so that the other faces may be brought properly under the action of the tools. A very simple plan ing machine with Whitworth's patent revolving tool holder by which a cut is taken when the bed is in motion in either direction, is exhibited, and also a radial drill of the pattern turned out at these works. This is a simpler and more neatly designed tool than that by Messrs. Sharp, Stewart & Co., and is a beautiful specimen of work. The same may be said of a small foot lathe which stands beside it. In proportion as the surfaces become smaller we observe that the scraping is more carefully done, and this tool shows the highest degree of fin ish. The motion of the treadle, in accordance with the usual custom of these makers, is communicated to the crank shaft of the lathe by chain belts passing around pullies in the frame of the treadle. Three surface plates are also exhibited and this may be considered the most suggestive part of the collection, as it is to this invention that Mr. Whitworth and the world owe the means to produce the accurate bearing surfaces now required in good tools.

But what can be said of tools such as we find in the Belgian lepartment for example, where as a substitute for scraping, the makers have disfigured the bearings of their machine with fancy patterns such as diamonds and circles? If this must be done let it be somewhere else than on a working face. As we might expect, tools which exhibit such a bar barism as this also show throughout the very worst design and workmenship.

ON THE NATURE OF THE LATENT IMAGE IN PHOTOG-BAPHY.

BY M. CAREY LEA

When light, considered simply in reference to its illuminate ng power, falls upon any substance, we are accustomed to consider the effects of that illumination as passing away a the same instant of time that the illumination terminates But there are a vast number of well-recognized exceptions to this rule, which we know under the names of phosphorescene

If certain bodies, known as "phosphorescent," be expo o a bright light, such as the direct rays of the sun, and then be removed to the dark, they will emit a very distinct light This light continues to be emitted for a time of variable du With some substances it continues for days, with others it terminates in a few hours. Becquerel has enough mously extended the number of substances that act in this way, by showing that the period of time during which they phosphoresce may be exceedingly short, and so escape ordi nary observation He constructed an extremely ingenious instrument by which phosphorescence could be made evident even when it continued for but a very minute fraction of a second after the light which fell upon the substance was re moved. These facts, then, embraced under the general term of phosphorescence, prove incontestably that bodies may, by light, be thrown into a state of vibratory motion, lasting for a longer or shorter, sometimes a very considerable, time after the exciting cause is removed, and that, so long as this vibra tory movement continues, they will themselves emit light.

But light, such as it comes to us from the sun, is endow with another property distinct from illumination, and which we conveniently term actinism. There is not the slightest rea-son to doubt that bodies may be endowed with the power of being impressed by these rays, and retaining them precisely as bodies may the illuminating rays. Herein lies the explanation of the physical or latent image. It is simply a phosphorescence of actinic rays. Once stated, the whole matter is so evident a to carry conviction with the simple statement.

Let me then explain the manner in which this ph takes place with iodide of silver. Pure iodide of silver un-dergoes no decomposition by light when thoroughly isolated from all substances, organic and inorganic, which are capable of aiding in effecting reduction. But, if exposed to light, it continues for a certain time thereafter to retain the vibrations it received; and just for so long as these vibrations continue will it be instantly decomposed if brought into contact with any substance which would have caused its decomposition had the two een subjected to the action of light together.

Iodide of silver, if exposed to light in the presence of pyrogallic acid and nitrate of silver, is reduced. If the iodide be exposed separately, it is thrown into a state precisely similar to that of a phosphorescent body, except that it continues to vibrate in unison with the actinic, instead of the illuminating rays; and so long as this condition remains, if it be brought into contact with the above-mentioned substances, the effect is the same as if they had been exposed together to ordinary

a surface as too little or too carefully scraped. Every thing CENCE, a name which, though not in every respect suitably. has the great merit of indicating the parallelism of the phe nomenon to that of phosphorescence.

> The more we examine these phenomena, the more we shall perceive that actinescence must, so to speak, exist. For different phosphorescent bodies emit light of very different colors, showing that their respective capacities of prolonged impression are confined to rays of a certain refrangibility differing for each in each case. Now we know that the actinic influence accompanies rays of a certain refrangibility, especially the violet, the indigo, and the rays immediately beyond the visible. The permanence, therefore, of these actinic rays under suitable circumstances, is no more difficult of conception than that of any other rays-and that this permanence exists for illuminating rays is a fact which has been known and recognized for centuries.

> On what, then, does the faculty of receiving a latent deelopable impression depend?

> On the possession by the body of two properties: First, that of being decomposed when brought into contact with certain agents in the presence of light. Second, that of being able to retain the influence of the chemical rays, so that on being rought into contact with these agents after removal from the light, the same decomposition may be brought about.

The first of these properties is sensitiveness to light.

The second is actinescence.

The joint possession of the two renders a body capable of eceiving a latent or physical image.

It is easy to conceive that a body may be actinescent with-out being sensitive to light. In fact, substances that phosphoresce with a blue light are probably actinescent also, but not being sensitive to light, they of course can form no latent

To this class undoubtedly belong those substances which ess the property hitherto deemed so mysterious, that of storing up chemical power after exposure to light. When was first published by Niepce de St. Victor it was received almost with ridicule. But in the views here ex-plained, this remarkable fact finds its natural place so completely that its existence would even have been anticipated, had it not already been observed.

On the other hand, substances that are merely sensitive to light when brought into contact with others, but which have no power of retaining light impressions until the decomposing agent is brought into contact with them, are likewise incapable of receiving latent images. But these capacities may exist conjointly, as we see in the case of a large number of silver compounds.

This new view will, I think, dispel all the mystery that has seemed to some to envelop the idea of a physical image, and brings all the most obscure facts of photo-chemistry into par allelism with well-understood and very simple phenomena Philadelphia Photographer.

COOPER UNION SCHOOLS.

The annual reception and commencement of the male and female departments of this institution took place on the evenings of Wednesday, Thursday, and Friday of the last week in May. On each occasion the halls were filled with a fashionable and elegant assemblage, who manifested much interest in the progress of the arts and sciences. The young ladies of the School of Design displayed some fine portrait and landscape painting, as well as some excellent pen and ink sketches, and specimens of engraving on wood not easily ex celled. In the male art department were exhibited some marked specimens of drawing in perspective and architecture from the fundamental principles to the most difficult prob lems, some fine specimens of drawing from copy, cast, and life, and in mechanical drawing from the embryo effort of the bisection of a line to the full and complete engine.

The receipts of the institute during the past year amounted to \$37,178, showing a large increase over previous years. This fund is received from the rents of offices and stores in the building, and is the main support of the institution. The trustees declare the institute to be in an excellently prosperous ondition.

The number of pupils that entered the schools last year vas 1,700, and the number that remained to the close of the term 710. The full course of studies of the institution requires five years for completion, when if the pupil has passed satisfactory examination each year, he is presented with the Cooper Union Medal and a diploma to that effect. There were eight graduates this year, one of them being a lady. The night schools are under the direction of Prof. Joseph G. Fox, whose bearing toward each individual pupil is ever courteous and gentlemanly. An occasional lecture on astron-omy, which seems to have become a neglected science, would prove both beneficial and interesting to the pupils of this school, as well as create an interest in one of the most oble of the natural sciences.

The reading room during the past year was visited by 30,000 persons. The number of journals and magazines on 260,000 persons. The number of journals and magazines on hand is 260. The library is gradually increasing in size and value, and it is the intention of the trustees ere long to make it one of general circulation.

It must be indeed gratifying to Mr. Cooper to see full and complete a realization of his early day-dream. Here along the corridors of the hall nightly throng the growing youth of this metropolis, seeking the fountains of useful lore which this good citizen has provided for them. Conscious of his own difficulties in his youth in acquiring a scientific education, he resolved that if he ever obtained the means, those who came after him should not suffer from the same cause, and erected this institution to that end. It now stands a grand and noble monument that will over link his name

SAFETY OF IRON SHIPS.

The Council of the Institution of Naval Architects (Eng.), has rendered an elaborate report prompted by the loss of several large and superior iron steamers during a year or two past, from which we extract the material conclusions and suggestions.

- No general rule can be laid down for adjusting the proportions of length and depth to the breadth of a ship.
 To every design of a ship should be appended the load
- 2. To every design of a ship should be appended the load water line, and her scale of displacement from light to load water line. Measures should be taken to secure that this information be recorded on the ship's papers, together with outline plans marked with the proper capacity of each compartment of the hold.
- 3. A minimum hight of freeboard (vertical distance from the load water line to the top of upper deck) should be fixed as follows: For a ship of 32 feet beam and 160 feet long, 4 feet; 192 feet long, 5 feet; 294 feet long, 6 feet; 256 feet long, 7 feet. In case of long ships, a complete spar deck would count for its hight as freeboard. No diminution of freeboard should be allowed for a poop or forecastle.
- 4. Compartments should be so arranged and proportioned that any two adjacent may be placed in free communication with the sea without sinking the ship; for the obvious reason that breakage may occur across the partitioning bulkhead opening two adjacent compartments simultaneously. Transverse and longitudinal bulkheads, coal bunkers, iron lower decks, and screw alley, should all be so connected with the hull and with each other as to form independent water-tight compartments, communicating with the decks and each other by water-tight doors worked from the deck. Double bottoms are a great element of both safety and strength.

5. Sufficient ventilation should be provided in passenger ships, to admit of closing all side scuttles and hatches in bad weather. Openings in the deck should be fitted with solid coverings hinged in place so as to be readily closed. Side and stern windows should have hinged dead lights to be always in place. Combings over engine and boller rooms should be as high as possible, of iron, and riveted to the beams and carlings. Beams should be continued across without interruption, or made replaceable on going to sea. Cargo ports should be strongly secured by iron bars. All communications with the sea frem engine room and pipes should be protected with conical or Kingston or slutee valves.

- 6. Pumps:—a brass-barreled hand pump to every compartment, or patent pumps having connections to this extent, except the forward and after compartments—the former to have a sluice cock. Also a donkey engine and pump capable of pumping from the bilge and from the sea, of feeding the boilers, and of throwing water on deck; also one or more bilge pumps worked by the large engines, with bilge injection pipes if the engines have condensers. In large vessels the donkey engines should have a separate boiler high above the water line, and communication with the main boilers beside; and all vessels should have a set of bilge pipes connecting every hold and the engine compartments with these pumps.
- 7. As a security against fire, there should be force pumps on the upper deck, and sufficient length of hose, with the nocessary copper delivery jets, to reach either extremity of the vessel, and also suction hose or pipes from the sea. The cocks by which the working of the pumps is regulated, should be carefully arranged and marked, and great care should be taken that both cocks and pipes are accessible. A plan of the whole should accompany the ship's papers, and the crew should be periodically exercised in the use of the fire apparatus.
- 8. Ships are often badly stowed, sometimes with the weights too low, causing them to roll with such rapid and violent motions as to carry away the spars and otherwise endanger the ship, and at other times too high, making the ship crank and liable to turn over. The stowage, whether done by contract or not should always be done under the direction of the captain, and he alone should be held responsible. It is known that under given conditions of structure and stowage, the number of oscillations per minute will be about the same, whatever the force of the impulse which causes the ship to roll. But no such observations have been made in merchant ships as to warrant any specific rules on the subject, and it is highly desirable that the attention of captains and owners should be directed to the collection of information.
- 9. The pipes and valves of water closets on deck below or near the water line should be strong and carefully fitted, or they may be the means of gradually and imperceptibly flooding the ships. In regard to boats, anchors and cables, no fresh regulations are required.
- 10. In order to provide for the rapid clearance of water which may break over the ship, flapboards should be fitted to the lower part of the bulwarks, sufficient in number and area to permit the rapid escape of the water.

Some members of the council (builders) dissented strongly from the report. Suggestions from other members not voted into the report, were recorded as worthy of consideration, such as: that there should be two hawse pipes on each bow, and a second pair of riding bitts; that on the beam of each compartment there should be painted the whole tunnage of the vessel and the capacity of the particular compartment; that the dead weight and measurement tunnage in each compartment should be shown on the ship's register before clearance, and that no dead weight should be allowed on the fore or after sections of any passenger ship; that all communications with the sea should be exposed to view, and readily accessible by the engineers; that certain portions of the ship, as the screw alley, might be made accessible for repairs after they had been bilged, by forcing air into them and expelling the water, and that with this view they should be made air-

tight and in communication with force pumps; that spars and boats should be so disposed as to float off in the event of a wreck, and form a substantial raft; and that deck houses and other portions of the ship may be so fitted as to be readily detached as rafts.

Mr. Scott Russell stated that it was of the first importance in the construction of iron ships to have no parts exceptionally strong and rigid, or exceptionally weak. The extra rigid parts would eat through and destroy the ship, and the thin places would yield. Perfect continuity and uniformity of strength, as near as it could possibly be calculated at every point, was his theory of iron ship building, in a word.

CAPTAIN FORMES ON SAFETY APPLIANCES.—To the above report we append a summary of suggestions made in a recent lecture by Captain R. B. Forbes, the well-known ship owner, navigator, and nautical inventor:—

Some method of shutting off steam which can be operated from the deck in case of fire about the boilers; fixtures to close openings and smother out fires with steam from the boilers; apparatus to blow off steam and water from the boilers upon the fire, close them air tight, and thus make them serviceable either to float the vessel or delay its sinkage; the tops of saloons and cabins to be made detachable to serve as rafts; doors to be hung on pintles and provided with cork panels, or otherwise made life preserving; outward and in-ward-bound vessels to pursue different tracks, lessening chances of collision; vessels to carry mortars, for throwing lines; small boats to be supplied with canvas drags, the mouth held open with a hoop; also with kegs of oil, which are claimed to have been tried and found very serviceable in severe storms: stools, mattresses, and other fixtures to be made life preserving, etc. Attention is called to the fact that not a single life boat is furnished to United States naval yes sels, and few life preservers.

Cements and Uniting Bodies.

In the preparation of cements and all substances intended to produce close adhesion, whether in a semi-fluid or pasty state, freedom from dirt and grease, without slovenliness, is a most essential and necessary condition.

A TEMPORARY CEMENT, to fix optical glasses, stones, jewellery, etc., on stocks or handles for the purpose of painting, repairing, or ornamenting, is made by melting together at a good heat, two ounces of resin, one drachm of wax, and two ounces of whitening; with this applied to the article when heated, secure fixation may be obtained, unfixed at pleasure by the same means, viz. heat.

RICE CEMENT, which is made by mixing rice flour intimately with cold water, and then gently boiling it, forms a beautifully white preparation, and dries nearly transparent; it is capable of bearing a very high polish, and is very durable; it is in every respect far before the common paste made with wheat flour or starch; it may be formed, also, into a plastic clay.

For Uniting Stone, Derryshire Spar, etc., etc., melt together four ounces of resin and half an ounce of wax, and about an ounce of finely-sifted plaster of Paris. The articles to be joined should be well cleaned, and then made hot enough to melt the cement, and the pieces then pressed together very closely, so as to leave as little as possible of the composition between the joints. This is a general rule with all cements, as the thinner the stratum of cement interposed the firmer it will hold.

CEMENT FOR CHEMICAL GLASSES.—Mix equal parts of wheat flour, finely-powdered Venice glass, pulverized chalk, and a small quantity of brick-dust, finely ground; these ingredients, with a little scraped lint, are to be mixed and ground up with the white of eggs; it must then be spread upon pieces of fine linon cloth, and applied to the crack of the glasses, and allowed to get thoroughly dry before the glasses are put to the

PUZZUOLANA CEMENT.—A kind of earth thrown out of volca noes, of a rough, dusty, granular texture; its most important property consists in making a cement when mixed with one third of its weight of lime and water, which hardens very suddenly, and is more durable under water than any other. Manganese is found to be a valuable ingredient in water cements. Four parts of grey clay are to be mixed with six parts of the black oxide of manganese, and about ninety of good limestone, reduced to fine powder, the whole to be calcined to expel the carbonic acid; when well calcined and cooled, to be worked into the consistence of a stiff paste, with sixty parts of washed sand.

THE DIAMOND CEMENT for glass or china is nothing more than isingless boiled in water to the consistency of cream, with a small portion of rectified spirit added. To be warmed when used.

LEARY SKYLIGHTS may be stopped and cured with Dutch rushes, bedded in and covered with good white lead. On wet making its appearance it quickly attacks the rush, which swells up so tight and firm that all progress of wet and droppings is effectually stayed.

Lemery, the chemist, used the following lute for stopping retorts, etc.: Fine flour and fine lime, of each one ounce, potter's earth half an ounce; make a moist paste of these with white of egg, well beaten up with a little water, and this will be found to stop exceeding close.

Philosopher Boyle recommends, on experience, the following for the same purpose: Some good fine quicklime and scrapings of cheese, pounded in a mortar, with as much water as will bring the mixture to soft paste; then spread on a piece of linen rag, and apply it as occasion requires.

A most valuable glue for photographers, and extensively used by first-class bookbinders, is made from bottle incia-rubber. This must be dissolved in highly rectified spirits of tur-

pentine: the highly rectified spirit extracts every particle of grease, which is of the greatest consequence. As I have somewhere before remarked, it is not exactly what you do, but the way in which you do it; grease, above all things, is a most determined enemy to any of these preparations.—Photographic News.

THE SUEZ CANAL.

The prospects for a speedy completion of this great engineering work, from the latest accounts are not very flattering. The original plan contemplated the running of a canal 260 feet in surface width and twenty-six feet deep, connecting Port Said on the Mediterranean with Suez, at the head of the Red Sea, a course of about ninety-six miles. From recent and trustworthy reports it appears that the maritime canal has been partially excavated as far as Ismaileh, a distance of forty-eight miles or just one half the total length. Below this city operations may be said to have fairly commenced, but great engineering difficulties must needs be overcome before the task will be successfully completed. The proposed route passes through high drift sands which when once excavated, it would seem, must continue an endless source of trouble and expense, the action of the winds and the corrosion of the banks by passing vessels, demanding constant attention and repairs.

For the first nine miles north of Ismaileh the canal is only dug to half its future complete width. Beyond this, for the remaining distance to Port Said, there are two channels, each of one-third the complete width, the center portion being left so that traffic may be carried on in the one channel while work is progressing in the other. The average depth throughout is only seven feet.

To furnish supplies to the workmen employed, a freshwater course has been opened from the river Nile at Cairo, which runs in a serpentine course passing by Ismalleh, thence in a line nearly parallel to the main canal to the port of Suez. A lock near the former city joins the two canals and by means of it a vessel of eighty tuns burden not long since safely made a passage between the Mediterranean and Red

At the works at Port Said steam barges are at work inside the harbor, carrying earth from the excavations out to sea in a north easterly direction where it is in no danger of its drifting back. One of the buildings in the gardens which surround the Exposition buildings is devoted to an interesting collection of models of these steam barges and dredges, also models illustrating the whole series of works on both canals, and the region of country through which they are to pass, plans of the principal places along the line of the canal El-Guisr, Suez, Ismaileh, and Port Said. The interest in this collection is further enhanced by a great variety of stuffed birds, insects and reptiles found in the vicinity of the canal, and fossil specimens and curiosities unearthed during the excavations. The whole is presided over by a large sized stuffed camel.

Although interested parties have persistently published the most encouraging prospects actually, the main Suez canal, after seven years of labor and millions of money have been spent upon it, is now but about one-third completed, and at the present rate of progress full five years must pass before it, as a commercial highway, begins to repay the funds which its protracted construction has absorbed.

How Mosaics are Made.

A traveler writing from the Continent, says the Mosaics seem to absorb the most time and money in the least space, unless it be the solid gold decorations. We saw a table last week less than six feet in diameter, said to have cost two hundred thousand dollars, requiring the labor of a large number of men for fifteen years. Upon entering the hall where this kind of work is done, I could not doubt these enormous figures. Suppose, for instance, a thousand of the hardest and most expensive stones which will take on a high polish, to be cut into pieces three-eights of an inch thick. These pieces are cut the other way into small pieces like shoe pegs, and where the shading from one color to another is sudden, these pegs must not be larger than a needle. Now the artist cuts and puts in these little pieces, selected according to their color, so as to give the coloring wanted as distinct as though painted. These pieces or pegs must be fitted so closely that lines of separation will not show, and set upon end side by side like types. They claim that ten thousand different shades of color are necessary; and in order to do this kind of work a man must be skilled in colors and shades as a painter, in order to place the colors properly, and then be the nost careful and accurate of mechanics in order to fit the pieces, and then he must have patience enough to work on the cheapest and coarsest pictures one year, and upon a fine one, from ten to twenty years.

THE sixth enormous gun cast at the Fort Pitt Foundery for the Chilian Government, passed through this port a week or two since, accompanied by 100 balls of 1,000 lbs. each. The monster is twenty and a half feet long, twenty inches in the bore, and five and a half feet in diameter at the breech

How to Get the Best Pavement.—It has been suggested that the Society for the Prevention of Cruelty to Animals could not do a better act of mercy than to offer a prize for the invention of a pavement best adapted for horses and not inferior to others in durabily and economy.

Dr. Crosley, of Lowell, is putting up machinery for making coffin cases from surface slate instead of wood.

False Teeth for Saws

The advantages of removable teeth for circular saws, especially over those cut from and forming part of the plate, are so apparent that they are not now generally denied by practical men. Inventors differ as to the best form best form of teeth and the best method of attaching them to the plate. We have lately published two plans, but the one herewith illustrated differ s in some respects from those. It is the invention of N. W. Spaulding, one patent bearing the date Sept. 10, 1861, and a reissue April 21, 1863.

The form of teeth and method of inserting and holding is seen in the engraving of a section of a circular saw with two

ners in order that the strain on it may be distributed over a larger surface and prevent danger of fracturing the Its edges have a recessed V-groove where they engage with the plate, while the edges of the recess in the plate are milled to fit the groove. A rivet at A, one-half the diameter in the tooth and the other half in the plate, holds the tooth securely in position. At the bottom is a slot, D, in which to insert a key to start the tooth when it is desired to remove it. False teeth with square corners tend to rupture the saw at their angles, and the rounding corners of this tooth are so formed for the purpose of remedying this difficulty. The result is that saws with this shaped

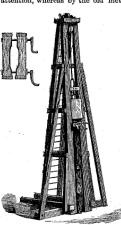
tooth do not burst, but wear well under the severest treat a spring against the plate to be engraved, as it revolves upon The points are swedged to a chisel edge wider than

the cross section of the body of the tooth.

For further particulars address N. W. Spaulding, 113 Pine street, San Francisco, Cal., or N. W. Spaulding & Brothers, 224 Washington street, Chicago, Ill., or Messrs. Branch, Crooks & Co., 116 and 118 Vine street, St. Louis, Mo. [See advertisement on another page of this paper.]

JOHN M'CLAY'S IMPROVED PILE DRIVING.

The engraving represents an improvement in the mode of driving piles. It will be readily understood by any one acquainted in the art. It consists of a yoke or clamp, constructed of either wood or iron, in such a way that it keeps the head of the pile immediately under the hammer until the driving is completed. When once adjusted the pile needs no further attention, whereas by the old method staples or bars were



used requiring the close attention and hard work of four ormore men; it is composed of two pieces of oak or other strong timber six inches square banded with iron at the ends. In these recesses are hewn or cut, some what octagonal in form to fill the pile timber. Through the timber pass headed rods of one inch and an eighth iron, with threads cut or them and a nut and wrench combined ; these rods are at such a dis tance apart as to nearly touch the uprights or leaders of the driver, thus controlling any sideway motion of the pile. It is estimated that three-fourths of the

usual time and labor of the old process is saved by the use of this device. Another advantage claimed is that it serves to hold the fibers or grain of the head of the pile together, thus preventing the splitting or shiving which so often occurs.

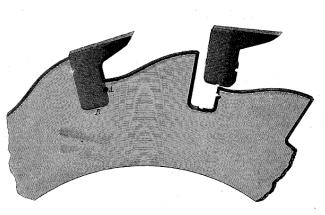
Patented June 12, 1866. Further information can be had of the inventor, John McClay, or Jeremy W. Bliss, No. 240 Main street, Hartford, Conn.

The Electrical Engraving Machine.

The inventor of this interesting apparatus, M. Gaiffe, who produced it in the London Exhibition in 1862, has since then developed it more perfectly, and now exhibits in the Paris Exposition a machine for simultaneously engraving any number of plates, of any scale orvariety of scales desired, from the same design, with an exactness of reproduction which has its equal only in electrotyping.

The machine, as described, looks like a face lathe, with any number of face plates parallel to the ways, and a slide rest carrying the graving tool at right angles to each of them. The rotation of all the face plates is exactly uniform, and the horizontal movement of the rests across the face of the plates from the center to the circumference, and extremely slow, is conveyed by one continuous screw, of the same pitch

move more slowly in proportion to the reduction of scale desired. The face plates slowly revolve, and the graving tools, starting at the centers of the face plates and progressing imperceptibly toward the circumferences, traverse the whole disk with a spiral line, closer or more open according to the pitch of screw and consequent rate of motion. The first face plate carries a copper plate on which the design is formed preferably on an enlarged scale, in non-conductive varnish The tool applied to this plate is simply a conductor with a pla tinum point, by which the currents transmitted through the exposed portions of the plate, or lights of the design, are passed on to all the other rests in the machine. Each of teeth, one in place, and the other detached. The bottom of these carries a graving tool with a diamond point, pressed by the tooth has rounded cor-



SPAULDING'S PATENT SAW TEETH.

note engraved by this machine could not be successfully imitated by any other means. Large maps, etc., have been re duced to minute proportions, and found as legible when mag nified as the originals.

Improved Apparatus for Coffee, Tea, etc.

cocoa, etc., without injury to the flavor or loss of the aroma.

the face plate. A pair of electro-magnets behind each graver retract it from the plate at each passage of electricity through the lights of the design, letting it fly back and strike the plate as the electricity is intercepted by the shades. The whole design is thus passed over spirally from the center and a fac simile of prescribed scale is engraved by each of the tools. Magnified by a strong lens the spiral dotted line which constitutes the engraving is traceable, and hence a bank

The engravings show views of the different parts of a contrivance for extracting the essential principles of coffee, tea

WOODWARD'S COFFEE AND TEA EXTRACTOR.

esents the receptacle for the ground coffee, tea or cocoa. B is the cover, extension tube and top, which is placed, charged with the coffee, in the pot. The tube may be depressed or elevated to accommodate itself to the coffee pot or other vessel and is held down by the lid. Boiling water is back through the strainer, D, from whence it continually per-colates through the coffee to be again returned. Thus all the virtue of the coffee is extracted and none of the aroma is ost. The bottom of the receptacle is circumferentially perforated, forming a strainer through which the liquid passes while the grounds are retained.

Its advantages are so apparent that further description is needless. It appears to be admirably adapted to its purpose. Samples can be obtained or further information received by application to J. Pickering, 17 Cortlandt street., New York

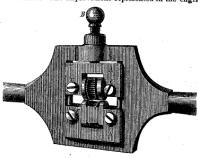
The Microscopic Fleet.

The current of blood, and its channels in the body, is the slow, is conveyed by one communication between the subtile life supporter, organs and search of the subtile life supporter, organs, is can be supported by the subtile life supporter, organs, is can be supported by the subtile life supporter, organs, is can be supported by the subtile life supporter, organs, is can be supported by the subtile life supporter, organs, is can be supported by the subtile life supporter, organs, is can be supported by the subtile life supported by the subtile

tween the interior of the body and the atmosphere, and serves for import as well as export. The blood corpuscles, which are continually rushing about in the stream, constitutes the exact analogue of a fleet of vessels laden with oxygen, and carrying the cargo to the most distant part of the system and all the different organs, where part of it is consumed for works going on there, while another part is stored up and accumulated for future use. The carbonic acid is the return load put on these little vessels, each of which are only visible under the micro-scope. In spite of their tiny form, they are able to transport forward and backwark four pounds and a half of oxygen and carbonic acid per day, to condence within themselves four hundred liters of oxygen from the atmosphere, and to give off as much carbonic acid, without any of their speedy and airy movements being discerned by the observer. During the day they export much more carbon than they import oxygen, and during the night, in quitude and sleep, they follow each other with rich cargoes of oxygen to provide for the expenditure of the next day.—Dr. Brown.

GILL'S SCREW-CUTTING DIES.

When the ordinary dies in screw plates or bolt cutters become dull there is no remedy but to anneal, recut, and reharden them. The improvement represented in the engrav-



ng is to form dies so that when the portion in use becomes dull another unworn portion of the die can be prethe bolt without removing and repairing the dies

The device is to make circular dies, pivoted into sliding blocks, to be forced into position by a screw in the ordinary way, the dies being capable of being rotated at will. The en-graving shows the face of a screw plate in which are the blocks, A, which are forced together by the screw, B. These blocks hold each a die of nearly cylindrical form which may be rotated by slacking the set screws, C, and held by screwing them up, the screws bearing upon their journals or pivots. One side of each die is planed or filed flat, so that when the flat side of each is in position a screw can be threaded up to the head. Where the bolt is long, and to be threaded only a portion of its length, the convex surface of the dies can be

used. When one portion is dull the dies may be partially ro tated to present a new cutting surface. These dies can be secured in a head for use in a bolt-cutting machine as well as ih an ordinary screw plate. Henry Gill, of Mansfield, Ohio, is the inventor, a patent for the contrivtnce now being solicited poured through the tube into the receiver. In the center of through the Scientific American Patent Agency. For other the receiver is an upright tube, perforated at the top, which particulars address as above. WARD'S CLOTHES PIN.—This device, illustrated in No. 21

current Vol., page 358, is susceptible of a greater number of adaptations than therein mentioned. By turning one of the pieces half way around it gives two different sized notches to grasp the line and clothes, so as to be adapted to large or small lines or thick or thin clothes, while if the notches on both the pieces are brought together another sized line can be accommodated.

MINING.—The renowned Fremont estate, Mariposa, has for me time been lying perfectly idle. Not a mine on the grant is being worked, the shafts are filled with water, the machinery rusted, and everything apparently in rapid decay in consequence of the operations of the late Superintendent.
The present overseer is engaged in straightening up affairs

DAVIDSON'S SELF ADJUSTABLE HANGER.

The work of hanging shafting with the old style of hangers is a laborious and vexatious task. It is difficult, after having got the boxes in perfect horizontal line, to level them so the shaft shall not strain nor spring. After the hangers so the shaft shall not strain nor spring. After the langues are in place, one here must be raised and another there must be lowered by slacking and setting up bolts, "shimming" under the feet, or paring away the beams. But with such a hanger as that seen in the engraving all this annoying labor and consumption of time is avoided. After the line is drawn on the flooring timbers, a single hole is bored for each hanger, to receive a central projection on the face of the cross piece, and then the bolt holes are bored through. The hangers are then secured firmly by the bolts, no alteration of their positions being required if the center hole is bored correctly. For leveling, nothing more is necessary than to raise or lower the frame sustaining the box, by means of the nut and check-nut seated in the space between the two legs, which form the saddle. This can be done in a very few minutes and with very little exertion. It will be seen that the frame carrying the box is allowed to turn in a horizontal plane, while the method of swinging the box by the two screw pivots through the sides of the frame allows motion to that in a vertical plane, so that the shaft readily adjusts itself.

The box has a reservoir which holds sufficient oil, as guaranteed by the manufacturers, to run six months without reoiling, and has been thus run eighteen months on a two-inch shaft making one hundred and fifty revolutions per minute



Passages under the lining of the box connect a reservoir at each end, and in the center is a diagonal slot filled with felt or sponge which keeps the shaft always lubricated. A drip-per is attached only to receive the oil which may run over in filling if more is poured in than enough to fill the box.

The manufacturers furnish a peculiar coupling to accompany this hanger, although it may be used with any coupling. This one, however, is a cylinder having a hole tapering from each end to the center—the ends of the sections of shafting being turned to fit and held by steel pins passing through coupling and shaft. A slot through the center of the coupling allows the introduction of a wedge to start the ends of the shaft, which do not fully meet, when a section is to be taken down to put on or take off a pulley, one of the pins in this case to be driven out.

This hanger and box was patented Sept. 7, 1858, and many hundreds of lines of shafting are running in it, giving in all cases perfect satisfaction. It saves all the oil, can be adjusted without stopping the engine, and is arranged for post bear ings as well as for hangers.

It is furnished by Messrs. M. T. Davidson and Co., 84 John street, New York city, who will give any additional informa-tion desired. See advertisement on another page.

Pneumatic Railways in Switzerland.

M. C. Bergeron, Director of the Western Swiss Railways, has obtained a concession from the Canton de Vaud to connect the railway station and the Place St. François, at Lausanne, Switzerland, by means of a Pneumatic Railway.

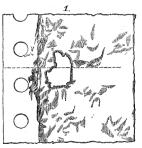
The same engineer has lately presented to the British As sociation at Nottingham the plans for a Pneumatic Railroad over the Alps, by the Simplon Pass, commencing in the Saltine valley on the Swiss side, and the Diveria valley on the Italian side. The distance is 16 miles. M. Bergeron estimates the total expense at \$4,000,000. The incline on the Italian side would be 1 in 14. On the Swiss side 1 in 64. He proposes a tube large enough to receive carriages of the size of an ordinary omnibus. The highest point to be reached is 6,000 feet above the level of the sea. The tube is to be cut in the form of a gallery in the side of the precipices, the debris being allowed to fall into the torrent below. The air current is to be produced by means of water wheels for which the streams furnish abundant power. This is by far the cheapest plan yet presented for effecting the passage of the Alps by railroad. Its economy is principally due to the small area of the proposed tunnel. The working expenses would be very

THE cost and expenses of the Eric Canal to Sept. 30, 1862 amounted to \$52,591,101 81: tolls received, \$59,264,810 62: clear direct profit to the state treasury, \$6,773,864 81,

STEAM BOILERS-THEIR FORM, CONSTRUCTION, AND MATERIAL.

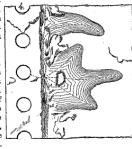
NUMBER SEVEN

Probably no structure used in the mechanic arts is subject to greater and more rapid deterioration than the steam boil-Beside the ordinary wear and tear to which everything beside is subject, it has insidious enemies which often give no sent evidence of their depredations. Of these, corrosion



the boiler becomes in some parts hotter than when it contains vater, and rivets are sprung by the expansion. Sometimes this expansion is intentional for the purpose of loosening the

scale. When the boiler is again filled and set to work the seams and rivets leak, caus ing the corrosion that is called "channel-ing." Nos. 4 show a specimen of this sort of corrosion. In this case the central rivet on the plan leaked and cut a series of channels into the plate along the course of the dotted lines producing a hole through the plate.

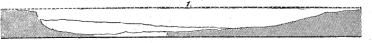


This corrosion had been going on for about four years. Many explosions occur from this cau

Faults in construction will ruin a boiler made of the very best material. No. 5 shows an instance of bungling work manship in riveting and calking. An examination of this

one to understand what it represents. Another instance of

improper construction is given in the following from Mr.



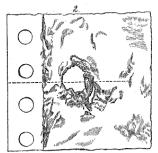
is one of the worst. If internal, its progress can only be as | specimen is sufficient without explanation to enable any certained by occasional inspection, and its ravages generally defy all remedies. If external, it is hardly more readily discovered, especially if the boiler is lagged, cased, or otherwise Thomas Hoge of Waynesburg, Pa. He says: "I send you a covered. And in either case

corresion is an injury the effects of which cannot be remedied by repairs.

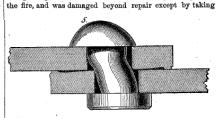
Nos. 1 and 2 with the cor-

esponding sections show the

by covering the boiler with ashes, a common practice to prevent the loss of heat by radiation. The attraction of moisture by the ashes and the corrosive matter thus dissolved from its substance thinned the tops of the boilers in less than two



effects of external corrosion. That in No. 1 was occasioned sketch of a portable boiler which I bought at sheriff's sale at an oil well last fall, and which though it did not "explode," the crown sheet, or plate over the fire, gave way and cracked ugh in places to let the water blow through and put out



out the whole sheet and putting in a new one and staying it as the first should have been secured.

fire box. The crown sheet was flat and about 28 by 48 inches and stayed with crown bars of angle iron as shown, with

washers between the bars and sheet, about 1 box by four to five

of an inch thick. The bars were not as long as the width of the fire inches (more than two each end) and the last rivets still further from the

edge by 1 to 14 inches. making 3 to 4 inches from the rivet to the flanged corner of the plate. The crown bars should have reached clear over the crown sheet and have been

bent down so as to rest upon the edge of the side sheet where it would have had permanent support for the immen

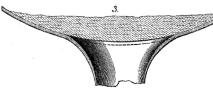
weight to be sustained; but instead of this they had no support at all beyond the last washers, though they projected a little over them, consequently all that part of the sheet riveted to the bars was very rigid and on being raised or depressed all the strain would come at the last rivet in each bar, and the sheet having no support from there to the riveted edge at the side sheet, would be easily bent down or "kinked" at the right hand as shown in the sketch. I had plenty of water and 90 pounds

in No. 3. In this case the sediment had filled the bottom of the torn clear out but the ends of the crown bars beyond the boiler to the depth of three inches at the lowest part, and the washers came down until they rested upon the sheet at the extreme end, thus supporting the weight about an inch nearer the edge of the sheet, where it had support by the line of rivets and where it was capable of sustaining a much greater weight than further in at the washer. A little figuring will show that there was over 120,000 pound ly after working, and before the brick work has had time to of pressure on this sheet when it gave way, or over \$,000 cool, they expand by the heat remaining in the masonry, and pounds on each outside washer at about 3 inches from the



years until, as seen in the section taken across the plan on inches at the dotted line, a hole was made entirely through the plate This work went on under the ashes undiscovered until the boiler was rendered unfit for service. Nos. 2 present a similar case only that the corrosion occured under a covering of nd after eight years working. It will be seen that the result is similar in each case.

Accumulations of scurf afford excellent opportunities for the development of corrosion inside the boiler. If not frequently removed the scurf forms a coating beneath which the work of destruction goes rapidly on. In a horizontal cyl-indrical boiler, the scurf is deposited to a dangerous thickness on the bottom, allowing the plate under it to become overheated and softened, when the scurf sinks down into a pocket which if unnoticed will soon become so weakened by corro-



of steam when the plate at one side bent down and sion as to burn quite through. One of these pockets is shown was fractured as shown; and most probably would have by heating, the plate was bent down into a gradual curve, and thinned from half an inch to about one sixteenth of an

Leakage of rivets and seams is a prolific cause of local cor-rosion. When boilers are emptied on Saturday night, direct-

flanged corner. Is it any wonder that a quarter inch sheet was bent under such a load? I got a good blacksmith to as sist me and we took the old sheet out in less than a day; then I took it to a boiler yard 50 miles off and got a new sheet and crown bars made and we put it in ourselves without any assistance from machinist or boiler maker, and at an expense of not over \$200, while if I had taken it to a machine shop, as all said I must do, and pay \$5 to \$6 per day it would have cost me \$500 to \$600 before I got it back to it s place again. Not that I depreciate the services of good ma chinists or the advantage of machinery, but if a man has the ability to do his own repairing I like to see him exercise it, but if he has not the ability, or cannot see his way clear he had better not commence it. I have had 122 pounds of steam on my boiler since we repaired it, without any sign of weakness. Finally I would advise every man who intends to purchase a boiler especially an "oil engine" made by an unknown party, to examine it thoroughly and not conclude from external appearance, as I did, that it is all right within, where it is not easy to see; and if manufacturers continue to make such defective engines as the above, just let them keep They know, or ought to be made to know by a law or loss of business, that such gross malformations will not be

Correspondence.

The Editors are not responsible for the opinions expressed by their correspondents.

Why the Commissioner does not Increase his I

MESSRS EDITORS:-I find in the last number of your wide-spread and useful journal an article censuring the Commissioner of Patents, written without proper investigation, and inspired no doubt by your zeal for the rights and benefits of inventors who look to you for information on subjects connected with their interests as such.

Let me refer you to the Commissioner's report, published in your 12th number, under date of 23d of March last. He says there, in brief, that the clerical and examining force cannot b augmented without providing more room, as every room is at present filled far beyond its utmost capacity, and the serious obstacles to business cannot be remedied in any other way than by furnishing additional rooms.

In every part of the report we have it stated over and again the want of room, and it is that, and that alone, which is the barrier that opposes the " progressiveness of the department.

Congress, it is true, has given the examining force required and it is also true it has turned a deaf ear to that part of the Commissioner's report where he calls upon it "in the confident hope that your honorable body will take measures to afford the relief so much needed," i. e., "the indispensable necessity for much more room in order to properly carry on the now great and rapidly increasing business of the Office."

In the same number that gives his report we find an editorial headed "The Rights and Wrongs of the Patent Office," after eulogizing the Commissioner's" pathetic facts," and "un-adorued statement," you wish he "had taken the opportunity to urge the just complaint of the inventors more at large," etc.

In the face of this just and strong statement in your editorial, and a daily knowledge of the Office's condition, it is fairly presumed, you turn round and throw the entire onus of the "inactive measures" on the Commissioner, knowing as you must, as a matter of necessity, from your extensive business with the Office, that Congress is solely to blame in net providing room for the patent business which sustains "the magnificent building," and for which it was solely designed.

The Indian Bureau, and Agricultural, and Land Office, and Pension Office, have no right to hold rooms in it to the exclusion of the Patent Office, which seems to be regarded as on sufferance, the same as the cuckoo regards the robin even in

The Commissioner is doing the best he can to crush together or conglomerate the examiners to make room for more and as soon as he has got a perch or two ready in some small out-of-the-way cage of a room graciously granted him in any corner, he will bring the birds into the cage, and there, under difficulties, do what he can for inventors, and patiently await tardy action of Congress. A SUBSCRIBER. Washington, D. C.

Caterpillars---Care of Trees-Lamps. "Objections to Metal

Messes. Editors:—In No. 22, current volume, on page 346 I notice a letter from a correspondent headed "Kerosene and Caterpillars." I protest against the gentleman's suggestions; the practice of boring holes into the hearts of trees is as deadly to them as a bullet hole through the heart of an ani-The introduction of milk by injection into the veins of man is said to cause death; what then is likely to follow the mixture with the sap of a tree of mineral oil, tainted with impurities and corrosive chemical matter. Kerosene has been found to contain sulphuric and hydro-fluoric acids, etc. Are these substances proper dilutants for the sap of trees even in minute quantities? Introduce a chip of wood into either of the above acids, note the effect, and consider.

As to sulphur, I do not believe that a tree has ever been damaged by it; in fact, I do not believe that a single grain of the mass corked up in the tree was ever taken up in solution by the sap and circulated. A fine row of ancient elms before a public edifice in this city began to die-real cause, defective and improper trimming, supposed cause, "caterpillars," etc. Holes were bored into the hearts of the trees and roll sulphur

trees died of improper trimming and the boring of the aforesaid holes, and here allow me to say a few words on the training of trees. Elm trees require peculiar care A branch growing in the wrong place should never be suffered to become a large branch. It should be immediately cut off. The amputation of a large limb is almost certain to be the death of the tree; even when the stump is protected it soon begins to decay, and though to a superficial observer it might seem perfectly sound, a single thrust directed by a skilled hand would penetrate the deceifful crust and lay open the mass of decay within. From that stem the poison of decay slowly crawls. Its progress cannot be discerned by the outward appearance of the tree, but it reaches the heart of the tree and destroys it: soon the leaves begin to wither and the tree dies.

There is another subject to which I desire to call your at-

tention. I recently observed an article in your paper recomnding the adoption of brass or metal resevoirs instead of glass for the oil in kerosene lamps, as less liable to burst. Now, brass is a much better conductor of heat than glass. Did you ever attempt to raise or lower the wick of a lamp which has been burning some time? If so, you must have remarked the heat of the brass handle; that heat is not confined to the handle. It will be found on examination that all the metallic portions of the lamp are equally hot. Suppos the oil contained within such a medium. How long would it be before the amount of gas evolved would be sufficient to burst the strongest metal lamp? A metallic lamp, burning kerosene, resembles a powder magazine with burning fuse ttached

Albany, N. Y.

What Twenty-five Cents Will Purchase.

In these days of high prices our readers will no doubt be surprised to hear of an article that is not only really cheup, but actually valuable. We allude to the new edition, just published, of our book "For Inventors and Mechanics." 25 cents the purchaser obtains a neat little bound volume of 108 pages, elegantly printed, containing among many other things the following

The complete Census of the United States by counties, in cluding a table of the population of the principal cities and towns; The complete Patent Laws of the United States; Forms for Assignments and Licenses; Official rules for pro ceedings at the Patent Office; 140 diagrams of Mechanical movements, with descriptions; The modern condensing steam engine, with engraving and nomenclature of the various arts; Diagrams of the rotary steam engine; Substitutes for the crank; Outlines of practical geometry; How to calculate the horse-power of engines, water, and water wheels; How to sell patents; How to obtain patents, home and foreign; Table of steam pressure; Table of heat conductors; Information upon assignments, reissues, extensions, interferences, infringe nents, etc., together with a large amount of other illustrated matter,

Published by Munn & Co., 37 Park Row. Price only 25 ents. Sent everywhere by mail on receipt of the price. to be had of the leading news agents.

An intelligent and appreciative correspondent, in a recenletter, thus speaks of the above publication :

"I think there was never before printed or published so great an amount of knowledge in so small a book."

We think so too, and we advise everybody to supply them selves with a copy while they are to be had.

Locked Safety Valves.

The following circular respecting the locked safety valv has been issued:

TREASURY DEPARTMENT, Saturday, June 1, 1867. In order to remove all cause of complaint and secure uni formity among the several Inspection Districts in respect to locked safety valves the commission convened by order of the Department to examine and report upon the life saving inventions, have examined such safety valves as were brought to their notice, and have approved the five hereinafter specified as meeting in the highest degree yet attained the require-ments of the law. The results attained by the commission in this direction have been submitted to the Board of Supervising Inspectors convened in special session in Washington, and by it unanimously approved by a majority of the members of the board being present. At their request the Department now announces that henceforth any one of the valves herein specified may be used in any inspection district at the option of the steamboat owners, subject, of course, to the usual in spection and tests applied by the local inspectors, and to examination and approval, or disapproval, for special reasons, by the supervising inspectors. It is to be distinctly understood that these valves, though in their general character approved are yet to be subjected to the most careful and exact s as to the quality of material and workmanship; and their sufficiency in each particular case to meet the demands of the law. It is also to be understood that this enumeration is by no means designed to exclude other valves, equally meritorious, that may be presented, but that supervising inspectors are required to afford to all such a thorough and impartial examination, and accept any that are found to poss equal to those now selected. The valves which have been chosen are: First, the American high and low pressure: second, the Robinson high and low pressure; third, the Farrar high and low pressure; fourth, the Mason high and low pres sure; fifth, the McMurchy.

HUGH McCulloch, Secretary of the Treasury.

New Steamers.

The Pacific Mail Steamship Company has just completed, the lose were bored into the hearts of the trees and roll sulphur hearts of the trees and and unchanged. Those of 105 inches diameter and 13-feet stroke; wheels 40 feet distance and the lose were conveniently whitper from potential to the preserve them.

Accurate for the hearts of the trees were all dead. When they were cut down the sulphur was found unchanged. Those of 105 inches diameter and 13-feet stroke; wheels 40 feet distance from the first object to furnish an improved machine, by means of which the bugs may be conveniently whitper from potator these, and destroyed.

ameter and 12 feet face, with a bucket width of 24 inches She has surface condenser arranged as part of the engine, fitted with brass tubes § inch diameter and 9 feet long, with the joints made with "Allen's compressed wood-packing," and the condensing water thrown through the tubes by means of an Andrew's rotary pump, driven by a pair of inverted direct acting engines, geared two and a half to one. Connecting with the suction of this pump are valves communicating with the bilge of the ship, so that in case of leakage, the whole capacity of the pump can, in a few moments, be used to free the ship, amounting to over 20,000 gallons per minute. cam is supplied to the engine by four horizontal tubular boilers, placed forward of the engine in the hold of the ship, arranged with the fire-room fore and aft, and the uptakes connecting to one smoke-pipe of 10 feet diameter. The tubes are 3 inches diameter by 7 feet long. Steam chimney 20 feet high, which gives great freedom from priming even in the heaviest of weather. The boilers contain 24 furnaces, with a total of 585 square feet grate surface, and 16,700 square feet of fire surface, which gives, with great ease, a working pressure of 20 pounds for the engine. In connection with main engine and boilers, the engineer department is furnished with two donkey steam pumps of large capacity, and arranged to pump from the bilge, or to feed the boiler, or throw water on the different decks in case of fire. They are supplied with steam from an independent boiler, so as to be worked when steam is not on the main boilers. There is also supplied a hoisting engine, for delivering and receiving cargo, and coaling the ship by steam, in fact, everything that would add to the efficiency of the engineer department has been supplied.

The Celestial Empire is the second largest vessel ever laid down in the United States. The first one of the same class was the Great Republic, being a sister ship, belonging also to the Pacific Mail Company. The latter it will be remembered sailed a few weeks since from this port to take her place on the newly established line of the Company, to ply between San Francisco and China via Japan. In many respects these two vessels are nearly alike. They are the largest vessels in the world, next to the *Great Eastern*, devoted to the passenger trade, and reflect the highest credit upon our naval architects, shipbuilders and machinists. Those of the Cunard line, and even those of the celebrated French line, look like fourth ate steamships alongside of this modern ark of the Pacific Mail Company.

Becent American and Loreign Latents.

der this heading we shall publish weekly notes of some of the more pro nent home and foreign patents.

APPARATUS FOR MAKING VINEGAR.—Wondelin Weis, St. Paul, Minn.—This invention consists in so constructing an apparatus for making vinegar that they vinegar can be made in a very short time and with the aid of but one set of shelves, and that the shelves can be easily and quickly cleaned.

or sources, and that use sources can be easily and quickly cleaned.

PERSANT—E. T. Hofmann, Poughkeepsio, N. Y.—This invention relates to a pessary which contracts downward all round and fits the entire neck of the uterus, anterior, posterior, and lateral, as far up as said uterus extends into the vagina, the posterior surface of the pessary being made to it the convexity of the sacral vertebre and its anterior surface to the neck of the bestimates. ladder, so as to give to these parts protection from pressure. A depr n the upper surface makes room for the cul de sac, and flat inclined su es keep the pessary in position and prevent any undue lateral

STEAM BOILER.—William Lowe, Bridgeport, Conn.—The object of this in rention is to improve what is known as the horizontal tubular and it consists principally in forming a combustion chamber within the shell of the boiler, directly over the fire.

NUT MACHINE.-James Haslam, Philadelphia, Pa.-This invention in arranging a catch upon the end of the vertical slide bar, which by the process, holes the nut while it is being squared, whereby the nut is ca and held in position.

and held in position.

BOLT AND HIVET TRIMMER.—M. D. Budd, Roscoe, III.—This invention consists in constructing a tool for cutting or trimming boils and rivots in black-mith work and other iron or metallie work.

EQUILIBRIUM SYEAN VALVE.—R. F. Brown, Savannah, Ga.—This invention consists in forming the valve with apertures for the admission and exhaust of the steam, in such a manner that the steam presses equally or nearly so mone each side or the valve.

of the seems, in sect a measure mass and seems presses equally or meanly so pon each side of the valve. Gratz.—William Kelser, Strondsburg, Pa.—This invention consists in mak-ing the grate in two parts, and operating each part from the outside of the

STRAM AND WATER-HEATING APPARATUS.—Alanson Cary, New York City.

—The object of this invention is to provide a safe, efficient, and economical apparatus for the warming of private houses and public buildings of every description by heated air, and the invention consists in placing in a suitable apartment a succession of hollow plates, so constructed as to be steam and water tight, which plates are connected together and also connected with a team boiler by suitable pipes. Also in an arrangement of tubes through the said plates, whereby it greatly increases the heat-radiating surfaces.

EVAPONATOR.—Henry Lighty, Atties, ind.—This invention has for its ob-lect to farnish an improved evaporator, so constructed and arranged as to greatly diminish the labor attending the evaporation of the juice, and at the same time to separate both the soum and sediment from the sirup, and to guard against seorching and burning.

GATE.-B. Homer Fairchild and Emery Sadler, Farmington WATE.—B. Home: Fairching and homery causer, grimmignon, attent—inherention consists in farming the gate with the forward end or ends of topper or upper and lower horizontal bars extending out in front of the faward vertical bars, so that the gate may be partially opened and secured place to allow the passage of small stock while larger animals are prevent

Axles for Wagons, Carrs, erc.—F. McManus, Ellenburg Centre, N. Y.

-This invention consists in winding a wooden axle with wire, to prevent it

POYATO DIGGER.—J. C. Richardson, Benton, Mc.—This invention has for its object to furnish an improved machine by means of which potatoes may be dug rapidly and thoroughly.

CAR COUPLING.—John B. Behrens, Pearl, Ill.—This invention h object to furnish an improved car coupling, so constructed an in case of accident to any car or cars of the train, the injure couple themselves from the others, so as not to drag all the cars with then o destruction.

PRESS OR COVER FOR TURS, BARRELS, ETC.—Hiram L. Chase, Bath, Mc.
This invention has for its object to furnish a simple, convenient, and effective
means for keeping salted meat, pickled fish, or any other articles under the
pickle or brine to preserve them.

WROUGHT IRON PLOW BRANS—Waldon Eddy, Greenwich, N.Y.—This inreaction has for its object to improve the construction of wroughtiron plov eams, so as to make them easier of manufacture and more efficient in opera

POST AUGER.-Thomas Leeson, Sharon, Wis.-This invention is ject to furnish an improved auger for boring post holes, simple in constru-tion and effective in operation.

tion and effective in operation.

HAT-SIZING MACHINE.—S. S. Middlebrook, Sandy Hook, Conn.—This invention relates to a new and improved machine for sizing hats, reducing their dimensions by rubbing and friction, after being formed in the usual way. The invention consists of two endless aprons placed vertically in a suitable framing, and one arranged to travel or move a trifle fisher than the other, and both so arranged as to have a rediprocating motion, whereby the desired work may be effectively and perfectly performed.

SIFTER.—R. C. Ludlow, St., Louis, Mo.—This invention relates to an improvement in the construction of round sifters, sieves, or riddles for sifting flour, meal, and other substances.

PROCESS OF RESTORING SULPHURIC AGID, RTC.—Oliver W. Farrar, Pitts-burg, Pa.—The nature of this invention or discovery consists in an improve-ment in the process of restoring or recovering the sulphuric acid which has been used for refining herroleum, coal oil, naphtha, or other similar hydro-carbon oil or substance,

TURBINE WHEEL-Albert A. Wood, Manlius, N. Y.-This to a new gate, which is intended particularly for that class of turbine whee which is known as Jonval's turbine wheels, but may be applied with advatage to water wheels of various different construction. It consists of a rin egment provided with one or more lips which correspond in sition to the guide curves, and which are themselves curved in a manner that the space or spaces through which the water passes to the backets of the wheel can be enlarged or diminished, and the water can be us made to run on the buckets in a solid stream. The ring which curved lips is operated by an endless screw and suitable gear wheels

COPPER BILLERS.—Edward F. Woodward, Brooklyn, N. Y.—The design of this invention is to furnish housekeepers with an apparatus for boiling tea-coffee, cocoa, or other vegetable substances, and extracting therefrom their virtue and flavors and retaining the same in all their original strength and

FENCE.—Thomas Morris, McGregor, Iows.—This invention has for its object to furnish an improved fence, simple in construction and easily put up and taken down.

and taken down.

Compostriox.—Cassius Carroll Peck and Francis Ernest Engelbardt, New York City.—This invention consists in adding to astrong solution of common giue or gelatine, or chloride of lime, or in its place acids, such as sulpaurie or sulphurous acid, or any other mineral acid, and bichromate of potastium or any other mineral bichromate, to which composition a strong solution of penta sulphite of calcium or other sulphite is added.

MOP WRINGER.-O. C. Barnes, Stowe, Vt.-This invention relates to an im-MOP WRINGER.—O. O. Barnes, showe, v.—Ins investment coates on an improvement in the construction of a mop wringer or press, and consists in a rectangular box nearly or quite square to serve as a vessel for holding water instead of a pall, which box is provided with a leyer treated in tain move a follower placed on a perforated platform in the upper part of the box in set a manner that it shall press upon and squeezes the water out of the mop.

RAILROAD CHAIR -J. W. Shively, New York City.-This invention relat-RAILBOAD CHAIR—9. It is nively down as a supporting the ends of ra road rails, and consists in such a construction of the rails and double che bar that the friction of the trains passing over the rails is transferred fro the edge of the rail to a projection all to a projection on the chair or cheek bar, whereby the are protected from the hammering and consequent de struction by the trains

FIRE KINDLER.-Verlin G. Tansey, Quincy, Ill.-This invention consist in providing means whereby the troublesome operation of kindling a fire from either wood or coal may be performed by petroleum or other oil, with the greatest case and at a very slight expense.

Inggreases case and a a very signs expense.

LIQUID METER.—Parcel Brinkerhoff, Chillicothe, Missouri.—This invention consists in constructing an instrument by which I am enabled to measure out and discharge given quantities of liquid by merely turning a liver
when the meter is attached to a harrel or a vessel containing liquid, thus obvisiting, the necessity of resorting to measuring cups of different sizes for
that purpose. that purpose.

IMPROVID SUBSOIL PLOW.—Rufus Peet, Castile, N. Y.—This invention has for its object to furnish an improved subsoil plow so constructed as to be easily repaired in any or all of its working pars, which shall be easily worked, and which will do its work effectually, losening up the soil to any

SELE-ACTING WEATHER STRIP.-C. E. Butler, Hudson, N Y .- This inver ion relates to a weather strip and to the manner of applying the same, and onsists in so constructing the fastening and other devices that the weather consists in so constructing the fastening and other devices that the weather strip is at all times firmly pressed against the door or window to which it is applied.

applied.

PARALEZ VISE.—Isaac C. Tate, New London, Conn.—The object of this invention is to adjust vises or clamps of any suitable construction to the use of carrers and others who have to work on different sides of the article held in the vise, and consists in mounting the vise upon a universal joint so that it can be turned and inclined to any desired degree thereby enabling the turning of the article in the vise to the light or to the front of the operator or to any other desired position.

any other desired position.

FIRE ESCAPE.—Robert Mackinzie and James Cooper, New York City—
This invention relates to a fire escape which consists of a car suspended
from a rope, the latter passing over a pulley block which is secured to the
window frame on which this escape is to be used. The pulley block is at
tached to a cross head which is sitted into hooks that are screwed or other
vise fustemed to the zaid window frame, and the car is guided by ropes, or
which the upper ends are secured to the same cross head, while their lower
ends are securely anchored in the ground.

ends are securely anchored in the ground.

Whiel for Vehicles.—Elias Hoxy, Montezuma, N. Y.—This invention relates to such an arrangement of the hub of a wheel that a larger number of spokes can be easily arranged in one wheel whereby lighter material may be employed for the spokes as well as or the fellies and whereby the spokes are more securely attached to the hub than was heretefore done. The invention consists in the use of a metal ring arranged around the wooden hub and provided with a zig-zag flange projecting from the center of the ring being arranged around the outside.

CIRCULAR SAW .- J. W. Clark, Iola, Kansas .- The design of this invention rovide a self-adjusting guard for circular saws for preventing all poss of accidents while in no way interfering with the operation of the sav nlity of accidents while in no way interfering with the operation of the care or the handling of the lumber in passing it to or taking it from the saw, and at the same time abating the flying saw dust by conducting it under the sav

CHEESE PRESS, ETC .- Wm. H. Ragan, Fillmore, Ind .- This invention lates to a new and improved plan of construction of a press adapted to presing cheese, grapes, apples, and other substances.

ing cheese, grapes, apples, and other substances.

APPLARTUS FOR DESTROYING MOTHS.—Charles F. Worch, New York City.—This invention consists in the use of a spacious box made of wood or any other suitable material which is made air tight and provided with a furnace and smoke pipes, etc., so that the inside of the box may be beated to a bout 120° Fah. Furniture, clothing and any other material containing moths can be placed in the box and is then subjected to the heat for from 3 to 10 hours. The heat is not very intense but as the box is air tight the moisture will be concerned to the contract of the same cause soon completely withered.

same cause soon completery winteron. New York City.—This invention relates to a pump in which a continuous stream of water is made to pass through the section and discharge pipes. It consists principally in the use of a radial arm or pision that oscillates around the, axis of a circular cylindrical vessel. A stationary abutiment is arranged in the latter, extending from the axis to the circumference: and on each side of the same are openings of channels which connect the cylinder with the discharge and suction pipes.

Machine For Marking Corn Ground.—George Sprague, Spring Hill, Kansas.—This invention relates to an improved plan of constructing a ma-chine for marking the rows in a field for planting corn.

FASTENING WAGON SEATS .- Elias Hoxy, Montezuma, N. Y .- This inve to a new manner of securing wagon seats to the frame or box of the wagon so that neither the sill of the seat nor that of the frame is weakened by boring holes into them for the purpose of securing the necessary bolts or Moreover, the seat is very securely held down and can be very easily removed, i' desired.

BONE (HARCOAL KILN .- Adam Weber, New York City. relates to improvements in the construction of kilns for reburning purifying 'bone black' or bone charcoal which has been used in the refu of sugar and became charged with vegetable matter so as to destroy its fil

VENTILATING DOOR.—Theodore R. Timby, Saratoga Springs, N. Y.—The object of this invention is to keep the rooms of a building, those rooms which communicate with the hall, in a perfectly resultated state by means of openings or holes made through the upper and lower parts of the door and covered by deflectors.

MAGIC ARROW.-H. C. Griffin, Franklin, N. H.-This invention relates to MAGIC ARTON—H. C. Griffin, Franklin, N. H.—This invention relates to a simple toy for children designed to supersede the ordinary bow and arrow, and it consists of an elastic cord constructed of india-rubber or other suitable cluster material, and having its ends connected to the promps of a forked barand an arrow provided with a slit near its head to receive the elastic cord, which, by drawing back the arrow is partsched or distended so as to propel the arrow a considerable distance when the same is released.

The arrow a consequence unstates when the same observed.

Jack for Raisine and Devetine Railroad Tracks.—Seman Taber, St Joseph, Mo.—This invention relates to a new and improved Jack fr raising and leveling railroad tracks. The object of the invention is to obtain a simple and portable device for the purpose specified, one which may be manipulated and applied with the greatest facility, and constructed at a moderate

METAL WHERLS FOR RAILROAD CARS, ETC —Samuel Vanstone, Providence R. I.—This invention relates to an improved metallic wheel, and it consists is forging or striking up the same, or casting them of Bessumer steel or of iron malicableized and then forging them into the desired shape.

malicableized and then lorging them into the desired analysis.

BRIAD-OUTING MACHINE.—S. D. Simmons, Brocklyn, E. D., N. Y.—This
invention relates to a new; and improved device for cutting bread and is an
improvement on a machine for the same purpose for which Letters Patent
were granted bearing date July 25, 1885. The object of the present in ention
is to simplify the construction of the machine, reduce the cost of manufacture, and render it capable of being operated with far greater facility.

BERHIVE.—Volney Leonard, Springfield, Pa.—This invention relates to a new and improved beehive, and has for its object the protection of the bees from the moth, perfect ventilation, uniformity of temperature, and anovel construction of the spare honey boxes and honey board, whereby several ad-vantages are obtained ever hives of ordinary construction.

LOCK.-Henry Jackson, Brooklyn, N. Y.-This invention relates to a and improved lock of that class in which the tumbler or tumblers are at-tached to a sliding bolt, and has for its object the prevention of the picking of the lock by obtaining a pressure of the tumblers against the stum-on thereby ascertaining the precise position of the slots in the tumblers, a practice now very successfully adopted by burglars in picking tumbler locks. The invention has further for its object the obtaining of a firmer or stronger bolt than hitherto, an important feature when the invention is applied to

SHERF SHEARS.—John Raiston, Slippery Rock, Pa.—This invention re to sheep shears in which a movable cutter is pivoted to the face of the tionary cutter, the latter being divided into two or more fingers or precenting so many cutting edges. The movable cutter is operated by spring and is drawn collquely across the cutting edges of the statio-fingers, thereby producing a drawing cut requiring less power and pri-ing a cleaner cut than could be done with the sheep shears now in use.

Answers to Correspondents.

CORRESPONDENTS who expect to receive answers to their latters must, in all cases, sign their names. We have a right is know those who seek indees the correspondent by mail.

SEECIAL NOTE:—This column is designed for the general interest and instruction of our readers, not for gratuities rights to questions of a purely when the paid for as advertised on the grates of the column is designed for the design of the service of t

- W. J. T. and J. H., of Fla.—The Dictator was built, and launched from the foot of 13th street North River, New York. The first named correspondent is in error. We shall publish an engraving of the
- of Pa .-- We have always preferred to have the pressure of the steam in a gate on the top of the valve rather than on the bos although the ordinary gate will work either way. When the steam troduced on the top it helps to keep the valve steam tight on its seat.
- G. M., of Mass.-It would seem that a sledge with the handle r. ar., or index.— I would be an unhandy implement. The handles should be placed somewhere near the center of gravity in order to halance. This is the principle upon which ax heads are hung, and as the sledge has a round handle it would seem to be still more desirable in this case.
- D. S. M., of Ill., endorses the statement on page 330 that green wood does not expand on freezing. He is led to his conclusions by observations which have been made in his business, which appears to be
- R. T. W., of Ohio.-When you see a rainbow the sun is always at your back. The sun, the eye of the observer and the center of the arch are in the same line. A rainbow is sellom seen at midday unless an eminence
- H. W. B., of N. Y .- Grain storehouses have been built of iron, as you propose. An establishment constructed on this plan, is de scribed on page 182, last volume Scientific American, under the heading How grain is stored in New York.
- "How grain is stored in New York."

 L. W. M., of N. Y.—The simplest apparatus for determining the amount of rain which falls, is a cylindrical vessel of tin; a common two quart pail will answer very well. The vessel is to be set where the rain will not be obstructed by trees, funces, or buildings, and after the shower the depth of the water in the cup is to be carefully measured. To facilitate the measuring, the water may be poured into a graduated glass to ascertain the bulk, from which the depth may be easily calculated.
- C. H., of N. Y .- "Will the attraction of gravitation alone
- stop a pendulum?" No.
 J. D. R., of N. Y.—We understand that the only requirement by law concerning the composition of the alloy used for the three and five cent coins is that it shall contain not less than twent cent of nickel. The alloy no doubt will be found valuable for other
- D. B. T., of N. Y.-You will find an explanation of th
- gyroscope in Silliman's and Ganot's physics.

 A. B. R., of Wis.—Iron pyrites or native sulphide of iron is now extensively used in the United States as the source of sulphur, in the manufacture of sulphuricacid. The best pyrites contains between 40 and 50 per cent of sulphur. The pyrites which contains much arsenic is of n
- G. L. C., of La.—Water glass, liquid quartz, and silicate of soda, are different names applied to the same thing. The article is on sale in this city and you may procure it of any druggist who makes his purchases in New York.
- M. M. of N. Y .- The working strength of a hempen rope 3

- M. M., of C. W.—Asphaltum or pitch is often used to make the vanits of the character you describe water-proof. There is cheap substance which answers its purpose so admirably. It is able of itself and has no chemical action on the wood, stone or n which it may come in contact.
- J. M. B., of Ky .- A commutator is the name of the device 1. M. D., Of N.Y.—A. COMMUTATION IS the Bathe Of the device used in galvanic apparatus for changing the direction of the currents of electricity. The word is synonomous with pole changer. In the magneto-electric machine, the electricity is produced in waves in alternately opposite direction, and consequently the soumentator is necessary whenever the electricity is to be used for the electrotype process, or for producing electromerates.
- M. D. S., of Ky., and W. A. C., of N. C.—Good color may be given to electro-gliding and silvering by depositing an alloy with the battery. But the process is quite troublesome and uncertain; it is not much used in practice. A simpler and surer plan is to color the goods aftor the gold or silver has been deposited in the usual way. To give gold surfaces a rich orange tint, take saltpeter 5 parts, alum 2 parts, white virtoil part, copperss | parts. Pulverize very fine and mix. For use add to the powder sufficient water to give the mixture the consistency of cream, and into it dip the glided article; or the mixture may be applied by means of a brush. The coaring is allowed to dry on the goods, and then they are to be heated in an oven or on a plate of fron until gold becomes of the destred color; the longer the beat is continued, the darker the color. The articles are finally immersed in water to remove the coating. Another mixture used in a similar way is composed of verdigris, atum and becawax, and turns gold to a reddish cast. To whitce aliver surfaces, immerse in a saturated solution of borax, dry and heat till the borax is completely melted. The excess of borax may be washed away by dilute sulphuric seed. M. D. S., of Ky., and W. A. C., of N. C.—Good color may
- R. N. L., of R. I.—The blue woolen cloth which 'crocks' is dyed with prussian blue. The latter is a powder and if you whip the cloth amartly you will see the color fly away as dust.

 W. R. D., of N. H.—" Where is the center of motion of a
- wagon wheel rolling on the ground? My opponents contend that in a wheel revolving on its axie suspended, its center of motion is the center of the wheel, but the instant the wheel is allowed to rest on the ground with the wagon in motion, that the center of motion is changed to that part of the wheel, but the Instant the wheel is allowed to rest on the ground with the wagon in motion, that the center of motion is changed to that part of the wheel which is constantly on the ground?" W. R. D. is on the right side of the question. The center of a revolving wheel is always a center of motion; for the rolling of the wheel on a plane or on a curve does not after the relation of the wheel to the center. In the case of the wagon wheel rolling on a plane that part of the wheel which is constantly on the ground is not the center of any sotual curve. The particles of the wheel describe rolling on a plane that part of the wheel which is constantly on the ground is not the center of these curves are fixed points; each individual particle describes its own cycloid which has its peculiar center. All motions on the earth are relative, and a moving body may have two or more centers of motion. Thus the wagon wheel has a center of motion in itself, and others, at the center of the earth, center of the sun, and at the center of motion of the universe.
- J. W. L., of N. Y.—The force given out by condensed air on expansion is precisely equal to the force which was used in the compression, provided that none of the heat of compression has been lost. The seks used or the rate or manner of compression or expansion, do not affect the question one way or the other.

Business and Personal.

The charge for insertion under this head is 50 cents a line.

Manufacturers of clock work to run light machinery send address to A. S. Griswold, Pittsburgh, Pa.

address to A. S. Griswood, Fixadorga, Fa.
Foundery and Machine Shop wanted at Coloma, Ill. See
advertisement and address A. P. Smith, Sterling, Ill.
John M. Hill, Nashville, Tenn., wishes to communicate with

parties who make Bedstead Fans driven by Spring Power.
The Bartlett Sewing Machine.—To correct an erroneous im-

pression that may have been given to the public that the shape or form of the Bartiett Sewing Machine is the same as the Willcox & Gibbs Machine, or that there has been a contest in reference thereto, it requires these facts to be stated:

The United States Patent Office is wood, among other letters patent for sewing Machines to Joseph W. Bartleft, neo patents for "new and useful do signs for Sewing Machines." One of these patents is for a circular form the same as that First used in the Bartlett machines, the other for an elongated form, it being found that this latter form possessed advantages over the Gircular form, giving greater space to the "work," etc., and from a similarity of the Bartlett patent circular form to that of the Wilcox & Gibbs, Mr. Bartleft, therefore, being desirous to give as distinct a character as possible in the best form to his form to that of the Wilcox & Gibbs, Mr. Bartleft, therefore, being desirous to give as distinct a character as possible in the best form to his machines, determined, some fifteen months ago, to adopt the use of the "long arm "form, caused the models to be made and their manufacture begun. They are to be seen at the General Office, No. 589 Broidway, New York—[Guzette.

We have examined the Bartlett Machines. The mechanism is of the simplest kind—found to be durable and noisieras; the stitch did not rip upon being tested, and is far superior to that of the "chesp" Machines.—[Scientific American.]

being issect and its aspects.

These Machines have met with an almost unqualified approbation, and experts on Sewing Machines pronounce it the most simple, perfect Sewing Machine now in market. It gives great satisfaction in our establish ment, where we have tested it thorough y, and it is especially valuable be cause apprentices who never before worked upon a Sewing Machine can operate it at once."—[Demorest's Magazine.

EXTENSION NOTICES.

John Krauser, of Tylersburg, Pa., having petitioned for the extension of a patent granted to him the 20th day of August, 1833, and reissued October II, 1884, for an improvement in 'ider mills, for seven years from the expiration of said patent, which takes place on the 20th day of August, 1891, it is ordered that the said petition be heard at the Patent Office on Monday, the 12th day of August next.

Oliver P. Drake, of Boston, Mass., having petitioned for the extension of a atent gra ted to him on the 30th day of August, 1853, and reissued the 15th patent, graited to find on the South they of August, 1895, and resisted and the day of November, 1864, for an improvement in apparatus for combining hydro-carbon vapor with air, for seven years from the expiration of said patent, which takes place on the 30th day of August, 1897, it is ordered that e said petition be heard at the Patent Office on Monday, the 12th day of

LAW REPORT --- IMPORTANT TRADE MARK CASE.

LAW REPORT.--IMPORTANT TRADE MARK CASE.

This is an action brought by Amara B. Howe, brother of Ellias Howe, fr., raying for an injunction to restrain the "effondant copporation, of which Ellias Howe, fr., is principal stockholder and president, from selling or advertising any sowing machine bearing the trade mark, or any titl in which the name." Howeve's used. Howe sowing Machines, or any titl in which the name. "Howeve's used. Howe sowing Machines, or any titl in which the name." Howeve's to the planter, the planter of the planter of the planter of the planter. The decision in the case is based on the following grounds:—Prix, Ellias Howe, fr., as the inventor and patentee, had the exclusive Second, The illomes granted to his brother, the plantiff, craferred on him the right to make and sell only, nor was this an exclusive right, nor did it give him the privilege to use the name of Howe as connected and both on the machine and in connection with its sale, and the plaintiff as partner or agent the plaintiff are proposed to have excited before class were currendered by the plaintiff. The proposed of his case of the came in opposition to Ellias.

Form, By a special accessment made in the day of the plaintiff. The proposed of the case of the came of the control of the case of the plaintiff. The proposed of the case of the plaintiff and apply it to any advised mark, but he own name as applicable to the own patents of the same purpose. Sixth, The ladgement is the error erger that the plaintiff is not entitled, on the evidence proposed, to an injunction.

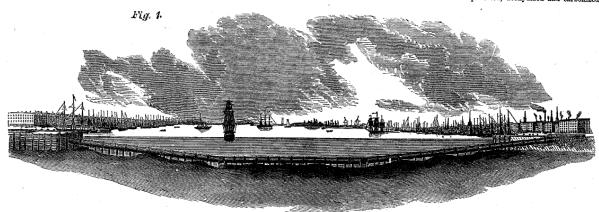
CROSSING THE EAST RIVER.

Since last winter, when on account of floating or fixed ice munication between New York and Brocklyn or Williams burgh was either cut off for hours or rendered insecure and precarious for days, there has been a desire, not bounded by considerations of the interests of capital, that some more certain if not more rapid means of intercommunication should be contrived. The annoyances of the past winter and early spring are not exceptional; they have been repeated from year to year until the patience of the public has become well nigh exhausted, and the demand is general that some surer

a single bridge. Its approaches could be close to the shore, and therefore not interfere with the rights of property owners In every aspect the submerged tube appears to be better than the aerial bridge.

Subsequently, as seen in No. 39, Vol. XII., 1857, SCIENTIFIC AMERICAN, we published engravings of a similar plan which we herewith reproduce. It was suggested by H. P. Holcomb, of Winchester, Ga., and the engravings represent a profile view and the entrances, style of tube, and a cross section. In Fig. 1 the tube is shown supported on piles sunk in the bed of the river; Fig. 2, one of the entrances; Fig. 3, a cross section, and Fig. 4 the construction of a portion of the tube, which is

bining with the carbon of the burning fuel forms carbonic acid, and in passing through a thick bed of burning fuel it receives another equivalent of carbon and is converted into carbonic oxide; jets of air are forced into the furnace, over the fire among the products of combustion, the oxygen of which unites with the liberated hydrogen, carbonic oxide, and other inflammable gases, producing a clean, intensely hot flame. Nothing is permitted to escape but the incombustible gases. With this furnace it is thought that iron of superior quality can be made from ore with any kind of raw coal, and less than half the quantity used in ordinary furnaces. The cost of the furnace is not over fifteen per cent of that of ordinary furnaces. means of communication between the metropolis and its of wrought iron. These portions which are corrugated are The ore is desulphurized, deoxydized and carbonized before



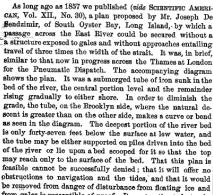
MODE OF TUNNELING RIVERS

ost important suburb should be established. A charter for a | intended to rest on foundations of piles and the corrugations | melting, the sulphur and gas in the coal being decomposed bridge company was secured at the last legislative session, and we understand that preliminary surveys are now in progress on both sides of the estuary known as East River. bridge to be constructed will probably be a suspension bridge. with one or two stories, and of a length between points of suspension exceeding that of any other on the continent. But vast as is this undertaking the approaches to the bridge proper, are hardly less in magnitude.

On the New York side they must stretch from the river

reach to the intersection of Sands and Fulton streets. Of course property on the line of these approaches must be more or less injured by the darkening of the windows and the obstruction of travel on the streets. Then, again, if merchandize is delivered from warehouses on the streets lining the river, in order to be conveyed over the bridge it must be teamed a distance to reach the approaches nearly if not quite equal to the breadth of the strait the bridge itself spans. In such cases the present system of ferriage will be preferred, as probably in many cases of foot passengers. If to these obstacles be added the enormous cost of the bridge and the feeling of insecurity, which no course of reasoning and scarcely a demonstration could obliterate from the minds of the people, it would seem that some cheaper and more feasible plan might be adopted,





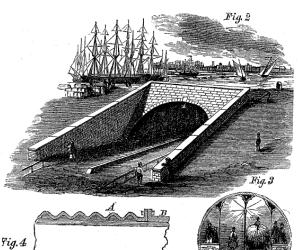
from gales is susceptible of proof. Its cost, estimated at only

about \$200 per running foot, is so much less than that of any

bridge that twelve of these tubes could be laid for the cost of

are intended to strengthen the tube and also to provide for any expansion and contraction. Our opinion is that if the whole tube was built of corrugated iron, it would be imr ly stronger and could also be made of thinner iron, thus re lucing the cost.

The plan of building the tubes proposed is similar to tha followed in the construction of the Pneumatic tube in London that is that it be built in sections, the ends of which are made water-tight, and then the sections floated to place and sunk



umped out. The joints to be made by bolted flanges We see fewer objections to this style of crossing rivers, es-pecially when very wide or where a bridge must be very elevated, than to any other. If the tube is sunk in a bed dredged for it there can be no reason why it might not last for gener ations, especially if, like that of the Thames, it is protected externally by courses of brick masonry. We gave an engraving and description of hat tube in No. 11, current Vol. No objection to the submerged tube, except the fact of its situation, would seem to obtain which might not be equally valid when urged against the elevated bridge. Certainly teams and street railway cars could as readily traverse the tube as the bridge. In either case there must be an ascent and a descent. But, beyond the fact of less cost in favor of the tube, there is the superiority in ease of approach and the consequent shortening of the distance. The two plans seem at least worthy comparison by those interested in the subject.

A New Smelting Furnace.

The works of the Star Glass Company, of Philadelphia, about to be started in Norristown, are furnished with a new style of furnaces with closed ash pits, in which is introduced a blast of air to support combustion with jets of steam in close proximity to the grate bars. The oxygen of the steam comand consumed before contact with the materials to be melted.

APPLICATIONS OF PAPER.

The uses of compressed vegetable pulp, or artificial wood, already very numerous, are multiplying. Among its good qualities, its low conductivity is important and but imperfectly appreciated. Many have seen, and verified by experiment, the statement that the warmest kind of bed comforter can be On the New York side they must stretch from the river water-tight, and then the sections floated to place and sunk made by basting old newspapers together. Something in bank nearly to the City Hall while on the Brooklyn side they by admitting a sufficient quantity of water, to be afterward this line might be made a valuable new article of manufac-

ture. Cisterns and water pipes of prepared paper, with a sufficient ingredient or else coating of insoluble substance, have been brought into use in England, for their remarkable resistance to the penetration of frost; or more accurately, their remarkable retention of the heat of their contents. It is stated that at the Albion Works, England, there was in the open yard a large brick tank containing several tuns of water, the ice in which was several inches thick during the severe cold of the past winter. By the side of this was another tank, made of paper boards, the water in which was not the least frozen. Some iron pipes which supplied water to the places in consequence of the freezing of the water which they boiler of the engine house from a large cistern burst in several contained. Some paper pipes, on the other hand, filled with water, and which had been exposed to the snow on the ground, kept the water from freezing. In a model house or hut, made of paper, some water in open bowls and pails did not freeze, though outside the building there were large masses of ice. The manufacture of paper pails has been initiated in this country, and we see no reason why they should not make a superior article. Sugar molds are now made of paper, by the same parties (American Papier Maché Co., Green Point, L. I.) and Messrs. Havemeyer & Elder, the noted sugar refiners, speak in the highest terms of a lot of 4000 of these molds which they have used for a year, preferring them to iron. An all-paper hat is com-ing into market, as we hear. Paper substitutes for starched linen are in common use, but what shall we

say to paper shirts, drawers and hose, for which a patent has been taken out? Is the whole series of metallic ages, silver, gold, brass and iron, to wind up in an age of rags?

Velocity per Hour.

The speed of our ocean steamers in crossing the Atlantic rarely exceeds 11 miles per hour; the speed of river steamers is from 14 to 24 miles per hour; of a race horse from 29 to 30; of a bird 50 to 60; of a high wind 20, and of a hurricane 80 miles; of sound 804; of mechanical force in air 750; of the earth around the sun 68,000; of light, as demonstrated by Foucault's apparatus, 690,000,000 miles and yet this inconceivable speed is little more than half the velocity of static electricity which atter Wheatstone has shown to be 1,040,000,000 miles an hour.

If the earth were a cannon ball shot at the sun from its present distance, and with the velocity it now travels, and if simultaneous with the explosion a telegram was sent to the solar inhabitants, the electricity would pass the intervening space of 95,000,000 miles and the message be received in five minutes; the earth would be seen coming toward them after the lapse of eight minutes; the inhabitants would have near ly two months to prepare for the sheek, which would be received over ten years before they heard the explosion.

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THEORIES OF THE STRUCTURE OF IRON.

A highly suggestive paper on the structure of iron read at a late meeting of the South Wales Institute of Mining Engineers, by M. M. Vivian, Esq. Mr. Vivian's somewhat novel data invite careful testing, and if confirmed, the theory to which they appear to lead would become an interesting subject of discussion, strikingly in harmony with the present tendency of speculation in physics. He asserts positively. from a wide and protracted range of microscopic study of the metals in their various conditions, that they are invariably found (according to previous treatment) in one of these two kinds of molecular formation: either angular and crystal-line, or cellular: the fibrous condition being a mechanical modification of the latter, showing under the microscope an ellipsoidal extension and concatenation of the cells, which are at the same time flattened and laminated upon another like scales, or links in a flattened chain.

We lately quoted a theory which attributed the fibrous condition of wrought metals to the interposition of slag which became minutely flattened and lengthened out within the structure, by the process of manufacture, so as to separate the mass longitudinally into fibers. The more usual and plausible explanation of this condition is that by stretching and doubling a tenacious mass very many times over, a mul titude of fresh surfaces are successively formed and brought into contact, which, not being in a state of fusion, cannot mingle their particles, but adhere superficially, with a certain distinctness or separation preserved; so that the mass is made up of minute parallel strips, coherent but not consolidated or mingled, and possessing each in itself the flexi-bility which is found in a fine thread even of the most brit tle substance; while their limited cohesion to each other allows a certain flexible play within the mass, as in bending a bundle of rods. It will be seen that these theories are all ductile enough to be run into each other as one, with a little mutual accommodation, supposing Mr. Vivian's microscopic observations to be correct. Granting the flexibility of puddled iron to be accounted for by the usual explanation above given, it is a question whether some other cause must not be sought for its increased tensile strength. And again, the unsurpassed flexibility and tenacity of Bessemer steel re main quite unaccounted for by the ordinary theory. So that there is unquestionably room for inquiry on this subject.

No metal is ever really solid, and all good malleable iron is "as porous as a sponge." Mr. Graham's researches have shown that the metals absorb and retain mechanically various proportions of different gases, in their cellular spaces Mr. Vivian makes the interesting statement, from his observations, that the best known conductors of heat and electricity, such as silver, copper and iron, have the most perfectly cellular structure, and their conductive power varies in accordance with the variations of this condition. His idea is that the cells afford a vacuous channel for these forces: which is not as philosophical as to suppose that the forces are forwarded by the continuity and elasticity of the cellular partitions.

As to the cause of the exchange of the crystalline for the cellular (or else amorphous) structure, and vice versa, the present state of inquiry (for science there is none) allows a variety of conjectures. In the state of fusion, the molecules of the structure are partially liberated by the separative force (heat) from the force of cohesion or gravitation to one another At the same time the ultimate contents of the molecules themselves may be affected likewise, so as to assume the natural form of matter in freedom (or rather in action, through the force of heat) which is spherical. From this modification of their form and loosening of their cohesion, results fluidity, or the smoothness and freedom with which the molecules roll over one another. Mr. Vivian attributes the alleged cellu-

lar formation to an equilibrium of the opposing forces of expansion and contraction, but as these act in exactly opposite directions, the result of their equilibrium would be rest, If at that point of time the at a single point of time. molecular form were fixed beyond disturbance from the further progress and predominance of the contractile force, the result might be a globular, but not necessarily a cellular structure. If on the contrary, the withdrawal of the calorical and ascendency of the contractile force be violently accelerated, it is conceivable that the globular molecules might be riven by an irregular conflict of forces in straight lines, producing a formation in planes, or crystals. The alleged cellular condition of the globular molecules would remain to be accounted for, by enclosed gases for instance-a cause apparently not of sufficient universality—or else by some un liscovered law.

This brings into play Helmholz' new theory of "wirbelewegung," or vortex motion. Supposing it a law of calorical force (or, as we more habitually regard it, fluid freedom) in matter, to produce motion in circles, we have at once a clear cause for the alleged cellularity, and a clear necessity, both for its maintenance—in case the heat-motion be not suddenly overcome and the arched condition of the matter be enabled to sustain itself without violent opposition until it grows turgid and finally rigid—and on the other hand for its disruption in planes of cleavage, in case the contractile force be suddenly and violently accelerated. This account of the process, if true, would also account for the brittleness of the ruptured and crystalline structure, as well as for its density and hardness. The crystalline or "short" quality of iron worked too hot, would also be explained on the same principle—the sudden contraction from the sudden escape of heat, cooperating perhaps with mechanical force, to rupture the cells or arches at the critical moment of consolidation. We shall not be understood, of course, as advocating any of the actual or supposable theories, which we repeat only by way

of information and stimulus to inquiry.

According to Mr. Vivian's observations, the walls of the metallic cells, being smoothly formed and inaccessible to exidation, are exceedingly brilliant, and reflect light from innumerable facets, when the mass is fractured. As before said, by rolling they are supposed to be flattened out like links, into chains or fibers, and by drawing as wire, this effect becomes still more marked. If then the bar, or especially the wire, be broken short off at right angles, it shows a dul gray color, because we look into the cells lengthwise, and the light is but faintly reflected from their depths. On the other hand, where the bar shows a longitudinal fracture slightly bent to one side, the most lustrous effects are seen Mr. Vivian thinks that the tensile strength of wire is re duced by repeated annealings during the process of drawing in consequence of ruptures of the cells by expansion. If his views are correct, the test of iron and steel which he re-commends, by examining the molecular structure with the microscope, when sufficiently understood, would become of great value.

THE COMMISSIONER'S DILEMMA.

We publish in another column a letter from a subscriber setting forth the cause of the delays at the Patent Office, and on the Commissioner does not increase the examining force. The Commissioner is to be commended for his forcible though unsuccessful appeal to Congress to give him more room, and for his subsequent effort to get possession of space occupied by other departments which have no right in the Patent Office building, and which ought not to have been allowed to quarter there at first. These various bureaus which absorb so much room needed by the Patent Office, and for the want of which inventors are suffering throughout the and, are like squatters: they have no business to remain, but are difficult to get rid of when once settled. Now what is the remedy? Until Congress assembles—when we hope the Commissioner will again lay his grievances before it, backed by the influence of one hundred thousand inventors in the shape of a petition—the cases in the beautiful Model Hall might be placed nearer together and light partitions con structed, forming rooms for the temporary use of an increased examining force. They might not be so convenient for the purpose as the rooms on the first floor adjoining the Library, Drawing and Record Rooms, but they would certainly be as eligible as those rooms in the basement, and much more cheerful and healthy for the occupants. Any expedient should be resorted to, rather than to have the inventive genius of the country discouraged by lack of desirable room or want of sufficient force to keep the work of the Office up.

We hope to see some immediate action taken by the Comnissioner to remedy the evils which have existed too long already, and which are daily increasing. Come, Mr. Commis sioner, do devise some way of obtaining room and appoint new or promote some of the most efficient assistants to be first Examiners. Sub-divide some of the over-crowded classes and require that the back work of the Office shall be brought ap at once, and when once up, make it incumbent upon the Chief Examiner in each class to keep it so, and if he is unable to do it, to report the reason of his inability when he makes his monthly statement, that a further division may be made. or some other mode devised for his relief.

THE NATURE OF THE PHOTOGRAPHIC IMAGE.

The solution of this problem has for years engaged the attention of scientific observers, and a variety of explanation have been given. One of the most recent theories is that light acts upon the sensitive plate by a sort of mechanical pressure, in proof whereof it has been shown that if an object be pressed against the sensitive film, in the dark, the im- room should be supplied with moisture from the evaporation

age of the impressed object may be at once developed, by the use of the usual developing agent

But by far the most clear and satisfactory explanation of the phenomenon is that presented by M. Carey Lea, in the last number of the Philadelphia Photographer, which we pub lish in another column. Dr. Lea's contributions to chemical photography are widely known for their excellence and accuracy. The beautiful theory now made known by him is the result of a long series of laborious experiments.

THE DAY LINE IN CONGRESS.

In our discussion of the question, When and where the day begins, we ventured the prediction that the subject would some time engage the attention of national legislatures. Our prediction is being fullfiled sooner than we expected. The following is an extract from a recent speech of Senator Sumner delivered on the occasion of the purchase of Russian America:--

Another change must be made without delay. As the settlements of this coast came castward from Russia, bringing with the Russian flag Western time, the day is earlier by \$A lours with them than with us, so that their Sunday is our Saturday, and the other days of the week are in corresponding distord. This must be rectified according to the national meridian, so that there shall be the same Sunday for all, and the other days of the week shall be in corresponding harmony. Important changes must follow of which this is typical. All else must be rectified according to the national meridian so that within the sphere of our common country there shall be everywhere the same generous rule and one prevailing harmony. Of course the unreformed calendar, received from Russia, will give place to ours; lold Style yielding to New Style. Another change must be made without delay. As the settlements of this

The fact to which the Senator alludes is a very curious one, when we cross the boundary of Russian America we come into another day. There is evidently a need of legislation in this case. But the learned Senator, like some of spondents, befogs himself. He appears to imagine that the beginning of the day has some connection with some meridian already established. What does he mean by "national meri-There was once an attempt to establish the meridian dian? of Washington for the reckoning of longitude; but that meridian is very little used in practice and it has no relation whatever with what we have called the day line. Moreover, Mr. Sumner appears to attach an unwarranted meaning to the well known expressions, Old Style and New Style. These expressions preperly refer to the reform of the calendar instituted by Pope Gregory XII. in 1577, when ten days were dropped from the old reckoning.

THE REGULATION OF TEMPERATURE AND MOISTURE.

All extremes of heat and cold, moisture and dryness, are injurious, but for short periods the human system can easily resist an influence from which injurious effects are experienced after a protracted exposure. Thus the workmen around furnaces never experience from an intermittent exposure the injurious effects to which men are subjected who work on hot summer days in the continuous radiation of the sun and ometimes fall victims to sunstroke.

Short exposure to cold will not produce that injury to a healthy person which follows when portions of the body are thoroughly cooled off and the natural perspiration checked for ome time. It is an error to think it better to cool off gradnally than to go from a hot fire at once into the cold. On the contrary, when before going out on a very cold day we warm up well before a good fire, and immediately wrap up in a coat or shawl, we find that we can resist the cold much better and longer than when we cool off before going out. It must be noted, however, when we remain in a place which is very warm so long that our perspiration becomes as free as it naturally is in the summer season, and then at once go out into the cold, there is danger of taking cold by the sudden check produced in a perspiration which was too free for the winter eason. The artificial heating must therefore be moderate, or if strong, it must be of short duration. A thorough cooling off of the body below a certain standard of temperature (which is somewhat different for different individuls) will urely produce disease, which also will be different in its nature according to the different predispositions of the individuals: thus, by the same exposure to cold one will get a catarrh in the head, another become hoarse in the throat, another will have his respiratory or digestive apparatus disturbed, still another will be visited by rheumatism or neuralgia, etc., and it is one of the duties to be attended to during our material existence here on earth to know ourselves in this respect also, in order to guard against the weak points in our constitutio

As healthy as is wet and moisture, when we are exposed to it for a very short period of time (witness the use of baths etc.), just as injurious is it when protracted beyond reasonable limits. Even when the moisture is only in the air in great excess, it is injurious to live in this air, as is proved by the unhealthfulness of low, damp localities, whether in a temperate or hot climate: such a damp air will always be a continuous check to the perspiration, as it does not absorb the invisi-ble moisture which is always passing off the whole surface of the body, and which is so readily removed by dry air. Besides this, a damp atmosphere is very favorable to the generation and development of the fever-producing miasma. But the most dangerous enemy we have to contend with in

our climate is the extreme dryness of the air in the winter season. Cold air has much less capacity for absorbing moisture than warm air, while the general evaporation of course supplies less moisture for the atmosphere to absorb in winter than in summer. Now when we heat this cold dry air in our rooms in winter, we increase its capacity for watery vapor, and consequently its relative dryness. In this condition the air powerfully absorbs the moisture from all surfaces, those of the skin, throat and lungs not excepted. The air of every

water in connection with the stove or furnace. For a middle-sized room the evaporating surface should be about half a foot square. Unfortunately many furnaces and stoves are not provided with this arrangement, and where they are too often the addition of water is entirely neglected, and the consequence is that the inmates of the place live in an atmosphere so dry as to injure their respiratory organs, produce pains in the throat, or rush of blood to the head, increase all kinds of pulmonary trouble, etc. On the other hand, an excess of vapor from keeping the water too hot may produce a deposit of moisture on the walls, and prove injurious. This is easily guarded against. To steam coils a small stop cock may be attached, from which by operating it a small amount of steam may be discharged from time to time: when not neglected, this is an excellent arrangement.

In many churches and public buildings in our cities, and even in private residences, this deficiency of water in the heating apparatus is very evident in the effects it produces on delicate lungs and throats, and this dry air is often made worse still by being heated in contact with the red-hot iron of the stoves. The air should not be scorched by contact of a small surface of red hot iron, but it should be heated by a more prolonged contact with a larger surface of iron moder ately heated, and always come also in contact with tepid water, which will correct the drying effect of the hot iron and make the air more congenial to the moist surface of the throat and lungs.

GLEANINGS FROM THE POLYTECHNIC ASSOCIATION.

The seasonable subject of the ice manufacture first engaged the attention of the members of this club at their last regular meeting held on the 6th inst. Prof. Vander Weyde proposed a new plan for freezing water on a large scale. Most ice machines ever invented depend for their successful working up-on the principle that any liquid forced to evaporate draws the heat which is absorbed during the process, from the most available source. If now ether, or other volatile liquid, under the exhausted receiver of an air pump is rapidly vaporized, it draws from water with which it is placed in contact, its latent heat, and the latter is thus chilled, and in time frozen. The cost of the evaporating liquid hitherto employed has made the manufactured ice very expensive. Prof. Vander Weyde proposed using chimogene, one of the products from the distilling of petroleum, for this purpose and stated that ice could now be made so cheaply that it must come into practical use, rather than depend upon an uncertain and variable natural supply.

Dr. Bradley at a previous meeting had described a plan for preventing boiler incrustations by making the boiler form part of an electrical circuit, having the poles of a Daniell's battery connected with its ends. He cited on this occasion two instances wherein his plan had been tried, and in both cases boilers using Croton water, and having incrustations one eighth to three sixteenth inches thick, were entirely freed in less than five weeks. He also offered a hypothetiexplanation of the causes and process of removal. One of the members claimed that only two even well attested case alone were not sufficient to prove the plan effectual or not.

Mr. Maynard exhibited a new wooden street-pavement that had come under his notice, and believing the principle a good one he wished to make it public For facility in removal for the purpose of repairing the sewers, gas mains, or wa ter pipes, this pavement is made in blocks one foot square The surface is grooved like the Nicolson pavement, to a depth of seven or eight inches, but unlike that pavement the blocks are cut in two directions at right angles so that a firm footing may be obtained by the horses in crossing streets paved in this manner. The crevices are filled with the usual composition of tar, pitch, and gravel. This plan it was stated, has been heartily approved by the engineer of the Croton Board

Two weeks since the question was raised at a meeting of this club, whether the water of this city acted, or not, on lead To test the matter Mr. Read purchased 150 feet, filled it with the water and sealed it in the presence of the Secretary of the Institute. At this meeting after the expiration of twenty-four hours, the seal was removed and the water when tested with sulphuretted hydrogen gave evident traces of the sence of lead. The pipe used was new and it is well known that an insoluble coating becomes formed on the in-side after using it for a short time, but the result showed that in the large number of houses fitted with new pipe every year, thousands are annually poisoned in this way. Moreover the slightest jar, even the turning of a faucet, it is asserted will separate this coating and the action of the water will ther

At the close of this discussion a vote of thanks was te dered Prof. Tillman for the able manner in which he had presided over the meetings of the past year. The meeting then adjourned until the second Thursday in September.

ONE CENT A MILE.

The united management of the Hudson River and Harlem Railroads has undertaken to extend its sway over the river also, with a view to maintaining fares at its own figure, by means of a notification to the steamboat proprietors that any movement in the reduction of fares on the river, should be met by a reduction of the railroad fare to \$1 50: the intention of course being to "fight it out on that line" until the steamboats are run off the river or brought back to fares agreeable to the railroad interest. The steamboat men are tough and plucky, and those who remember when passengers were carried to Albany for twelve and a half cents by steamboat competition, before the railroad was thought of, have no fear that the mighty Hudson and its navigators are to become an appanage of a railroad company.

Origin of Petroleum.

There have been numerous theories proposed to account for the production of mineral oils; among which the following is advanced by Professor Wilbur in a lecture at Hamilton, C. He believes that oil has been formed from marine vegetation, just as coal has been formed from land vegetation. Seaweed has a large proportion of oily carbonaceous matter, and few persons have any adequate conception of the immense growth and deposit of this product in the ocean bottom, every year. Each crop, after fulfilling its term of growth, becomes detached and sinks to the bottom, naturally accumula ting in the hollows or pockets. As it is a received opinion among geologists that this portion of the North American continent was once the bed of a salt-water ocean, the accumulated masses of seawead, after being covered with depos its of stratified rock, might with probability be supposed to have eventually the form of a hydro-carbon oil. Moreover, the Devonian rocks which contain these deposits, were also the rocks in which salt was found, in immense subterraneous reservoirs of brine, now condensed or saturated far beyond lhe saltness of the ocean. These two deposits, oil and salt, were thus brought closely together in point of geological time The salt was allowed to be an ocean deposit, and if so the inference was fair that the oil was one also. Moreover, Berthe lot has also suggested a new theory of the origin of petrole um. Acetylides are always formed when carbonic acid comes in contact with the alkaline metals at a high temperature The earth is everywhere impregnated with carbonic acid, and Daubrée has recently shown good reason for believing that the terrestial mass contains melted alkaline metals in the in terior. From the acetylides thus supposed to be formed, bitu men and tars are produced by the perpetual reaction of hy drogen, and at one of the stages, these reactions are capable of producing a series like the American petrolenm.

THE SANDWICH ISLANDS.—The exhaustion of the native population which has been going on for a great number of years, seems to be accelerated of late. During the last six years, there has been a decrease of over 9,000. The death rate among the natives is now about 1,500 a year over the births; and with an increasing ratio, this decimation will work the extinction of the race in a quarter of a century European, but more especially Californian enterprise already sways the development and the institutions of these islands and the proximity and unequalled energy of our Pacific states must inevitably draw them at no distant day under the protection if not the possession of the Union.

A SELF-DISINFECTING CAR for the transportation of fresh meats, fruits etc., has been fitted up for an experimental trip. in the following manner: A small closet is placed in each end of an ordinary car, with apertures near the floor and roof a deposit of ice at the top, and beneath this two shelves of wire, one covered with lime and the other with charcoal The heated air at the top of the car enters the upper opening is cooled by the ice and descends, passing through the disir fectants and becoming purified, and thus creating a constant current and circulation of air. The application of the apparatus to dwellings, chambers and sick rooms, is also cont-us



ISSUED FROM THE U.S. PATENT OFFICE FOR THE WEEK ENDING JUNE 4, 1867.

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On filing application for Design (three and a half years)
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Pamphlets containing the Patent Laws and full particulars of the mode sphying for Letters Patent, specifying size of nodel required, and much their information useful to inventors, may be but gratis by addressing MUNN Co., Publishers of the Scientific American, New York.

65,326.—GATE.—Philip M. Ackerman, Webster, N. Y.
I claim the loose sliding bar, D, having a suitable supporting head, H, iz
purposes herein shown and described.
65,327.—GATE.—J. B. Alexander, Washington, D. C., assignor to himself and James C. Duncan, Olnoy, III.
or to himself and James C. Duncan, Olnoy, III.
where the same device composed of any other material, substantially as
described and for the burpose set forth.
65,528.—SELF-LUBRICATOR.—John Bachelder, Norwich, C.
First, I claim the revolving plate, of the bord, III.
65,528.—SELF-LUBRICATOR.—John Bachelder, Norwich, Claim
First, I claim the revolving plate, of the bar and strainer, g, in the dripping
plan.

nan. Second, The combination of the revolving plate, c, and the conductor, d r, its equivalent, all for the purposes herein described.

or, its equivalent, all for the purposes herein described.

65,329.—TRUSS.—Horace R. Ball, New York City.

First, I claim the bar, B, pivot, e, link, D, and set screw, C, for regulating the lateral set or facing of the paid, A, all arranged and acting as herein shown and described.

Becomd, Calair and A, for regulating the vertical facing or set of the paid, A, and for the purpose set forth.

Third, I) claim and A, for regulating the vertical facing or set of the paid, as and for the purpose set forth.

Third, I) claim and A, having a bar, B, socket, b, pivoted to the end of the holop, K, by a pivot, I, and set screw, I, for regulating the pressure of the Fourth, i claim has combination; the paid, A, bar, B, with a perforated fan tail, H, pivot, I, set acrew, I, and cop, K, for throwing the pad below or above the hoop, substantially as here in explained.

5,330.—Mop Wringer.—O. C. Barnes, Stowe, Vt.
I claim the follower, D, with the jointed head block, g, in combination with
e treadle bar, b, arranged and operating substantially as and for the purse herein set forth.

goes necessary of the description of the period of the per

pager, substantially as herein shown and described for the purposes set torth. 55,332.—Wadoon Brarke.—C. G. Bennet and S. A. Drake, (assignors to C. G. Bennet, Farmer Village, N. Y. Flrst, We claim, in combination with the bracke bar, b. the relieving or raise cause. C. constructed and operating as and for the purposes herein shown Second, Suspending the brake blocks, B. of warons and other vhicles from

and d sortbed.

Second, Suspending the brake blocks, B, of wagons and other vehicles from an axial point located near that of the ground wheels, w. substantially in the manner and for the purposes herein shown and described.

5,363.—MANUFACTURE OF STEEL.—A. B. B. Berard, Paris,

5.383.—MANUFACTURE OF DIEBLE.

France.

France.

France.

France.

First. 1, else the peculiar arrangement or construction of a reverberatory grace with a double movable sole plate, as hereinbefore described and hown in figs. 12 and 8, second. The interposition of a bed of fuel in the current of the gas, as hereinbefore described.

Second. The interposition of a bed of fuel in the current of the gas, as hereinbefore described.

Fourth, the arrangements, above described, for causing the scories to act in the metal to reliminating the phosphorus and other injurious foreign material the properties of t

or iron.

65,834.—HAME STRAP.—Martin T. Briggs, Schoolcraft, Mich.
I claim a jointed metallic hame strap composed of three parts, A B and C,
constructed and operating substantially as set forth, and provided with a
bidding device to lock and retain the parts in bidding positions. 65,335 .- Measure of Liquids .- Parcell Brinkerhoff, Chilli-

65,335.—MEASURE OF LIQUIDS.—PARCEN DEINKERION, UNIMICATION, MA. COLDE, Mo.
First, I claim the central tabe, C, having index lovers, E F, spirally arranged perforations, b, in combination with the tube, B, of the vessel, having corresponding perforations and graduated top, G, and operating substantial values described for the purpose specified.

66,336.—STEAM ROTARY VALVE.—R. F. Brown, Savannah,

Ga.

I claim the arrangement of the induction passage, C, eduction passage, D, with reference to the passages, C C, and valve, B, substantially upon the principle and in the manner as herein set forth.

ciple and in the manner as herein set forth.

65,937.—CHURN POWER.—James Budd, Pittsford, N. Y., assignor to himself and J. W. Briggs.

I claim the lever, B. in combination with the conurn and the wheel, W, when the said lever is provided with a variable exital point with relation to the roller, r., as shown at f., substantially as and for the purposes set forth.

65,938.—BOLT AND RIVET TRIMMER.—M. D. Budd, Roscock 11.

coe, Ill. claim the combination of the spring, g, the clasp, d, and the guide, h, arged substantially as described.

ranged substantially as described.

65,389.—MACHINE FOR SHOTING METALS.—W. Butcher, Jr.,
Sheffield, Eng., and Thos. Shaw, Philadelphia, Pa.
First, I claim the employment of a rotating disk for the purpose of throwing motien metal off in particles, as set forth.

Second, The employment of configurated heat-enduring substances, for the purpose described.

Propose est office.

65,340.—WEATHER STRIP.—Charles E. Butler, Hudson, N. Y.
I claim the elastit weather stripe formed by combining with the slotted strips, B, the slotted plates, C, sor. ws. D, and springs, E, all made and operating substantially as herein shown and described.

ating substantially as herein shown and described.

65.341.—TINNERS STOVE FOR HEALTING SOLDERING IRONS.—

C. A. Buttles and James Cowles, Milwaukee, Wis.
We calam dividing the interer of the six of the pot, by a perforated division or partition plate, d. in combination are not provided with the c. and the damper, g. substantially us and for the purpose described and We also claim the bent arm and weight, k m, in connection with the hinged ild, E, as and for the purpose described and represented.

Lewistown, Pa.

65,343.—Basin Plug.—William S. Carr, New York City.
I claim the plug for waste waterways, provided with an elastic cisk, and guided in the manner as and for the purposes set forth.

remoon in the manner as and for the purposes set tortin.

65,544.—TRUNK.—E. P. Carter, Arcade, N. Y.
First, I claim as an improvement in the construction of trunks and values
forming the hingue by connecting the ends of the interiolig bands of the very
er to the incircling bands of the body, substantially in the manner set forth
second, Providing the front ends of incircling metallic bands of trunks an
values with links for the reception of connecting straps, as and for the pur
poses shown and described,

poses shown and described,
65,345.—STEAM AND WATER-HEATING APPARATUS.—Alanson Cary, New York City.
I claim the combination and arrangement within the case, D, of one or
more series of inclined steam cases, A, united together at their odges by
means of the dingular plates, and connocted by steam pines, B, each plate promothering in the same vertical panse with the tubes in the uppower series of
cases, substantially as described and for the purpose specified.

65,346.—Press or Cover for Tubs or Barrels.—Hiram L. Chase, Bath, Mc.
1 claim the combination of one or more eccentrically pivoted arms, C, or their equivalent, with the cover or press, A, substantially in the manner herein shown and described, and for the purpose set forth. 65,347.—Guard for Circular Saws.—J. W. Clark, Iola

Kansas.

I claim the saw guard, B, provided with the self-adjusting drop, c, and suspended on the vibraling frame, D, constructed and operating substantially as and for the purposes herein described.

If as and for the purposes herein described.

65,348.—SELP-JUBRICATING HANGER AND BOX FOR SHAFT-ING.—Wellsly W. Crane, Auburn, N. Y.

I claim, First, The adjustable hanger, when constructed substantially as above et of the property of the manner, substantially as above specified, when use i for the purpose and constructed in the manner, substantially as above specified.

Third, in combination with the above John, I cleam the self-labricating box, when used as and constructed substantially in the manner specified.

box, when used as and constructed substantianly in the manner specified.

65,449.—CONSTRUCTING SELF-LUBRICATING PULLIES.—Wells-ly W. Crane, Auburn, N. Y.

1 claim, First, The clamber, E, above described, when used substantially in the manner and for the purpose above specifical, and of the purpose above described.

Third, Feather-digning the said for the purpose above described.

Third, Feather-digning the ends of the pullies, for the purpose and in the manner above set forth.

manner above set forth.

68,850 — PLASTER SOWER.— F. P. Cullon, Dowagiac, Mich.
I claim, First, The construction of the hopper of a plaster sower of stationary nodes a a stationary inclined side, b, reciprocating side, a and pivoted adju-table side plate, b', substantially as described.

Second, The corrugating of the inner surface of the stide, c, in combination with the corrugating of the inner surface of the side, charged of plate from the hopper, substantially as described for the purpose set or plater from the hopper, substantially as described for the purpose set or purpose and the substantial of the careful for the purpose set or purpose and the state of the substantial of the careful for the purpose set or the substantial of the careful for the purpose set or the substantial or the careful for the purpose set or the substantial o

85,851.—Bluck Machine.—J. B. Curtis, Hillsdale, Mich.
Valum the Inclined planes, J. carriace, K. and molding boxes, S. as arranged, in combination with the clay too; L. clat molding boxes, S. as arranged, in combination with the clay too; L. clat molding boxes, S. as arranged, in combination with the clay too; L. clat molding lower, N. when operating conjointly for the purpose and in the manner set forth.
The arrangements of the shafts, D. G. cranks, E. H., arm and Ink, Q. R. in combination with the carriage, K, for the purpose and in the manner substantially as described.

stantially as described.

Stantially as described.

65,362.—PORTING LOAVES OF SUGAR.—William Morris Davis, Philadelphia, Pa.

1 claim forming a load of sugar with a hole through or into the interior of the loaf for the purpose of expediting the operation of drying sugar loaves.

65,338.—WATER DARWER.—James Daykin, Cleveland, Ohio. I claim, First, The provide head board, I, arranged in relation to the valve Second, The adjustable head board or pine, I, and tilling, board, I, in combination with a chain or rope, E, valve rod, H, and bucket, D, when arranged set forth.

65,334.—GATE.—John Dickason, Vevay. Ind. [claim, First, The private of the purpose set forth.]

and operating in relation to each other successional as and not one purpose of \$354 - (AATR.— John Dickason, Vervay, Ind.

1 oldsin, First, The system of lever handles, a and at connecting bars, o and ', and circular lever bar, D, in combination with the gata, A, all arranged and operating substantially as and for the purpose specified. Second, in combination with the gata, A, and the U-shaped lever bars, E and E', which operate the cranks, f and m, the connecting bars, o and I, and the connecting bars, or and I and the connecting bars, or and I are the connecting bars, and I are the connecting bars, and I are the connecting bars of the connection of the connect

aid E, which operate the variety of the property of the propes specified.

Third, The adjustable screw boils, b and d, circular lever bar, D, or its quivalent, the post, C, and gate, A, arranged substantially as herein derived and for the purpose specified.

Ly the changing strap, p', and the hand lever, r, as described and for the surpose set forth.

65,855.—HAY AND STRAW CUTTER.—John H. Dickinson, Chicopee Falls, Mass.

I claim a device for cutting hay and straw wherein the cutter shall rise and fall on the arc of a circle, using for that purpose the levers, C C, the cutter, A, the connections, F, the shaft, G, and the swing catch, E, in combination.

A, the connections, F, the shaft, G, and the swing catch, K, in combination, 65,556.—APPLICATION FOR SOFT METAL BEARINGS FOR WAGON AND CARRIAGE BOXES.—George W. Disman, Upper Sandusky, O. lesiam making carriage boxes by first preparing soft metal rings of copper of a composition of which copper is the bards, and pletage said rings upon a sand, or other core, and laying them in a property prepared mold, and running me

65,357.—Plow Beam.—Walden Eddy, Greenwich, N. Y. , First, Forming the adjusting bolt, B, solidly upon and out of the end of the plow beam, A, substautially as herein shown and de

scribed.
Second, Securing the rear end of the draft bar, F, in the space between the Second as, of the plow beam, A, by a bolt, G, passing through an eye of hook, 13, formed upon the rear end of the said draft bar, F, substantially a herein shown and described and for the purpose set forth.

65,358.—Saw Ser.—James E. Emerson, Trenton, N. J.
I claim, in combination with the stock or swage head, the adjustable or novable lips for giving to the tooth of the saw the shape or form herein shown and represented.

snown and represented.

65,959.—GATE.—B. Homer Fairchild and Emery Sadler, Farmington, Mich.

First, We claim the latch, D, constructed substantially as described in
combination with the post, A, and projecting bar, c', of the gate, C, substantially as herein shown and described. E F G, constructed substantially as deserbed in combination with the post, D, and the upper borizontal bar, c'
of the gate, substantially as herein shown, described and for the purposes set
forth.

65,360.—Machine for Driving Nails.—Demis L. Falardo

10,500.—MACHINE FOR DRIVING INAILS.—Definits D. Fainardo, New York City.
I claim the revolving wheel reservoir, d, formed and tited as described to the tube, \(\text{A}\), in combination with the tubo and the machinery connected therewith, in the manner and for the purposes set forth in this specification.
65,861.—MODE OF RECOVERING WASTE ACID FROM REFINING PETROLEUM.—Oliver W. Farrar, Pittaburgh, Pa. I claim the improved process of diluting the spent sold of oil reinners with weak sulphurit acid, as and or the purpose herein specified.

weak supporte sent, as and for the purpose neron specialist.

The arrangement of the roller, F, hinged pounder roller, D, corrugated concave, B', and dash board, d. in connection with the fountain or supply chamber, w, as and for the purposes set forth.

nor, w, as and not too purposes set not al.

63.—CONSTRUCTION OF SEWERS AND DRAINS.—Daniel H.

Fernald, Bangor, Me.

alm the adjustable indexed former, D, substantially as and for the purspecified.

powes specified.

65,364.—Fireplace.—John U. Fiester, Winchester, Ohio.

I datus the combination of the plates, D and E, key, a, when constructed and arranged as described and placed over an open fire grate, the participants are set forth and for the purposes described.

65,865.—Building Block Machinery.—A. L. Finch, Sing

65,865.—BUILDING DLOUK MACHIMEMAT.

Sing, N. Y.

First, I claim constructing the mold for building blocks of a detachet metal frame with a lining of plates of steel held in place by screws passing in from the outside of said frame, in the manner and for the purposes specified second, The side, I, that removes the pressed block and brings the besteed second, The side, I, that removes the pressed block and brings the besteen the said lonery knife for equalizing the thickness of the block, as specified.

Third, A movable board applied to the side of the mold frame as specified in combination with the slide, i, and stationary knife, for the purposes and as set forth.

combination with the silde, i, and statonary ame, and came pq 7 and 8, set rorth.

Fourth, The arrangement of the silde rods, 5 and o, and came, pq 7 and 8, ror o a sing the feeding silde, i, and giving a vertical motion to the mold Fifth, Connecting the gate of the feeding hopper with the mold bed by an upusable connection so that the supply of material can be regulated and a gate by opened by the motion of the mold, as specified.

Regulation of the motion of the mold, as specified.

Regulation of the motion of the mold, as specified.

Regulation of the motion of the mold, as specified.

Regulation of the compressing united, the compressing united, to accombination with the mechanism moved by the same shaft, batantially as specified for giving motion to the feeding slide and to mold of a sas self-orth.

bed, k, as sel for the Countries of the property of the countries of the C

cases, A and B, as desorthed.

65,368.—KER AND BARREL FOR PAINT AND OTHER MATERIAls.—Arthur L. Freeman, Manchester, England, assignor to Sewall S. W. Folsom, Boston, Mass.
First, I caim the fastening strap, g. made as a handle for the ker head and
first, because the construction of the tops of the ker,
in manner as specified.

Second, The construction of the upper hoop in two sections, m, connected by rivets or joint plins, as set forth, and so upplied to the keg as to
sectified their or both of a such section to turned up and used as a ball, as
sectified.

Second, The construction of the upper hoop in two sections, un a connected by rivels or joint pins, asset forth, and so applied to the keg as to enable either or both of a nuch sections to be turned up and used as ball, as Third, The combination as well as the arrangement of one or more legs or arms, o, with the keg and the said hoop made in two parts or sections, in , such arm or arms and sections being applied together and to the keg by means substantially as specified.

It is a substantially as specified. It is a substantially as specified, in the same the standard and the thead with the raised flanges and also with the annuler shoulder, I, and the head with the raised flanges and also with the fastening strap formed either with or without the handle as above mentioned; the lange by its elisativity serving to make a tituit joint and the fastening strap to note the fastening to make a tituit joint and the fastening strap to note the fastening area.

to the shoulder, as specified.

65,369.—Machine for Washing Sand.—James French,
Bellevernon, Pa.
I claim, First, Washing and elevating sand by a wheel working vertically
or nearly so, in a con avertrough, such a wheel being provided on its outer
transitionally through the axis of the wheel to which the graph them and
tentinginally through the axis of the wheel to which they are attached, substantially as and for the purposes above set for the
S cond, The method of elevating and discharging sand from one besin into
another by carrying the sand up on the bindes of one or more elevating
wheels and washing it into another bearing the control of the purpose described.

PROPELLER.—Herman Fromp, East New York, Y.
In the combination of a windmill and an ordinary horse-power with me shaft of a vessel, substantially as described for the purpose specific

the screw shaft of a vessel, substantially as described for the purpose speci-field, 27.1.—WATCH.—H. Gamney, Louisville, Ky.
Gi, 27.1.—WATCH.—H. Gamney, Louisville, Ky.
First, I claim securing the outer end of the balance apring of a watch to a
First, I claim securing the outer end of the balance apring of a watch to a
First, I claim securing the outer end of the manner described and for the
purpose specified.

Second; forming each arm, C C2. of brass and steel, substantially as and
for the purpose described,
and within the barrel by means of a supplementary spring colled in the reverse direction, substantially as and for the purpose specified.

Sécond, Forming each arm, CG.: 0 trass sun seven sussens.

For the purpose described, for the purpose described, for the purpose described, for the purpose described, and the sum of the main spring of a watch movement to and within the barred by means of a supplementary spring colled in the reverse direction, substantially as and for the purpose specific, decided in the reverse direction, substantially as and for the purpose specific, and the following the two vertical stakes or bars, C and E, together at the bottom by means of pins, c, or their equivalents, entering the bed prate, B, and at the top by passing the ends, c, through a suitable mortise in the diagram at the part of the purpose set for the purpose set fo

for the purposes set forth.

65,373 — CAZ COUPLING.—M. F. Gibbs, Livonia, N. Y.

First, I claim the hinged ball, C, with its projecting cam or latch, D, in

connection w the spring, s, substantially as and for the purposes shown

Second, The combination of said spring ball, C, and the latch with the

automatic "pin dropper," substantially as and for the purposes set forth.

automate "pin cropper," succeanisity as and for the purposes set forth.

65.874.—SEED BOX FOR GRAIN DRILLS.—Charles H. Godfrey,
Stewartsville, N. J.
I claim the fregular cames, o, on the stirring shatt, P. of a seed box for
grain drills, substantially as and for the purposes described.

65.875.—Cooking Stovie.—Wm. A. Greene, Troy, N. Y.
First, I claim, in combination with an oven front plate, a shelf plate, a, so
nection therewith a hollow shelf plate, substantially as and for the purposes
set forth. forth. cond. The detachable shallow shelf plate, a, applied below the grate and we the ash box, in combination with the front over plate, B, and the per-ted side plates, F, substantially in the manner and for the purposes here

ibed. The angular shelf plate, a, substantially as and for the purposes de scribed.

65,376.—Magic Arrow Toy.—H. C. Griffin, Franklin, N. H.

I claim the elastic cord, B, attached to a forked or other suitable and the notched arrow, C, all arranged substantially as and for the

65,377.-Mode of Drying Glue.-George Guenther, New

York City. claim the mode of drying glue by revelving or rotating metallic surfaces

having their temperature raised either by steam or hot air, substantially as described. eseribed.
5,378.—CLAPBOARD GAGE.—George Hall (assignor to him-self and Wm. S. Waldron), Middletown, Ohio.
I claim the combination of the rule, ft, with the gage plate, C, when hinged pon the handle, A, in the manner described and for the purpose set forth.

upon the handle, A, in the manner described and for the purpose set forth.
65,879.—WOOL-PACKING TABLE.—William S. Harris, Eckford.
Township, Mich.
Township, M

65,380.—Nur Machine,—James Haslam (assignor to M. J. Coleman), Philadelphia, Pa.
Coleman), Constructed and arranged substantially as described in combination with a nit mechine, for the purpose set forth.

ne combination with a nut mechine, for the purpose set forth.

65,881.—BERHIVE.—Joed Heacock. Marlboro, Ohio.
I claim the quadrangular sheet metal side, E. fitting into the lower part of the hive, A, and sliding between guide, e. it is bottom edges resting upon attend or table between the feet, f. and provided with the enrance, g. sabstantially as described for the purposes petities.

65,882.—PERSARIES.—E. F. Hoffman, Poughkeepsie, N. Y. I claim a pessary made wedge-shaped and provided with concave autraces be, an elevation, d, and flat retreating surfaces, e, substantially as and for the purposes set forth.

I Caim a pessary made wedge-shaped and provided with concave surfaces, be, an elevation, d, and flat retreating surfaces, e, substantially as and for the purposes set forth.

65,883.—BRICK MACHINE.—James Hotchkiss and Ezra Russ, Springfield. Ohio.

85,803.—BRICK MACHINE.—James Hotchkiss and Ezra Russ, Springfield. Ohio.

81,800.—British and Ezra Russ, Springfield. Ohio.

81,800.—British and Ezra Russ, Springfield. Ohio.

82,800.—British and Spring spring surfaces, etc. and surfaces, the continuous of the pawl, H. I. adjustable in length with the Second, The combination of the pawl, H. I. adjustable in length with the Second, The combination of the pawl, H. I. adjustable in length with the Second, The categories of the pawl, H. I. adjustable in length with the Second, The categories of the pawl, H. I. adjustable in length with the Second, The categories of the pawl, H. I. adjustable in length with the Second, The categories of the pawl, H. I. adjustable in length with the substantial spring shaped shaped spring sh

65,884.—SECURING WAGON SEATS.—Elias Hoxie, Monta zuma, N. Y.

Zuma, N. Y.

First, I claim the securing the scat to the wagon slit by means of two or more boils, F, extending from the sill, A, to the sill, C, so that no holes are made in either for the said boit to pass through, nor are they otherwise. Second, The boils, F, in combination with the nut, D, and slotted plate, E, all made and operating substantially as berein shown and described. 65,385.—WHEELS FOR VEHICLES.—Elias Hoxie, Montzuma, N. Y.

I. I.
 I claim the metal ring, B, arranged around the hub, A, and provided wit-zig-zag flange, O, substantially as herein shown and described.

zig-sag flange, C, substantially as herein shown and described G. Hub-5,886.—RUMNING GEAR FOR HARVESTERS.—Moses G. Hub-bard, Syracuse, N. Y. Antedated May 26, 1867.
I claim the vertical handle, A, in combination with the cam, D, formed in the property of the company of the company of the company of the moved resident of gear, substantially as and for the purpose set forth. I also claim the condition and arrangement of the spring, G, upon the shift og lever and in relation, to the shifting gear, substantially as and for the pur-oses described.

35,387.—Mode of Desulpurizing Ores and Extracting Gold and Silver.—William W. Hubbell, Philadelphia, Pa.

ears, e. or their equivalents, substantially as specified.

63,900 — PLASTER SOWER.— Gilbert Jossup, Shortsville, N. Y. First, I claim effecting a perallel adjustment of the delivery or discharge plate, 0, by means of the beat or anchor levers, 1, i and k, a set forth. Second, Hanging the hopper, T. down between the carrier wheels, whereby it is balanced or nearly se type the said wisels, substantially in the manner of the companion of the comp

specified. 55,331.—Bolt Cutter.—Jesse Johnson, West Fallowfield.

Township, Pa.

I claim the combination of knives, A and B, with levers, E and F, screw b, frame, U, and top and bottom plates as in figs. 3 and 4, all constructed, an anged, and employed in the manner and for the purpose shown and example and employed in the manner and for the purpose shown and example and employed in the manner and for the purpose shown and example and employed in the manner and for the purpose shown and example and employed in the manner and for the purpose shown and example and employed in the manner and for the purpose shown and example and example and employed in the manner and for the purpose shown and example and employed in the manner and for the purpose shown and example and exam

latined.

5.392.—Grate.—William Keiser, Strondsburg, Pa.
I claim the arrangement and combination of the parts, B and C, with the rame. A, substantially as described, also the straps, d, and the wrench, with the pins, h n'as and for the purposes set forth.

-Machine for Making Paper Hats.-Henry Kel-

logg, New Hayen, Conn.

First, I claim the combination of the annular piston carrying the pervious former, with the cylinder, and the means described or the equivalent thereof corner, with the cylinder, and the means described or the equivalent thereof Second, The combination of the elastic couching pad, the annular piston carrying the pervious former and the cylinder, substantially as and for the purpose specified.

Third, The combination of the elastic couching pad, the annular piston carrying the pervious former, the cylinder and the means for stopping the party on the compress the other, substantially as and for the purpose specified.

specified.

Fourth, The combination of the clastic conching pad, the couching annuise has annular piston carrying the pervious former, and the cylinder, substan Fifth, The combination of the means for automatically controlling the water in the cylinder, or raising and lowering the annuisr piston carrying the pervious former and the cylinder, substantially as and for the purpose.

the pervious former and the cymnotr, successions, generally specified.

And that he combination of the cylinder, the annular piston carrying and the size of the combination of the cylinder, the size of the means for scoppin the upward movement of the couching pad, and the means for scoppin the upward movement of the couching pad, substantially as and for the purpose specified.

The size of the cylinder of the c

pose specified.

394.—MACHINE FOR TURNING THE HEADS OF SCREWS.—
Timothy Kennedy, Hamden, Conn., assignor to Thomas
Kennndy, Branford, Conn.

irst, I claim the combination of the entire holder, B, with the enter, F;
the can, F, constructed and arranged so as to operate substantially in
manner, herein set forth.

for the same for the segmental cutter, E, having its cutter, become as described with the holder, B, and holder being arranged to
the the said cutter around a central point into cutting position, substanty as herein as efforth.

65,395.—Spring for Holding Cloth in Sewing Machines.
—Theodore E. King, Painesville, Ohio.
I claim the tension spring constructed substantially as herein set forth for the purpose described.

65,396.—SKATE.—Geo. V. B. Ladd, Boston, Mass. First, I claim the combination of the actional runers as specified with the coessed projection within which they are hinged or pivoted under the arangement herein described so that the rooking motion of the runners shall be limited and stopped at certain points of the said projection or shoulder as set forth.

et forth. Second, The combination of the sectional runners and recessed projec-lone within which they are hinged as described with the clastic foot rest, ubstantially in the manner and for the purpose set forth.

substantially in the mainer and for the purpose set forth.

65,397.—COMPINED COVER LIFTER, HAMMER, Erc.—R. M. Lafferty, Three Rivers, Mich., assignor to himself and J. E. and J. P. Prutzman.

1.4 E. and J. P. Prutzman.

1.4 E. and J. P. Prutzman.

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1.5 E. and J. P. Prutzman.

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1.1 E. and J. P. Prutzman.

1.1 E. and J. P. Prutzman.

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1.4 E. and J. P. Prutzman.

1.5 E. and J. P. Prutzman.

1.6 E. and J. P. Prutzman.

1.7 E. and J. P. Prutzman.

1.8 E. and J. And J. Prutzman.

1.8 E. and J. And J. And J. And J. And J

Emile Lamm, New Orleans, La.

I claim the above process or any other process, substantially the same as specified.

65,399.—Method of Preparing Gold for Filling Teeth.

—Emile Lamm, New Orleans, La.

-Emile Lamm, New Orleans, La.

I claim the use of all organic substences soluble in solutions of gold with the exception of saccharine substances for making crystallized fibrous gold by any process, substantially the same as that herein described for the purpose set forth.

Vis.

I claim the combination of the spiral spring plate, C, and nuts, D and R, with each other and with the shank, A, substantially as herein shown and described for the purpose set forth.

65,401.—MEDICAL COMPOUND.— George H. Leithead, East Birmingham, Pa. I claim a medical compound consisting of water, sugar, borax, gum arable, landanum or morphia of other similar opiate with or witbout alcohol about in the proportions named, and for the purposes above set forth.

m me proportions names, and for the purposes above set form.

65,402 — BERHIYE. — Volney Leonard, Springfield, Pa.

First, I claim the plate, D, applied to the hive, B, in relation with the their, as shown in combination with the fasterings or pivoted notched plates, 11, second, The moth trap composed of the grooved and notched strips, h, applied to the hive, substantially as shown and described. 65.403.—CARRIAGE TOP PROP REST.—H. W. Libbey, Cleve-

land, Ohio. laim the metallic sleeve, A, and cushion, B, combined as and for the pu

nose set form.

55,404.—Evaporatron—Henry Lighty, Attica, Ind.

1 claim the skimmer, 6, when constructed and operated substantially as herein described and for the purpose set forth. 65,405.—STEAM GENERATOR.—William Lowe, Bridgewater,

COMM.
I claim constructing cylindrical bullers commonly known as plain horizon.
I claim constructing cylindrical bullers commonly known as all delse or bottom
lat indular or flate bullers with one of several properties in the all delse or bottom
of the buller, and connected by tubes or flates, with me back and of the buller
frough which the products or combastion are made to pass substantially in
the manner and for the purposes herein shown and described.

65,406.—Sifter.—R. C. Ludlow, St. Louis, Mo.
I claim the combination of the batten a, head e, top e, and the sleve h, substantially as and for the purposes herein described.

-Tourniquet Clamp.-John Lusk, Jr., Eckford,

MICO. claim the tourniquet clamps (A.) provided with the guide lips (C.) and erated by thumbscrews (B.) substantially in the manner, and for the pur-se herein described and set forth.

pose herein described and set forth.

65,408.—Fire Escape.—Robert Mackenzie and James Cooper, New York City.

We claim the fire escape consisting of the inclined track ropes, C, C, their upper ends secured to the cross bar B. of the window frame, their lower ends to the ground bar D, and forming tracks upon which the car E, slides to the later, being guided by the search at the F, G, b, when all are constructed and arranged as described for the purpose specified.

65,409.—SAFETY VALVES FOR STEAM GENERATORS.—Carlile Mason, Chicago, Ill. First, I claim the lever C, arranged substantially as and for the purposes

Biason, Olavego, First, I claim the lever C, arranged substantially as and consequence pecified.

Second, The weight supporter D, E, provided with a spring k, substantially consequence of the supporter D, E, provided to remain in position when the Second. The weight supporter D, E. provided with a spring k, substantially as specified.

Third, The weight supporter D, E. provided with a spring k, substantially as specified.

Third, The weight is no consurrected as to remain in position when the weight is elevated from any external distance, substantially as specified.

Fourth, The arrangement of the spring, k, with the lever, C, or their equivalents so as to prevent the except of steam whenever the weight is agitated Fifth. The combination of the lever, C, and spring, k, with the lever, B, and Sixth, the combination of the lever, C, rod or rods, c, and lever, B, with the seventh, The combination of the lever, C, rod or rods, c, and lever, B, with the seventh, The combination of the sprinder, D, exp. E, with the spring, k, and rod, h, substantially as set forth.

Eight, The combination of the opinder, D, exp. E, with the spring, k, and rod, h, substantially as eat forth.

Eight, The combination of and rod, c, with thelever, B, cyinder, A, valve, a, and weight F, substantially as and for the purposes specified.

65,410.—RATCHET DRILL.—William Matthews, (assignor to himself and L. W. Eaton,) Bridgeport, Coun.
I claim the combination of the pawi, F, and dog, H, with the ratchet wheel G, when constructed and arranged to operate as sizeful described and shown,

65.411.—Axle for Wagons, &c.—F. McManus, Ellenburgh
Centre, N. Y.
I claim winding the part of a wooden axle upon which the wheel revolves
with metallic wire substantially as herein shown and described and for the
purpose set form.

65,412.—Plowshares.—William D. Mendenhall, Farming-60,412.—FLOW DILAMBES.—IT AMONG THE ADDRESS OF THE

a line paramet, or nearly so, to the cut of the saarc.

65,418.—FELVING MACHINE.—S. S. Middlebrook, Sandy
Hook, Conn.

1 claim the combination of the endless aprons, CC', reciprocating and revolving at different velocities, as and for the parpose described.

65,414.—Hanging Wagon Seats.—Henry F. Moore and James S. Blaisdell, (assignors to Henry F. Moore,) Med-James S. Binistell, (assignors to Henry F. Moore,) meet-ford, Mass.

Beats and be delived to slide back and forth, substantially as and for the wealth of the standard of the

65,415.—FENCE.—Thomas Morris, McGregor, Iowa.
I claim the panels, A, and braces, C, constructed and combined with each cher, substatually in the manner herein shown and described, and for the purpose set forth. 65,416.—FRUIT GATHERER-M. A. Morton and D. F. Mor-

ton, Angola, N. Y. We claim a fruit picker constructed, arranged and operating substantially sherein set forth.

se beroin set forth.

65,417.—CHURN.—John Neal, Sheboygan, Wis.

1 claim the combination of the earthenware vessel, A, and the metallic bearing posts, H, substantially as set forth and shown, for the purpose of adapting in combination with the dashers, F, the stripper, D, substantially as and for the purposes set forth.

In combination with the dashers, F, the stripper, D, substantially as and for the purposes set forth.

In combination with posts, H, and earthenware vessel, A, the hinged cap, h, constructed and operated substantially as set forth.

shank of the post through a vertical hole in a suitable ingo r brigeion as shank of the post through a vertical manual securing said shank by a serew nut, or its equivalent, substantially as set forth.

65,418.—Boiler Feeders.—A. F. W. Neynaber, Philadel-

39.418.—BOILER FEEDERS.—A. F. W. Neynaber, Philadelphia, Penn.
First, I claim the construction of the valve, A, with reference to the oritice fipple, S, whereby the steam is allowed to flow dround pipe. R, for the purpose of blowing an alarm whistle attached to pipe, G, and raising the piston, y, substantially asset for the "valve, A'piston, D, lever, E, support F, weight, i, pipes, if a steam of the purpose as decribed."

scribed.

1 claim the pump herein described constructed with the collar, B', npon the plunger rot, E, valved plunger, C D, and a valve box, G, adopted to be removed by the plunger, O, and forced down into the converging pump barrel, by the collar, E, all arbeitantially as and for the purposes herein specified.

65,420.—Tightening and loosening Wheels on Shafts.— Leverett H. Olmstead, (assignor to Wright & Smith.) New-

ark, N. J.
laim the combination and arrangement of the slide, B, sorew y, and pin,
ock, X, constructed and operating as described for the purpose of tightor loosening wheels on shafts, as sor forth,

65,421.—CENTER PLATE FOR STOVE TOPS.—P. Paradis and R. Reilly, Rochester, N. Y.

First, We claim dividing the center plates of cocking stove tops transversely through the marror portion and connecting them by loose or sliding joints, substantially in the manner and for the purpose series shown and described, 22.—CENTERING AND SQUARING CHUCK.—Gardner R. Parker (assignor to Dodge & Wellington,) Worcester, Mass

Parker (assignor to Dodge & Wellington,) Worcester Mass.
claim the particular combination and relative arrangement of the head, A ted thimble, B, drill, a, and cutters, A A, substantially as and for the pures above destribed.

See a control of the second of

ity since on the end of said for substantially as set forth.

65.424. — PUMPS. —Thomas Patterson, New York City.

First, I claim a pump having an oscillating pistor, I, within the cylinder, A,

which cylinder is provided with a partition or altiment, B, and connected

second, The semicrylindrical chambers, c d e and f, provided with the

second, The semicrylindrical chambers, c d e and f, provided with the

second and k, and divided by means of a partition, E, all substantially as

set fortil.

65,425.—DUROGEL.—Cassius C. Peck and Francis E. Engelhardt, New York City.

hardt, New York City.

11 Strate We claim the use of bichromate of polassa with the addition of mineral adds sets as subparts or sulpharous sold, and no ombination with pensarial adds sets as sulpharie or sulpharous sold, and no combination with pensarial adds sets as sulpharies of sulpharous sold, and no combination with pensarial sold and the pensarial sets of the pensarial sets and for second, The use of chloride of lime in addition and common gine substantially as set forth.

11 Pures Pace Carlie N. Y.

mon gine substantially as set forth.

55,426.—SUP-SOIL PLOW.—Rufus Peet, Carlile, N. Y.

First, I claim the combination of the parts, F F G H, with each other and
with the upright, D, and standard, B, said parts being constructed and arranged substantially in the form and manner hereir, shown and described and
to the purpose set forth.

of the upright, D, substantially as herein shown and described and for the
purpose set forth.

35,427.—MACHINE FOR DESTROYING POTATO BUGS.—Henry Pitchforth and William Benson, Muscatine, Iowa. First, We claim the combination of the reel, P. hopper O, and rollers, K, with each other, substantially as herds stown and described and for the pur-

pose set forth.
Second, Operating the rollers, K, from the drive wheel, C, by means of the
gear wheels, E F N M L, substantially as herein shown and described.
Third, Operating the roel, F, com the rollers, K, by means of the band, B,
and pulleys, S and T, substantially as herein shown and described.

BOX.—William H. Pollard (assignor to James H. Gould), Seneca Falls, N. Y.

I claim the box, A, provided with the corrugations, a a, operating in connection with the hub, as herein set forth.

nection with the http., as herein set forth.

65,429.—TheLEGRAPE SIGNAL KEYS.—Frederick B. Porter,
Detroit, Mich.
First, I claim the supplemental point or its equivalent, for the completion
of the diroult, O, connected, arranged, and operating substantially in the
manner and for the purpose described.

manner and ranged and operating
substantially in the manner and for the purpose described, in combination
with the above.

with the above.

65,430.—DREDGING BOX.—G. W. Putnam, Peterboro, N. Y. Iclain the sprinkle, consisting of the vessel, A, having valve, E, and cross par dos., Dieming compartment of the vessel, A, having valve, E, and cross par dos., Dieming compartment of the vertaility as described.

65,431.—CREESE PRESS.—William H. Ragan, Fillmore, Ind., assignor to bimself and N. R. Jones, Terre Haute, Ind., Pirst, iclaim the arrangement of the vertical screw, C, in the frame, A A, Print, and the control of the purposes herein specified.

8 sport wheel, p', substantially as and for the purposes herein specified with the platform, h, arranged and operating substantially as and for the PM 200.

65.432.—SHEEP SHEARS.—John Ralston, Slippery Rock, Pa. First, I claim the cutter, O, when pivoted to the first and second to the spring, I, substantially as and for the purpose herein shows 88000d. The stationary nother hand. described, The stationary notched bar, A, when secured to the spring, B, in mbination with the movable cutter, C, which is pivoted to the plate, A, and cured to the slotted end, e, of the opening, B, all as set forth.

65,433.—HARNESS PAD BLOCK.—William H. Rannels, Oakland Mills, Pa. iand Mills, Pa.

I claim the bow presser, B, having its legs curved ontward and hinged to oblique staples, g g, in combination with the block, A, when constructed as herein specified.

serein specified.

65,424.—POTATO DIGGER.—J. C. Richardson (assignor to himself and William Simpson), Benton, Me.

First, I claim attaching the testh, D. of the digger directly to the axle, A, Second, Operating the digger to lift the potatoes from the ground by means of the lever, J., attached to the axle, A, substantially as herein shown and described.

210, A and reset b. 1 and reset to the street of th

oribed.
inicd. The combination of the screen, G, and receiving box, H, with the
s, A, and teeth, D, substantially as herein shown and described and for the
poses set forth.

purposes set forth.

65,435.—PUMP.—F. Richter, Milwaukee, Wis.

1 claim the arrangement of cylinder, B, plunger, L, valve chest, C, an valvee, H, with the water passages and air chamber, K, as described.

valves, H, with the water passages and air chamber, K, as described.

65,436.—PAPER FOR THE MANUA-CUTRE OF LETTER AND INVOICE FILES.—John L. Rile (assignor to Asa Shipman),
New York City,
I claim the preparation of paper and other similar sheets in the manner
substantially as described and for the purposes specified.

65,437.—STEAM ENGINE.—Henry F. Roberts, Fayette City,

Fig.

1 claim the large steam cylinder, D, furnished with a piston and piston rod, and with the pipes, k and m, for admitting and discharging water atternately attis opposite ends, in combination with a high pressure steam cylinder, A, when such cylinders are connected together by extansit steam pipes, f.f., substantially as and for the purposes incumbefore described.

-FEATHER-CLEANING MACHINE.-J. H. Sardam, Wel-

Fington, Ohio.

inder, A, pipes, c and G, and naucet, k, as and for use purpose set forth.

65,439 — RALTWAY CHARR—J. W. Shiveley, New York City,
First, I claim the recesses in the rail ends, in combination with a cheek bar,
which pits into said recesses, substantially as and for the purpose herein
shown and described.

Second, I claim the combination of the longitudinal rib, f, its equivalent
with the cheek bar, substantially as and for the purpose herein shown and
described. An and the state of the purpose herein shown and described.

"At the state of the state of the state of the purpose herein shown and described."

65,440.—Horse and Cattle Poke.—Nelson Sylvester, Weymouth, Ohio.

the spring, E, plate, F, and spikes, e, in combination with tongue, eco, D, pln, b, and bow, A, substantially as and for the purpose set

65.441.—Bread Cutter.--S. D. Simmons, Brooklyn E. D.

N. Y.

I claim the box, A, provided with two compartments, b b', in combination with the knife, B, having the bar, D, attached about at right angles with plytos, e, at its end, to work in bearings, i, and a slit or space, c, allowed at the top of the box for the knife, as it is brought down to work into the compartment, d', substantially as and for the purpose specified. 65,442.—Roller for Boarding Oyster Dredges.—Thos.

P. Sink, Fairton, N. J.

I claim the right and left hand serew roller, as attached to the guuwale of an oyster boat, for the purpose of boarding an oyster dredge, as herein described.

soribed.

Sprague, Spring Hill, Kanses.
First, I claim the integrated Hill, Kanses.
First, I claim to hunged teld winze, E. E. with wheels, B' B', on their outer ends, combined with the truck frame, A, with wheels, B B, and levers, a a, arranged and operating substantially as and for the purpose described. Second, The guide rod, d, on the tongue, D, and the measuring line, e, in combination with the truck frame, A, employed as hereind described.

65.444.—ENGINE GOVERNOR.—Robert Slewart, Elmira, N. Y. First, I claim the elliptical springs, E. E. and hinges, c. c., when attached to cross heads, C. D. constructed and operating as described and for the purposes set forth.

Second. The weight balls, G. operating in combination with area, o, and hinged springs, E. substantially as and for the purposes described.

E. E. and cross heads, C. D. hollow what, B. and valve rod, A, constructed and operating as described, and for the purposes set forth.

65,445.—MATCH BOX AND CANDLESTICK COMBINED.—Curtis R. Stickney, Hartford, Conn. First, I claim the combination of a match box and a self-acting candlestick, when formed of two parallel tubes, substantially as heron set forth. Second, I claim the combination of the tube, e, vifit the outside shell, d,

and the cover, D, substantially as herein described and for the purpose set forth.
Third, I claim the cover, D, having a receptacle for the wick of the candle, substantially as herein described. substantiatly as nevern descriped.

Fourth, I claim the placing of the roughened surface, E, in such a position that one of the tubes abail serve as a guide for the match when passed over the surface, substantially as herein described.

65,446.—Revolving Stand for Pictures.—Edwin B. Stur

65.446.—REVOLVING STAND FOR PICTURES.—Edwin E. Sturdevant, Germantown, Ohio.

First, I claim the rotary frame, g'g', pivoted in the manner described, when arranged upon revolving chambers, substantially as and for the purpose specified.

Second, The series of revolving chambers furnished with brackets, h, and second, The series of revolving chambers double picture frames, substantially as and for the purpose specified.

65.447.—LIPTING JAGK.—Senma Tabler, St. Joseph, Mo. I claim the construction and arrangement of the pawls or does, F. I. springs of M and I. levers, H. lifting hook, D. rack bur, B. and selects, K, in the handle, L, substantially as described for the purpose specified.

ole, I., substantially as described for the purpose specified.

5,448.—FIRE KINDLER.—Vorlin G. Tansey, Quincy, III.

I claim an improved fire kindler, constructed and arranged substantially as hereins how and described and for the purposes as from the fire of the purpose openities.

65,450.-WINDLASS FOR VESSELS.-Henry Thompson, Rock-

35,450.— WINDLAGO EVAN 1 assume as well as the combination of the Hand, Me. I claim as my invention the arrangement as well as the combination of the History standard, F, and its roller, e, or the equivalent thereof, with windlass, A, and one of its pawl cases, C C, so as to be operated by such paw bases, substantially in the manner and for the purpose as hereinbefore reactined.

ecdified,

a laso claim the combination and arrangement of the vibratory standard,

its roller, c, or the equivalent thereof, the stay, G, and the connection bar

as described, the whole to be applied to the deck and windlass of, evesel

d the payl case of such windlass of a vessel, substantially as and for the

ripose abereliabore explained.

purpose hereinbefore explained.

65,451.—VENTILATING DOOR.—Theodore R. Timby, Saratoga Springs, N. Y.

I claim ventilating rooms by means of the holes, a, or slats, a', at the top to bottom of doors, provided upon each side with bevoled or hollowed out deflectors, B or B', immediately above the said holes and projecting over them, substantily as herein shown and described.

them, substantially as herein shown and described.

5,452.—MOTOR REGULATOR AND REGISTER ATTACHMENT FOR ORGANS.—William H. Topham (assignor to himself and Peck, Brothers & Co.), New Haven, Conn. First, I claim the combination of the plates. KK, with the plug, G, and ylinder, D, of the vaive, substantially in the manner and for the purpose Second, in combination with the plug, G, and its spindle, H, and bearing, I, the cap, h, and the nut or nuts upon the spindle, substantially as and for the purpose set forth, no of a regulator valve with an organ register, V, when constructed and arranged so as to operate substantially in the manner set forth.

when constructed and arranged so as to operate the set of the register, V, and the red, R, Fourth, The combination of the red, W, the register, V, and the red, R, Fourth, The combination of the red, R, and the red, R, and the red arranged so that the register operates substantially as set forth.

some une register operates substantially as set forth.

65,458—STRAM ENGINE—J. F. Troxel, Bloomsville, Ohio, First, I claim the special arranger and of the pictons, B B B B, and C, or cross heat, 6, and lities, F. in combination with the lever, in light 1, or the purpose and in the manner substantially as described second, The siding valve, a, sa stranged in combination with the pistons B B B, and operated in the manner as and for the purpose herein substantially set office.

65,454.—Making Car Wheels,—Samuel Vanstone (a signor to himself and John Stuart, Providence, R. I.

I claim constructing a car wheel by first forging or stamping the part, B.

It thin the lugs, C, around the central hole, b, and then casting the hub thereon,
ubstantially as described.

65,455.—FELTING MACHINE.—Enoch Waite, South Natick

Mass.

Ma

65,456.—Machine for Forming Bats for Felting Wad-

55,456.—Machine for Forming Bats for Felting Wad-Ding, etc.—Enoch Waite (assignor to himself and the Elliott Felting Mills), Franklin, Mass. I claim the combination of the endless apron, O, and the feeding drum, I, the said drum may be controlled by or increased or diminished with the of the said drum may be controlled by or increased or diminished with the of the apron, substantially as and for the purpose specified. I also claim the endless carrier and the striker made and arranged in man-er and provided with mechanism for operating them, as described, which has been been supposed to the property of the control of the the provided with mechanism for operating them, as described, which has been been supposed to the provided of the property of the projections may vibrate or move relatively to the bars, so as not to impude the motion of the carrier. On the endless appron, C, the feeding drum, I, and the doffer, H. by or with mechanism whereby the speeds of both the rum and doffer are varied with that of the endless apron, the same being for he purposes or objects explained.

the purposes or objects explained.

65,457.—KILN FOR RB-BURNING AND PURIFYING BONE BLACK.—Adam Weber, New York City.

First, I claim the columns, A', having cast upon their upper ends the plates, si no combination with the angle plates, p. supporting the fire bricks, q, the bed plates, a a, and ash pan, L, substantially as described for the purpose specified.

as our parters, as, and assipan, L, substantially as described for the purpose Second, The arrangement of the inclined partitions, h, he drewen the single fectors, D D, and east upon them and between the fire spaces, kk and m, m, in the rear of said recurs, such stantially as described for the purpose specified, the property of the said of the said of the said that the said of the said that the lith the reformation of the said of the said of the said of the said of the lith the reformation of the said of the said of the said of the said of the lith the reformation of the said of the said of the said of the said of the lith the reformation of the said of the said of the said of the said of the lith the reformation of the said of the said of the said of the said of the lith the reformation of the said of the lith the said of the lith the said of the lith the said of the lith the said of the s

citied.

Itild, The suspended iron ash pan, L, in combination with the furnace, C, stautially as described for the purpose specified.

Itil, The suspended in such a manner as to form partitions between the upportant partitions between the uppose and the such a manner as to form partitions between the uppose specified.

It is a first partition of the such a manner as to form partitions between the uppose specified.

purpose spunited.

State APPARATUS FOR THE MANUFACTURE OF VINEGAR.

Wondelin Weis, St. Paul, Minn.

Lower of the Manufacture of

f claim the flexible strap, B, in combination with the screw, F, or its equivalent for the purpose set forth. 65,460.—Plate Lifter.—John B. Willett, West Meriden.

Uonn.
I claim the combination of the handle, A, the lever, D, and hooked arms, three or more constructed and operating substantially in the manner acreins et forth.

65,461.—Coffee Por.—Edward F. Woodward, Brooklyn

N. Y. Islaim the detached fountain percolator constructed as described consists of the taper metal table. A, upon the inverted cup, B, and supporting the passes, table 1, cap D, with the perfected cup, B, and supporting the passes, table 1, cap D, with the perforated plate, a table, F b, to super table cup, cup top, F, and cover k, combined and operating substantially as described or the purpose specified.

tor the purpose specified.

65,462.—APPARATIS FOR DESTROYING MOTHS.—Charles F.
Worch, New York City.

Worch, New York City.

Becond, The device for regulating the heat in *Pab box, A, consisting of the box, E, plues, to and d. described,

Second, The device for regulating the heat in *Pab box, A, consisting of the box, E, plues, to and E, dampers, a a and c, and door, F, all made and operated the control of the control of

School and Excessive Leave.

55,463.—Steam Englie Lubricators.—John Ashcroft, New York City.

York City.

10 Separation of the life or cover, (3) constructed and operation in the manner state, I claim the life or cover, (3) and for the purpose set forth, second, The combination of cover, (3) and cup (4) constructed, arranged and operating in the manner substantially as shown and described and for the purpose set forth,

65,464.—PRESSES.—Henry B. Barber, Scott. N. Y. I claim the sliding plate, C. with its palls, a c, and eccentric lever, D. when used in combination with the rack bar, B, and follower, D, and frame, substantially in themaner and for the purpose set forth.

tiany in themanner and for the purpose set forth.

65,465.—PIPE AND SYUD WRENCHES.—Joseph B. Barnes,
Fort Wayne, Ind.
First, tolaim the handle, (a) when the back portion of the upper end shall be provided with a rack in combination with Jaw (c) as and for the purpose specified.

8econd, The pawd, (d) spring, (e) all combined and operated as and for the purpose described.

burposes, and paws, (of spring, to) an combined and operaces as and or much of 5,466.—Loriting Gas by Electricity.—E. E. Bean and W. H. Mumler (assignors to themselves and Nathaniel W. H. Mumler (assignors to themselves and Nathaniel Cummings), Boston, Mass.

First, and than, its combination with the escape wheel, p, the arm, n, rock shaft, 1, and then the company of the statistic of the statistic participation of the statistic pa

of oil are burner result, sucteanism, as and for the purpose set forth.

First, I claim the mostal chimney, E, when supported by upright bars, D.

First, I claim the mostal chimney, E, when supported by upright bars, D.

and secured to an annular plate, C, substantially as and for the purpose here
in shown and described.

Second, A lamp chimney consisting of the lower glass or transparent chimney.

Second, a lamp chimney consisting of the lower glass or transparent chimney.

Second, a lamb price mostal chimney, Se, which are so arranged that the same
and described.

one come in direct contact with each other, substantially as herein shown didescribed.
Third, Tae glass chimney. F, in combination with the metal strips or bars, arranged inside of the glass chimney substantially as herein described, for e purpose specified.

65,468.—Torler Powder.— Innocent Antony Bergrath
Nashville, Tenn.

of this particular tollet powder, and from the madetect the first particular tollet powder, and from the madetect to the first particular tollet powder, and from the madetect to the first particular tollet powder, and from the ma-

165,469.—Stone central the control of this particular tollet powder, and from the machine control of the contro

stantially as and for the purpose set forth.

65,470.—ROTARY VALVE FOR STEAM ENGINES.—P. Bloomsburg and J. Molyneux, Bordentown, N. J., assignors to Bordentown Machine Company.

First and the set of the set of

or the east uses, subsaturally as set fortal.

66.471.—APARATUS FOR STACKING HAY AND GRAIN.—Wm.
F. Browne, Washington, D. C.
What I claim as my invention and desire to secure by letters patent is the combination and surround of the elevated sheltering plasform, the mast with its elevating cross. and the latter for ascending the mast or stack, substantially as and for the purposes berein specified.

Standard as and for use purposes accome speciment.

65,472.—TREMOLO ATTACHMENT FOR MELODEONS, ETC.—R.

W. Carpenter, Brattleboro, Vt.

1. claim the attachment to a melodeon or other wind instrument of like

1. claim the other tendor of valve or swell, constructed to form an intermittent clue, or the control the same in its action

on the reeds, substantially as specified god to control the same in its action

of the reeds, substantially as specified.

on the reeds, substantially as specified.

65,473.—MAKING STEEL DIRECT FROM OBE.—Thomas J.

Chubb, Brooklyn, N. Y.

First, I claim treating purified from sands or mechanically purified ore, by

First, I claim treating purified from sands or mechanically purified ore, by

First, I claim treating purified from sands or mechanically purified ore, by

First, I claim treating purified from the first of the fir

leseribed. Second, The combination of the furnace, A, with the melting pot or chamer, A', constructed and arranged for deoxidizing, carbonizing, converting, and melting roo ore into steed for metal having some of the properties of teel, substantially as described.

The properties of the properties o

Second, The combination of the furnace, A, with the melting pot or chamber, A', constructed and arranged for deoxidizing, converting, converting, by A', constructed and arranged for deoxidizing, converting, ested, substantially as described.

Third, Preparing, mixing, and forming from ore into lumps, balls, or cylinders and pocking the same into osatings made of ear, cast or sheet fron, or state, substantially as described.

Tourth, This composition of a long, narrow nearly horizontal or slightly as described.

Fourth, This composition of a long, narrow nearly horizontal or slightly changed as the hollow end in the form of steel spones, chemically changed as changed at the hollow end in the form of steel spones, chemically changed as substantially as described.

Fifth, The employment of a long narrow chamber, A, so constructed that changed at the hollow end in the form of steel spones, chemically changed as substantially as described.

Fifth, The employment of a long narrow chamber, A, so constructed that the admission of the substantial by states or their equivalents, for similar metal, and for the admission and discharge or air and gases, and for many control of the substantial by a state of their existence in the end of the substantial by a state of their existence in the end of the substantial by a state of their existence in the end of the substantial by a state of their existence in the end of the substantial by a state of their existence in the end of the substantial by as described.

State The arrangement of a mold chamber, H, in combination with a State The arrangement of a mold chamber, H, in combination with a state of the substantial by as described.

State The arrangement of a mold chamber, H, in combination with a spen and the substantial by as described.

Eighth, The combination of a gas cenerating furnace or passage leading poperation, gubstantially as described.

Eighth, The combination of a gas cenerating furnace or passage leading substantially as described.

Touth, The employment in a heated

age or apparatus in commination with a chaincir employed for neating a et or oracibile containing from ore or metallic sponge, converting, oc-ting, and melting the same into steel.

The commination of a heat reclaiming or heat regenerative fur-or apparatus with a stationary vessel or chainber or chainbers employed converting, melting, and comessing steel or metallic substances into

cel. Twenty-drst, The immersion of steel sponge, or carburet of iron sponge, to a bath of motien steel or metal similar in nature or quality to the sponge, that the sponge may be melted and also a homogenous liquid mass formed I and the metal constituting the bath, substantially as described.

65,474.—Coffee Can and Crusher.—Daniel C. Colby, Washington, D. C.

Washington, D. C.

I claim combining with a coffee canister a grinding or crushing device of any desired structure, substantially as described and set forth. 65,475.—BEVERAGE.—Wm. Davis, Portland, Me.
I claim the compound of ingredients herein specified for a beverage, as set

65,476.—Can and Box for Paints, etc.—Frederick W. De-

yoe, New York City.

I claim the groove, a, external rib, b, and gasket, c, arranged in relation the each other and with the upper part, a*, or the body, A, and the rim, b* the cover, substantially as herein set forth for the purpose specified.

of the cover, substantially as herein set forth of PAINT.—James F. Drumford, A. Nor Box For Holding PAINT.—James F. Drummond, New York City.

I claim, First, the circumferential groove, a, in combination with the
overlapping rim, d, of the cover, and the soldered joint, a, substantially as
heroin set forth for the purpose specified.
Socond, The external circumferential rib, b, arranged with reference to the
substantially as level as the purpose as excelled.

Second, The external circumferential rib, b, arranged what rescribed to the her purpose specified.

65.478.—HAY LOADER.—Wm. H. Elliot, New York City, assignor to Lowell L. Johnson, Blinghamton, N. Y. First, I claim the combination of the swinging frame, g, or its equivalent affiring rope, m, and an elevating fork, so any rificion to raise the load while said frame will drop, and the elevating fork or yr friction to raise the load while said frame will drop, and the elevating mechanism cease to act, when the rork is an old-dombination of the lifting rope, m, swinging frame, g, pulley, b, belt, k, and tightening pulley, t, arranged and operating substantially aswinging frame, g, for the purpose of decreasing the friction at the proper moment, so as to hold the tork suspended, as set forth.

when the substantial is a swinging frame, g, purpose of decreasing the friction at the proper moment, so as to hold the tork suspended, as set forth.

I was a substantial of the same of the stantial of the same, and the substantial of the same, and handle of the same. same.

Fifth, The combination of the spring catch, r, head, p, and handle of the fork, substantially as and for the purpose set forth.

65,479.—Steam Generator.—Henry Feyh (assignor to him-self, George T. Emery, and Wm. B. Hawkes), Columbus

65,470.—Steam there exists were self, George T. Emery, and Wm. B. Hawkes), communication, Chico.

Chic

the manner and for the purpose described.

65,480.—MACHINE FOR HULLING RICE.—Edmond Theodore Ganneron, Paris, France.

First, I claim the arrangement of the saction chamber, I, and its nozzles or partially as specified.

Second, The valve, N. is accombination. itally as specified.

Second, The valve, N, in combination with the chamber, I, for regulating the draft through the passages, H, without varying the velocity of the fan or other device producing the suction.

65,481.—Apparatus for Annealing Wire.—Henry C. Gee

00,201.—APPARTUS FOR ARREATING HIRE.—Honly C. Goo.

New York City.

New York C

65,482.—STUMP EXTRACTOR.—Hugh M. Gibson, Grand Rapids, Mich.

IUS, MICH.

First, I claim the arms, C C, lever, A A, connecting bars, B B, and pawls
O O, all being combined, arranged, and operating as and for the purpose
specified. specified.

Second, The roller, D. hooks, G. G. ratchet wheels, K. K., pawls. O. O., and

arms, C. C. when all arranged and operated as and for the purpose described

arms, C C, when all arranged and operated as and for the purpose described.
65,483.—ROTARY STEAM ENGINE.—J. E. Gillespie, Boston,
Mass.

First, I claim the combination of the sliding and revolving radial wings or
pistrs, I claim to be eccentric rings, E, for operation together essentially as
specified.
Second, The loose eccentric rings, E, made adjustable from the exterior of
the cylinder or case, substantially as herein set forth.
Third, The blocks, a, to the wings or pistons, F, made adjustable from the
cutated or the cylinder or case, essentially as described.

outside of the cylinder or case, essentially as described.

65,484.—CONSTRUCTION OF PIERS, DOCKS, AND WHARVES.—
Richard A. Gilpin, Chester County, Pa.
I claim the construction, arrangement, and combination of the piles, a a plates, b b, tics, d d, and walls, h h, in the manner and for the purpose berein described.

65,485.—SOAP FOR CLEANING AND POLISHING WOOD, MISTALS AND OTHER MATERIALS.—J. T. Greenwood and J. Wilson, Beloit, Wisconsin.

We claim a new article of manufacture—an improved soap for cleaning such control of the purpose set forth.

Beloit, Misconsin.—Betting the control of the purpose set forth.

65,486.—Winger of Clayman — Loby I. Madd. Parton. Manufacture—in the proportions specified for the purpose set forth.

-WINCH OR CAPSTAN.-John L. Heald, Boston, Mas

65.489. — WINGH OR CAPSTAN. — John L. Heald, Boston, Mass. First, Italian a roller, L., when employed in connection with the drum, C, of a winch or capstan, substantially as and for the purpose set forth. Second, Supporting the sharf of the roller, L. in sliding bearings, it, operated by levers. K. or their equivalents, substantially in the manner and for the Third, The idea that the prince, E, on the erank shaft, D, for reducing the speed of the revolution of the drum, C, of the winch, as and for the purpose specified. Fourth, in combination with the above, the gears, H I, for ensuring the simultaneous revolution of the charts, 6, substantially as set forth.

Simutanous revolution of the states, by, substantisty is set forth.

65,487.—BOOT HEEL.—Louis Hoffman and Augustus A. Hoffman, Buffalo, N. Y.

We claim the connecting plate, C, constructed and applied as described, and provided with the spurs, it, in combination with the screw, c, and reversible or removable outer portion, a, of a heel, arranged and operating substantially in the manner and for the purpose set forth.

65,488.—Churns.—James C. Jay and Joseph Younce, Wabah, Indiana.

First, We claim the devices for giving motion to the dasher in combination with the chair. First, We claim the devices for giving motion to the dasher in combination with the chair. Second, Utilizing and applying the power of the rocking-chair in motion and its easy and converging motion for the nurpess of charaing.

65,489.—Wrench.—Lucius Jordan, Southington, Connecti

Cut.
I claim the arrangement of the bar, A, sleeves, D and E, nuts, F and H, and handle, G, the several parts being constructed and arranged in the manner and for the purpose harein specified.

65,490.—GAS CHAMBER AND VALVE FOR FORGES.—John V.

Karr, Goshen, Ind.
I claim the box. A, made of any suitable shape and provided with an inle and outlet pipe and air opening, E, when used with the valve, D, constructed and applied as and for the purpose specified.

and applied as and for the purpose specified.

65,491.—Machine for cutting the Locks in Hoofs for Barrels.—F. C. La Riviere (assignor to Lucian D. New-all and Moses R. Greely), Minneapolis, Minnesota.

1 claim the use of the lever, E, when constructed and operated to automatically clamp the hoof will be kelfe cuts the lock, in the manner and for the purposes substantially as set forth.

the purposes substantially as set forth.

65,492.—SHOE.—Charles D. Letherburg, Chester, Pa.

1 claim the within covering for the foot, consisting of the parts, B and C, and the flap, D, when cut of two pieces of material arranged as described.

65,493.—Cooking Srovess.—B. F. Livingston, Chicago, Ill.

1 claim, First, The openings to the grate and the oven arranged in the top of the stove, substantially as and for the purpose set forth.

Second, The combination of the plates, C. F. with standards, H, forming a Third, Tre arrangement and combination of the sphape, B. R. free box, Q, and draft flue, F. with the door, O, substantially as described and set forth.

68,404.—Cooking Words. D. R. sew won. A burgue, O. F. Economics. 65,494.—COMPOSITION OR PASTE FOR ARTICLE OF FOOD.
Robert M. Livingston, Mobile, Ala.
I claim a cheese compound or paste substantially as above described.

I claim a cheese compound or paste substantially as above described. 65,495.—Paddle Wheel.—Elisha Matteson, South Brook

Iyn, N. Y. two sits or series of paddles inclining inward, and ar-nged to gather and discharge the water, while they are made of cradually creasing and decreasing longth to correspond with the increasing and de-easing power of the crank, establishmith ly as herein specifies.

65,496 .- Churns .- William R. McCutcheon, Washington

J. C. I claim, in churns where there are two shafts rotated inopposite directions the wheel dasher having the inclined faces on the one shaft and below th perforated dasher, having its inclined faces on the other shaft, the two being operated as and for the purposes herein set forth.

5,497.—SPIKES.—George W. McGill, Washington, D. C. I claim a split splic having one prong longer and larger than the other and the smaller and shorter prong so bevelied at its point that one being driven into the wood it will diverge and spread from the main prong so as to operate as a brace and barb, substantially as and for the purpose described

65,498.—ATTACHING THILLS TO CARRIAGES.—Charles D. Miller, (assignor to himself and C. H. Warner), West Mer-

ler, (assignor w minuson. — dan, Con., claim, brit, The combination and arrangement of the bar, b, extending treen the heads, E, with the socker, C, and plyor, D, each constructed the contraction of the

65,499.— BAG FASTENERS.—James Miller, Ovid, Mich.
I claim the piece of sole leather or other substantial material, a, the leather strings or other strong cords, S and b o, and the iron hook, c, combined and arranged substantially as described.

arranged substantially as described.

65,600.—APPARATUS FOR CHARGING SODA FOUNTAINS.—
Daniel Needham, (assignor to himself and Jesse A.
Locke and C. M. Hovey, Groton, Mass.
relain the tube, B, or its equivalent for containing one of the gas producing ingredients, operated in the manner substantially as described, in combination with the casing, A, of a fountain for soda and mineral waters, and other effervescing beverages, substantially as set forth.

other effervescing beverages, substantially as set forth.

65,501.—Machinery for Forming Molds for Sterredtype or Electrotype Plates.—M. Nelson, New York City Or Electrotype Plates.—M. Nelson, New York City of the pulley, so the pu

rth. Fifth, I claim the scale boards, 36, keys, 35, and levers. SI. in combinatio th the auxiliary carriage, P, as and for the purposes set forth.

55,502.—SKATE.—John W. Post, Castlle, N. Y.
First, I claim the serew buttons, %f'g', arranged substantially as and fohe purposes described.
Second, The spring bar, 1, provided with a lug, 1, passing through a hole g', in the top part of the numer, B, substantially as and for the purposes deribed. Third, The combination of the spring bar, i. provided with a lug, h, with e screw buttons, e'f'g', and plates, a' and d, provided with slots, a' bi and, substantially as and for the purpose described.

cl, substantially as and for the purpose described. New York City.

65,503.—BUTTON.—Joseph M. Prugger, New York City.

I claim a button having a shank whose base, a, is concave, in the center which is secured at an obtuse angle the wire coil, c, whose convolutions at in the same plane with the base, whereby the button is uniformly supporte while holding the cloth clamped in the concavity of the base, substantial as described.

as described.

65,504.—Luc Cruisher.—Edward F. Pryor, Dayton, Ohio.

First, I claim the ice chamber, B. when provided with the chambers

first, I claim the ice chamber, B. when provided with the chambers

displiragen, F. elities with or without the hinge, O constructed substantial

as described, and set forth.

Second, The perforated displiragen, F. or its equivalent, when arrange

for use in an ice crusher, substantially as and for the purposes specified.

65,505.—WATER CLOSET.—Andrew Rankin, New York City I claim the pan or dish, D, and perforated receptacle, E, in combination with a water closet bowl, all arranged together and operating substantially as and for the purpose described.

as and for the purpose described.

65,506.—Cog Graring Spring.—Jonah L. Rees, Peoria, II. I claim the hub, D, with its arms, E, rubber spring, 6, adjusting bolt, 1, and tightening tap, L, of their equivalent, in connection with the arms, F, of bevel wheel, A, working in the manner and for the purpose specified.

65,507.—Petroleum Vapor. Stove.—J. J. Riddle and W. S. Gray, Pittsburgh, Pa.

First, We olaim a coiled, curved. or other coding where the control of the purpose.

S. Gray, Pittsburgh, Pa.

First, We claim a coiled, curved, or other ordinary shaped continuous conduit heater, P, within the fames and of sufficient length to vaporize any app, E, and mixing chamber, H, for the uses and purposes mentioned substantially as described.

Second, We claim the carrying of water from a vessel, R, into the flame, no hamber, E, by means of tube, W, filled with any ordinary capillary substantially as described.

Third, We claim the carrying of steam from a closed vessel, C, by means of tube, S, into the flame in chamber, E, or the uses and purposes mentioned moistantially as described.

The control of the control of the control of the C, in the control of the C, in the capillary substance, d, and tube, h, for the uses and purposes mentioned substantially as described.

SS 508 —SLASH TASINGUIPS — Avone C. Podonow. Ditilability in the control of the capillary substance, d, and tube, h, for the uses and purposes mentioned substantially as described.

65,508.—Sash Fastener.—Amos C. Rodgers, Philadelphia

Pa.

I claim a sliding frame or door, B, with its plate, b, at the edge in or lon with a plate, F, and with screw, D, whereby the plate, F, may be it much a plate, F, and with screw, D, whereby the plate, F, may be it much a plate, F, and be it with the plate, b, the whole onstructed and operating substantially as and for the purpose determined to the plate of the purpose determined to the purpose determi

constructed and operating substantially as and for the purpose described.

65,509.—Briegen-Loading Fire-Arm,—Matilda C. Root and

Elisha Colt, Hartford, Conn., and Harris Colt, New York

City, executors of E. K. Root, deceased.

First, We claim the employment in construction with the open breech

barrel and frame of a sliding breech piece, constructed and stranged to

Second, We slic claim the extractor shoe or piece in combination with

the sliving breech piece and the frame in which both said parts work, ar
ranged and operating substantially asset foring. S, in combination with the

Thirt, We also claim the double-acting spring, S, in combination with the

String and the structure of the second of the s

neer, R. and catch bar, T., the whole constant to the set forth.

Fourth, We also claim the hammer, M. constructed as described in combination with the sliding root or bar, w, and check pin, n, substantially as described for the purpose set forth.

nation with the sliding rod or bar, w, and check pin, n, substantially as described for the purpose set forth. ARM, —Mattilda C. Root and Elisha 65,510. —REVOLVING FIRE-ARM, —Mattilda C. Root and Elisha Colt, Hartford, Conn., and Harris Colt, New York City, executors of E. K. Root, deceased, assignors to Colt's Patent Fire-arm Company, Hartford, Conn. Delish, We claim the employment in combnation with a removable breest forth, and the employment is combnation with a removable breest forth, and the suppose set forth and the suppose s

65,511.—Steam Gage Cock.—James Sanders, East Boston Mass., assignor to himself and Noah H. Marston, Boston

Mass.

laim the hollow conical plug, B, with its spindle, C, and opening, d, in bination with the shell or casing, A, the interior of which is of a taper-torm, all arranged and operating substantially as and for the purpose set

light forth, an arranged and operating supreminant as a more and proposed.

63,512.—COMPOSITION FOR CONVERTING IRON INTO STEEL.—
Thomas Sheehan, Dunkirk, N. Y.
Tolaim the saturation of the liquid combination described in my former particles.

65,513.—CAR COUPLING.—G. W. Shingleton, Auburn, N. Y.
15,514.—CAR COUPLING.—G. W. Shingleton, Auburn, N. Y.
16,5513.—CAR COUPLING.—G. W. Shingleton, Auburn, N. Y.
16,5514.—It is said, and the purpose superior of the purpose specified, consecuting pix when constructed and used substantially as and for the purpose specified, one constructed and used substantially as and for the purpose specified.

as and for the purpose described.

65.514.—LIPTING JACK.—Tilman Shiver, Newburgh, Ind.
I claim the construction and arrangement of the interally vibrating bar, C,
plytocid at its lower end to the part, B, and at its upper end to the lever, 6,
which is pivoted to the part, A, of the jack, the said parts, A and B, being
recessed as at e4. substantially as and for the purpose described.

65,515.—Filter for Pharmaceutists and Others.—A. B

50.510.—FILTER FOR THARMACEUTHER AND OTHERS.—A. D. Spencer, Rochester, N. Y.
First, I claim in an atmospheric filter composed of the tunnel, A, bottle or ar, β, and air pump. Q, the employment of a packing, h, for the purpose of the pump of th

65,516.—FURNACE FOR HEATING ARTICLES OF STEEL IN THE PROCESS OF TEMPERING.—Benjamin S. Stokes, Man-chester, N. H.

ucster, N. H. in the cellular muffle, K, substantially as and for the purpose set forth claim placing the flue, C, at or near the front of the furnace for the described. surpose described.

I also claim forming an air space, g, within the door, F, substantially as aid tor the purpose set forth.

I also claim the cellular muffle, K, in combination with a furnace provided with a flue, C, and a double door, F, constructed and operating substantially as described.

67,517. — Sawing Machine. — J. B. Sweetland, Pontiac Mich.

MICH.

I claim the arrangement of lever, P, with the cord, S, box, d, and pin, q and shaft, M, for raising the saw and throwing the roller in gear to move the timber at the same operation, substantially as set forth. 65,518.—RAILWAY SWITCH AND SIGNAL.—George L. Warner 2,637.—APPARATUS FOR GRAINING PAILS.—John R. and

(assignor to himself and Cornelia Hawks), Rochester,

N. I. alam the combination and arrangement with the switch, B C, of the ted and isolated signal, L, connected by the cord, c, and provided with terbalance weight, f, operating in the manner and for the purpose elevated and isolated signal, L, connected by the course, and To the purpose counterbalance weight, f, operating in the manner and for the purpose produced the special production of the special production of the special production of the special special

65,519.—FARM GATE.—James B. Webb, Muscatine, Iowa. folaim the combination of the gate, A, post, B, adjustable head piece, C, with the rods and levers, D EF and F and double crank rods, G and G arranged to operate substantially in the manner and for the purpose set forth.

65,520.—FOLDING CHAIR.—George E. Whitmore, Housatonic, Mass.
I claim the combination of the arm posts, B, straps, D, and headers, A, with their stop pins and slots, G, constructed and arranged in a folding chair in the manner and for the purpose set forth, 65,521.—Hub for Wheels.—G. E. Whitmore, Housatomic,

Mass.
I claim the combination by which the the wooden parts of the hub is ensued and supported at both ends and on its periphery by the iron finances
used and supported at both ends and on its periphery by the iron finances
used and supported at both ends and on its periphery by the iron finances
used the support of t

and thus attaining the desired qualifications of elasticity and strength.

65,522.—BEEHIVE.—A. T. Wright, New Vienna, Ohio.

First, I claim the honey frames, B, and broad frames, B, as constructed the continuous properties of the properties of th

65,523.—BOLT CUTTER.—Wm. W. Wright and John Boody, Ellsworth, N. Y. We claim the combination and arrangement of the bars, A and B, lever, E, plates, C and D, and spring, F, constructed and operating in the manner and for the purpose specified.

65,524.—Heating Stove.—Thomas Yates, Dubuque, Iowa. First, I claim the arrangement of the open-top fire-hamber, A, in combination with the upper draft-chamber, ff, so that the draft can be directed. Second, The arrangement of the two diampers, g and h, in the upper draft-chamber, ff, so that the draft can be changed in the different directions, as specified.

RE-ISSUES.

2,633.—METHOD OF PRODUCING MOSAIC VENERRS.—Otto Heinighte and Moritz Laemmel, Bay Ridge, N. Y. Patented May 29, 1890.

First, Wo claim the within-described method of producing messale veneers from strips of any desired cross section and orvarious cotors, said strips being formed by pressing a suitable phastic material, which will harden after having gone through the whole process, through one will harden after having gone through the whole process, through one will have a suitable phastic material, which will harden after having gone through the whole process, through the produce of the same of the control of the same, substantially in the manner and for the purpose specialistic.

2,634.—Skirr.—J. E. Lucas, J. P. Arey and Charles G. Howard, Springfield, Mass., assignces by mesne assignments of William Heppenstall. Patented Oct. 20, 1860.

We calked a woven skirt baying hoops or wires inserted into woven pockets and having woven into the welf, draw strings or threads composed of larger stantially as specified.

use casms a woven serr saving noops or wires inserted into woven pockets and avaing woven into the well, draw strings or threads composed of larger standards were not to the well of the well of the well of the standards and the standards are standards as pecified.

3,635—Horse-rower.—Stuart and Adeline Perry, Newport, N. Y., assignee by mesne assignments of Stuart Perry. Newport, N. Y., assignee by mesne assignments of Stuart Perry. Newport, N. Y., assignee by mesne assignments of Stuart Perry. Newport and the standard of the standard standards and the standards are standards as the standard standard the standard standards are standards as the standard standards are standards as the standard standards are standards as the standards as the

the upper income previous on any conthe typer income previous or any conthe upper income previous or any conwe have claim arranging the arms of the drive wheel in pairs vertically one
over the other for giving great stability to the wheel, substantially as dewe also claim, in combination with an endiese schain and a drive wheel, the
use of sockets to hold the outer and inner ends of the arms of said drive
heel, substantially as described.

We also claim, in combination with an endies schain and wheel as well as to
strengthent is when up, as histantially as described.

We also claim construct any the arms of the large driving wheel for tying said arms in combination with an endies
claim, substantially as described.

We also claim construct any the large drive wheel with sockets and its rode.

We also claim construct any the large drive wheel with sockets and its rode.

We also claim, in combination with an endies schain and a recessed and
taking down of the wheel when used in the field or when it is to be trans

We also claim, in combination with an endless chain and a recessed and
though the proper of the drive wheel on which the claim works, subtrantilly and a crossed or tooched pulley driven by ald chain, apiece or

derive wheel and a recessed or tooched pulley driven by ald chain, apiece or

activities in the substantially as described.

We also claim, in combination with an endless chain and a spreach of

activities in the substantially as described.

We also claim, in combination with an endless chain and a pulley of remaining the preventing the being unduly as described.

We also claim, in combination with an endless chain and a process or

preventing the singular proper or construction of the control of the control of the control of the control of the proper of the proper or control of the control of th

2,636.—Priming Metallic Cartridge.—Horace Smith and Daniel B. Wesson, Springfield, Mass. Patented April

Daniel B. Wesson, Springfield, Mass. Patented April 17, 1860.

We claim a primed cartridge case composed of two parks, viz. its. a flanged case or shell of one piece of mutal and of sainticient length to hold it e fulminate, the propelling charge and the projectile, and 24, the fulminate arranged substantially in a ring form at the base of said shell in couracidatedicint to being being combined and arranged substantially as sledin composed of the following parts; viz.: Me also claim a complete cartridge composed of the following parts; viz.: Ist, a flanged case or sield of time phange and the projectile, 24, the fulminate arranged substantially in a ring form at the base of said shell as storesaid, 24, the propelling charge: 4th the projectile, these four parts being arranged and combined substantially in a ring form at the base of said shell as storesaid, 24, the propelling charge: 4th the projectile, these four parts being arranged and combined substantially as before set forth.

Alfred J. Cross, Chicago, Ill. Patented December 27, 1864

First, we claim an cleatic bod of any suitable material whether curved or relative to the form when arready suitable materials whether curved or substantially a and for the purposes specified.

Second, We claim constructing the said bed of cleatic material in the Second, We claim constructing the said bed of classic material in the material construction shown, to be applied as described whether said bed be arranged for the second whether said the purposes are formed to the second second

formation of the said picket or rail, substantivily as and for the purpose set of the conditional, tellam strengthening the fonce panels and uniting the pickets and rails thereof by means of plates or sets or plates figs. 3 and 5, and so arranged artight angle to the picket and rail, and in combination therewith that the as specified.

Third, I claim the plate far, 3 or its equivative when so arranged in relation that the combination of the picket above, and the plate shall form an extension of the picket above, and constitute a bread plate shall form an extension of the picket above, and constitute a bread plate shall form an extension of the picket above, and the picket above, and the picket and rail, substantially as set forth.

Fourth, I claim the adjustable blinges constructed with the depressions, a with the took, b, and serve holes, c c, of the bove plating of the gate as berein described and nor the purpose specified.

With the took, b, and serve holes, c c, of the bove plating of the gate as bretin described and nor the purpose specified. The purpose of forth.

2.639.—Mowing Maculture.—Charles C. More, Pittstown, N.

2,639.—Mowing Macliums.—Charles C. More, Pittstown, N. Y., assignce by mesne assignments of E. F. and J. Herrington. Patented April 9, 1861.

First, I claim a shoe brace which is rigidity attached to the finger bar and winder of the parallel or nearly parallel with the size of the main trans and is hinged at iterare and to said frame.

which extenss because we have to be the main frame and is hinged at its rear end nearly parallel with the side of the main frame and is hinged at its Second, Connecting the finger bar to the shee brace which is hinged at its Second, Connecting the finger bar to rise and fail at each end independently of the other to conform to the surface of the second seco

Sixth, A lifting lever provided with an internal segment rack for the purpose specifice.

Seventh, A lifting lever provided with a segment rack in combitation with a foot latch for holding said lever as described.

Seventh, A lifting lever provided with a segment rack in combitation with a foot latch for holding said lever with a bigged entiting apparatus which can be turned up by the side of lever with a foot latch for holding said lever when the cutting apparatus is raised.

Aliath. The foot rack or bar or its equivalent operating upon the heel end paratus is being turned up as set forth, while the point of the cutting apparatus is being turned up as set forth.

Tenth, The combination of the foot rack and the segment lever or their equivalent for the purpose specified.

Eleventh, The employment of a spring for holding the foot rack out of

gear or lock, when not in use, to allow the cutting apparatus to follow the surface of the ground over which it is drawn. Twelfth, he arrangement of pincons on the opposite ends of the counter shart, in combination with a mechanism for simultaneously throwing said

other endands of the same to tollow the surface of the ground over which it is drawn.

2,640.—GRAIN DRILL.—Worden P. Penn, Jacob Geiss, and Jacob Brosius, Belleville, Ill. Patented June 27. 1865.

Antedated Dec. 27, 1864.

First, we claim bracing the drill toothed to its drag har by meens of a separate brace in such a manner as to allow it to fold forward without Second, the arrangement of the state of the surface of the s

2,578.—Sewing Machines.—Alfred B. Ely, assignee of Reuben W. Drew, Newton, Mass. Patented Nov. 5, 1861.

ben W. Drew, Newton, Mass. Patented Nov. 5, 1861. (Div. A).

1st, I claim rotating and operating positively the thread-guide within a supporting born for entering the workso that the thread shall be laid in the path of the hook of the needle, whatever the form, direction, or length of seam, by means substantially as described.

3d. dottainly and operating the thread guide or whir, by means of a geared of the control of the purpose described.

3d. dottainly and operating substantially as and for the purpose described.

rod, constructed and operating substantially as and for the purposes described,
ad, The combination of sliding cam, L, rack bar, N, rod, O, and whir or
their equivalents, substantially as and for the purposes described.
4th, so constructing and arranging the guide in relation to its actuaring dedescribed. any be rotated and operated by a gener for ds, substantially as
described.
5th, The combination of a horn for entering and supporting the work with
a rotating general rod for operating the with; and a wint for presenting the
loop to the barb of the needle, substantially as described.

loop to the barb of the needle, substantially as described.

2,579.—Subwing MacHines.—Alfred B. Ely, (assignee of Reuben W. Drew), Newton, Mass. Patented Nov. 5, 1861.

(Div. B.)

ist, telaim so constructing and so arranging the parts of a sewing mechine in combination with a main operating shaft, that the need beat well positively or directly statched or coupled to its actuating arm cas be reached to the complex of the control of the complex of the control of the complex of the co

2d, so constructing and arranging the needle bar and the feeding point that they can be revolved either way together and preserve their relative

364, So constructing and combining the rotating needle bar with the feeding oint that the feed shall form a guiding point to the needle and space the

point mar use-reen smar form a guining point to use necesses as space use that the combination of the spring cast-off needle and feeding point when constructed and arranged substantially as described; still, the ediustable recentric with its connections or their equivalent for a tering and adjusting the t-row of the needle bar; it is not to be a substantially as described for revolving the needle, or it is a substantially as described for revolving the needle, or it is a substantially as described for revolving the needle, or it is a substantially as described for revolving the needle, or it is a substantially as described for revolving the needle, or it is a substantially as the substantial progresses. gresses. 7.h, Bevolving the needle bar automatically by means substantially as de-arched

recesses,
7.h. Revolving the needle bar automatically by means substantially us described
7.h. Revolving the needle bar automatically by means substantially us described
ben W. Drew), Nowton, Mass. Patented November 5,
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-Center Piece.-Henry Berger, New York City. 2,662.—Cook's Stove.—A. E. Chamberlain and John B Crowley, (assignors to Chamberlain & Co.), Cincinnati Ohio.

2,663.—TRADE MARK.—Giles F. Filley, St. Louis, Mo.

2,664.—Spoon or Fork Handle.—Alonzo Hebbard, New York City. 2,665.—Pending Wheel.—Charles Kirchhof, Newark, N. J.

2,666 and 2,667.—TRADE MARK.—Samuel McCartney, St. Louis, Mo. (Two patents).

2,668 and 2,669.—Burial Case.—Bernard Smith, (assignor to American Burial Case Company), Cincinnati, Ohio. (Two Patents).

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O LUMBERMEN.

and are held firm and secure even when put to the test of saw ing off chain hooks and dogs that are often found in saw ing off chain hooks and dogs that are often found in their society have never been known to start up or leave their society have never been known to start up or leave their society have never been known to start up or leave when worn about one half down, taken out, and by any blocksmith drawn out to nearly their original length, here's be removed by the sawyer and new ones put into their places, with accuracy and precision, in a few minutes, time, and she had a precision, in a few minutes, time, and she had a precision, in a few minutes, time, and she saw in the sa

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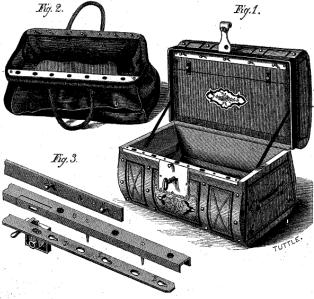
apanying engravings show several applications of a device for more perfectly securing the lids of trunks, valises, etc., and the mouths of bags, wallets, and reticules. By this means the whole length of the union between the two parts is effectually secured. In closely packed trunks

ter the ends of the bag gape, exposing the con-tents to the weather, or to the eyes and fingers of unprincipled depredators. With this attachment all the receptacles are fastened as much at the ends as at the point where the bolt engages with the staple of the lock.

1 shows a trunk with this device and Fig. 2 its application to a traveling bag. It is easy, from a description of the device, to see how it may be modified to suit all cases. Fig. 3 exhibits the parts detached. On the inside of the lid is secured a metallic strip, A, in which are riveted pins, B, having heads and short shanks. On the lower or corresponding edge is screwed a plate, C, forming in its cross section three sides of a parallelogram. Inside this is a sliding strip, D. The holes in the strip, C, permit the entrance of the pegs, B, the heads of which pass through the pear-shaped holes, E, in the sliding plate, D. The oblong holes in D, intermediate between the others, permit the movement of the plate where the screws which fasten, C, pass through into the wood.

The action is very simple. As seen in Fig. 1 a small knob attached to the sliding plate projects through the front of the trunk, by which when the pegs, B, have passed through the sliding plate it can be shifted so that the small ends of the pear-shaped holes embrace the shanks of the pegs and hold the lid firm-ly. The turning of the key locks this sliding plate as well as the hasp of the lock, and when the trunk is locked the knob by which the plate is moved is covered by the hasp. Thus the plate is held in place when locked so

that no portion of it can be disengaged from the pegs until and in Great Britain April 9, 1866. For rights and further the key is turned and the knob uncovered. The apparatus particulars address William S. Paddock, patentee Albany, N. Y. can be so modified that the turning of the key alone will make the connection between the lid and trunk without the employment of a projecting knob.



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