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1917

FURNITURE MAKING

ADVANCED PROJECTS IN WOODWORK

By IRA S. GRIFFITH

The Manual Arts Press

Peoria, Illinois



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1917

FURNITURE MAKING

ADVANCED PROJECTS IN WOODWORK

BY IRA S. GRIFFITH, A. B.

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Author of "Woodwork for Beginners," "Essentials of Woodworking," "Carpentry"
"Woodwork for Secondary Schools," "Correlated Courses in Woodwork and Mechanical Drawing,"
and "Projects for Beginning Woodwork and Mechanical Drawing."



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PREFACE.

ADVANCED PROJECTS IN WOODWORK is a collection of projects designed to meet the needs of classes in high school woodworking. These projects presuppose familiarity with woodworking processes, tools, and the two simple joints required in the making of projects contained in the author's *Projects in Beginning Woodwork and Mechanical Drawing*.

The drawings are complete only as to their general dimensions. The working out of details, such as the sizes of mortises and tenons and their locations, is left for the pupil in his work in drawing and design.

It is expected that the projects will afford suitable basic material for classes in woodworking design. It remains for the instructor to point out the manner in which this material may be used. For illustration, many beginning students are slow in appreciation of possible modifications in structure or decoration. Circular tops may be used instead of square or octagonal, and vice versa. Modification of the manner of filling side spaces with slats offers variety in initiative. Vertical posts may be made tapering and vice versa. Rails and stretchers may be variously employed. There is almost always a choice in the matter of joints,—keyed or thru or blind tenon. Fig. 1 is suggestive as to possible modifications of a type.

In addition to the possible structural modifications, the plates suggest variation in the matter of decorative ornament such as pierced and carved forms and simple inlay. Such ornament will, of course, be kept subordinate to the structural design.

The upholstering of stool tops and seats for chairs provides another problem in variation.

Little, if any, use is made of dowels as substitutes for the mortise-and-tenon. While it is true that modern commercial practice makes much use of dowels in this way, the author feels that such practice is too often contrary to the principles of good construction. Its genesis lies in economy of material rather than in any superiority as a fastening device.

In the designing of these projects the author has had in mind at all times the thought that most

of the students using them would have access only to a band-saw or jig-saw and a miter-box in addition to the regular hand tool equipment. For this reason such projects as hall clocks, mission beds, etc., have been excluded. The exceptional student will find projects of sufficient size to

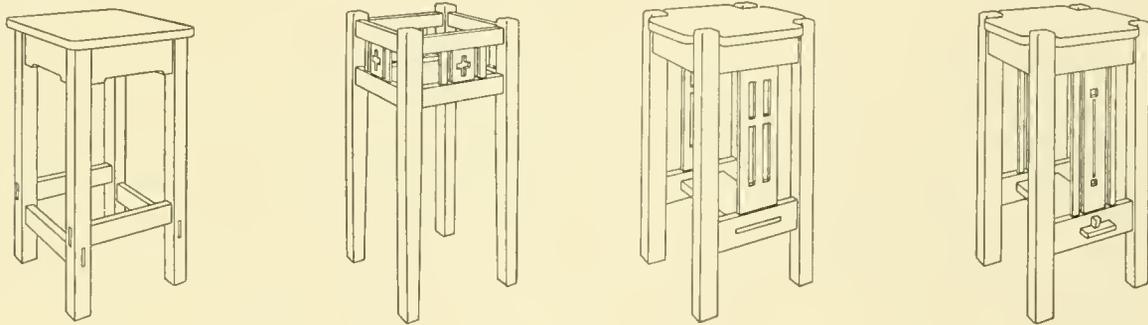


FIG. 1.

tax his ability and muscle. Easier projects and lighter projects have been provided for the weaker members of the class while the use of slats or their omission will provide additional variation in time of execution.

The use of stock ordered S-4-S (surfaced on four sides) has not been anticipated. The use of stock S-2-S and moldings such as are carried in stock by lumber yards is presupposed. If a working principle for the use of stock partly prepared were asked for it would be: Any material

that is carried as stock and which does not have to be ordered especially worked for the project a boy elects or designs may be made use of legitimately. Such a principle would permit the use of stock S-2-S, moldings of stock pattern, hardware such as hinges and locks without any suggestion of deception. It would exclude table legs and tops, etc., especially prepared at a mill, and offers a rational dividing line between two extremes, neither of which is desirable.

Of course, these projects may be used in the teaching of the use of woodworking machinery.

No definite notes as to methods of procedure are given in this book for the student is supposed to have acquired, thru experience with the projects in the elementary book, enough insight to enable him to proceed on his own accord. Definite instruction in making the new joints, in wood-finishing, etc. will be found in *Essentials of Woodworking*, or *Woodwork for Secondary Schools*, companion books by the same author.

While these projects are especially arranged for use with the courses outlined and discussed in *Correlated Courses in Woodwork and Mechanical Drawing*, by the author, there is nothing in the form of the plates themselves to prevent their being used with any course in woodwork.

July, 1912

IRA S. GRIFFITH.

The inking of the drawings and the making of the perspectives in this book is the work of Mr. George Gordon Kellar.

LIST OF PLATES.

GROUP IX.—JOINERY.

- | | | |
|--|------------------------------|----------------------------|
| 1. Exercises—Keyed tenon, Blind Mortise-and-Tenon. | 12. Taboret (octagonal top). | 26. Book Trough. |
| 2. Exercises—Miter Joint, Glue Joint. | 13. Taboret (round top). | 27. Screen. |
| 3. Exercises—Modeling, Hammer Handles. | 14. Small Table. | 28. Tea Table. |
| 4. Necktie Rack. | 15. Taboret (square top). | 29. Hall Rack. |
| 5. Footstool. | 16. Piano Bench. | 30. Wall China Rack. |
| 6. Book-rack. | 17. Piano Bench. | 31. Side Chair. |
| 7. Upholstered Stool. | 18. Book Stand. | 32. Arm Chair. |
| 8. Leg Rest. | 19. Umbrella Stand. | 33. Morris Chair. |
| 9. Cricket. | 20. Umbrella Stand. | 34. Electric Reading Lamp. |
| 10. Wall Shelves. | 21. Jardiniere Stand. | 35. Pedestal. |
| 11. Stool (square). | 22. Magazine Stand. | 36. Occasional Rocker. |
| | 23. Roman Seat. | 37. Mission Chair. |
| | 24. Light Stand. | 38. Drop Leaf Table. |
| | 25. Stool (square). | |

GROUP X.—CABINET WORK.

- | | | |
|---|----------------------|-------------------------|
| 39. Exercises—Mortise-and-Tenon Joint, Rabbeted Joint, Grooved Joint. | 41. Waste Paper Box. | 46. Chafing-dish Stand. |
| 40. Exercises—Thru Multiple Dovetail, Half-blind Dovetail. | 42. Wall Cabinet. | 47. Cabinet. |
| | 43. Telephone Table. | 48. Library Table. |
| | 44. Sewing Cabinet. | 49. Writing-desk. |
| | 45. Writing Table. | 50. Dressing Table. |
| | | 51. Linen Chest. |

PRICE LIST FOR YEAR 19____, 19____

LUMBER—Quality, 1st, clear, and kiln-dried.

KIND OF WOOD	Per 1000 feet when surfaced on two sides								
	Thickness in the Rough	$\frac{3}{8}$ "	$\frac{1}{2}$ "	$\frac{5}{8}$ "	$\frac{3}{4}$ "	1"	$1\frac{1}{4}$ "	$1\frac{1}{2}$ "	2"
Yellow Poplar									
White Pine									
$\frac{1}{4}$ Sawed White Oak									
Mahogany									
$\frac{1}{4}$ Sawed Red Sycamore									
Black Walnut									
Plain Sawed Red Oak									

HARDWARE—

For prices on hardware consult Hardware Catalog provided for you.

Figure retail price, that is, figure screws at price per dozen, not price per gross.

WOODFINISH—

Per square foot of surface covered.

LABOR—

Per hour.

(Form for high school use)

BILL OF MATERIAL

NAME _____

DATE BEGUN _____

CLASS _____

DATE FINISHED _____

ARTICLE _____

EXTRA HOURS _____

Pieces	Size	Description	Price	Feet	Cost	
2	$\frac{1}{2}$ x $3\frac{1}{4}$ x $12\frac{1}{2}$	Walnut Slats S-2-S to $\frac{3}{8}$ in.	.10	4.4	.39	
1	1 x $8\frac{1}{4}$ x $14\frac{1}{2}$	“ Stretcher “ $\frac{7}{8}$ in.				
6	1 x $3\frac{1}{4}$ x $12\frac{1}{2}$	“ Rails “ “				
1	1 x $14\frac{1}{4}$ x $14\frac{1}{2}$	“ Top “ “				
4	$1\frac{1}{2}$ x $1\frac{1}{2}$ x $24\frac{1}{2}$	“ Posts “ $1\frac{1}{4}$ in.	.11	2	.22	.66
8	2 inch No. 10	Flat Head Brt. Screws	.00 $\frac{1}{2}$.04	
4	$1\frac{1}{2}$ inch No. 10	“ “ “ “	.00 $\frac{1}{4}$.01	.05
	13 sq. feet	Wood Finish	.01			.13
		MATERIAL COST84
	30 hrs.	Labor	.15		4	.50

TOTAL COST \$5.34

INSTRUCTIONS FOR MAKING BILL OF MATERIAL.

Under "pieces" put the number of parts that are alike.

Under "size" put the various dimensions of pieces. In finding the sizes of the various pieces of lumber, examine the working drawings for finished dimensions, making due additions for tenons, then add $\frac{1}{4}$ " to the width and $\frac{1}{2}$ " to the length to allow for cutting out and squaring up. Tho you are to make use of stock mill-planed to thickness, you are to specify the thickness from which this mill-planed stock is got. Allow at least $\frac{1}{8}$ " for mill-planing.

Remember that length always means along the grain.

Fractions of an inch in width and length are not considered. Neither are fractions of a cent in the final results. If the fraction is $\frac{1}{2}$ or over, take the next higher whole number. If it is less than $\frac{1}{2}$, drop it. Fractions of an inch in thickness that are over 1" and fractions of a cent in the price per foot are to be figured as they are.

Lumber is measured by the superficial foot which is 1" x 12" x 12". Boards that are less than 1" thick are sold by surface measure. In other words, boards less than 1" thick are figured for quantity as 1" thick.

Standard sawed thicknesses are 1", $1\frac{1}{4}$ ", $1\frac{1}{2}$ ", 2", $2\frac{1}{2}$ ", 3", $3\frac{1}{2}$ ", 4". Thicknesses less than 1" necessitate re-sawing these sizes. In some communities the price per square foot for re-sawed stock varies for each difference of $\frac{1}{4}$ " in thickness.

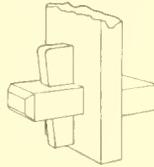
In figuring, multiply the length by the width by the thickness, by the number of pieces. If any piece is less than 1" thick figure it as 1". Combine all results that are the same in price per foot. Reduce to square feet by dividing by 144. Reduce decimally and do not carry the result beyond tenths place. Dispose of any fractional part beyond tenths as directed above.

The price list gives the price of lumber per 1,000 feet. The price per foot is readily obtainable.

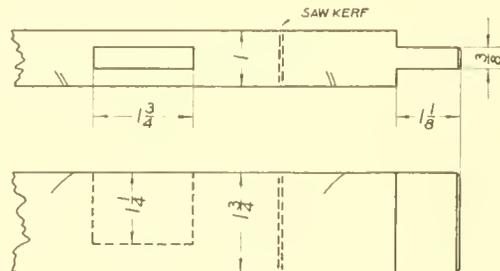
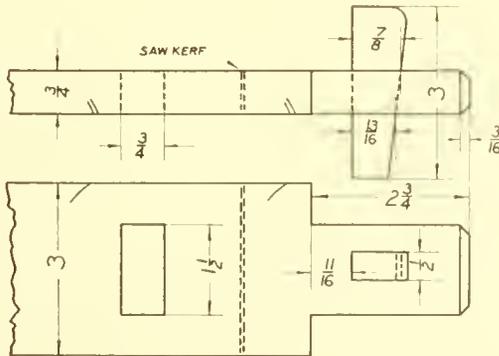
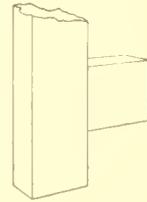
In figuring finish for these cabinet pieces, double the number of feet of stock as given by the stock bill to get the number of feet of finish. This is only an approximate method but is sufficiently accurate for such pieces as are to be made in first year high school, as specified in Group IX of this book.

EXERCISE (PREPARATORY TO GROUP IX)

KEYED TENON

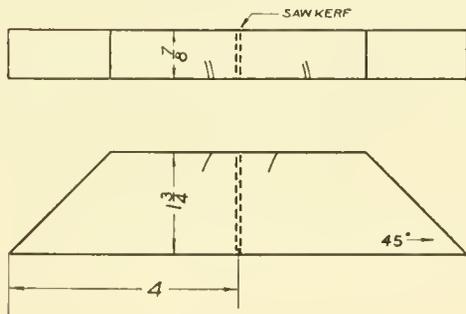


BLIND MORTISE AND TENON

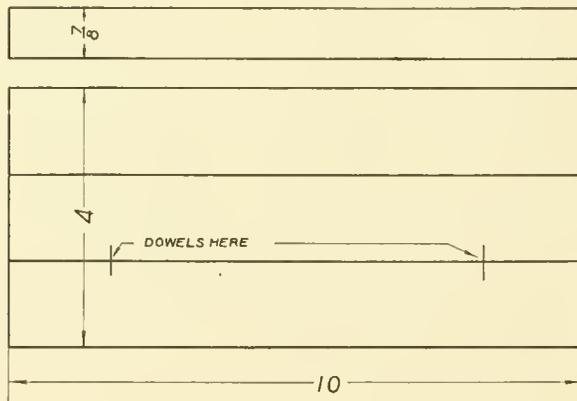


EXERCISE (PREPARATORY TO GROUP IX)

MITER JOINT

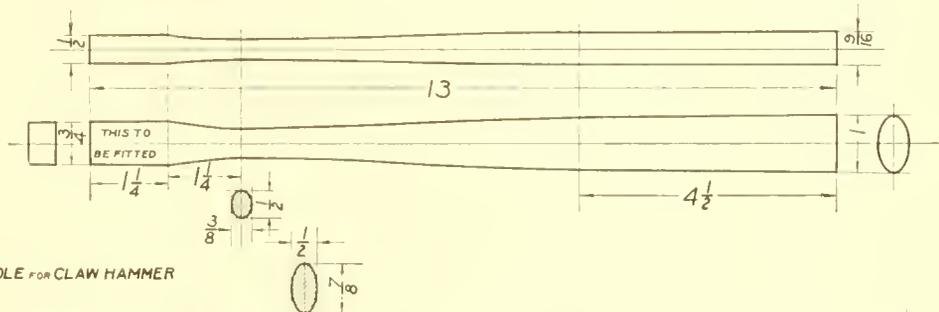


GLUE JOINT-DOWELING

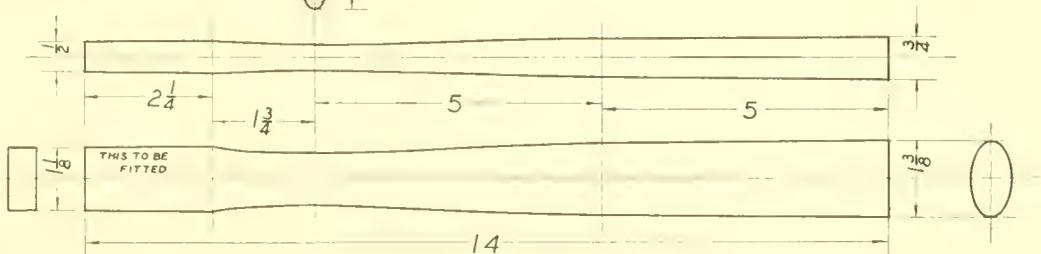


EXERCISE PREPARATORY TO GROUP IX
(CHOOSE ONE)

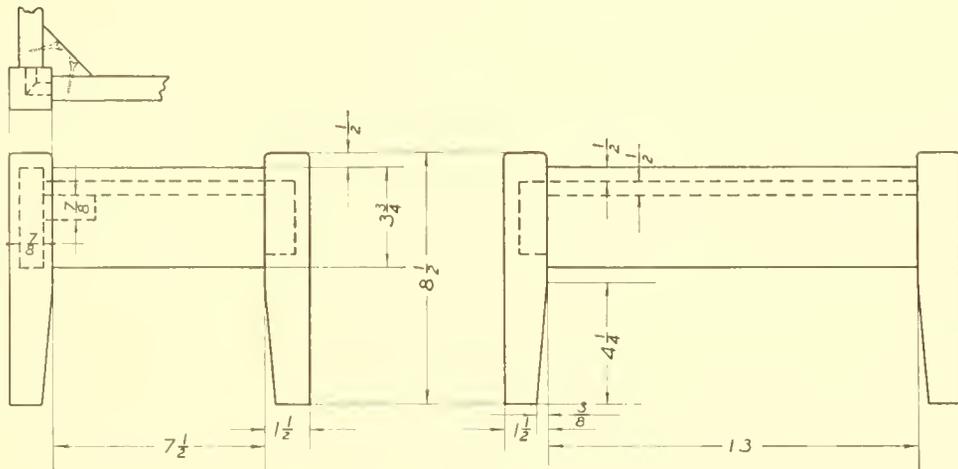
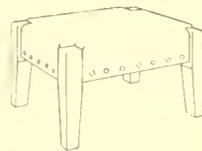
HANDLE FOR BALL PEEN HAMMER



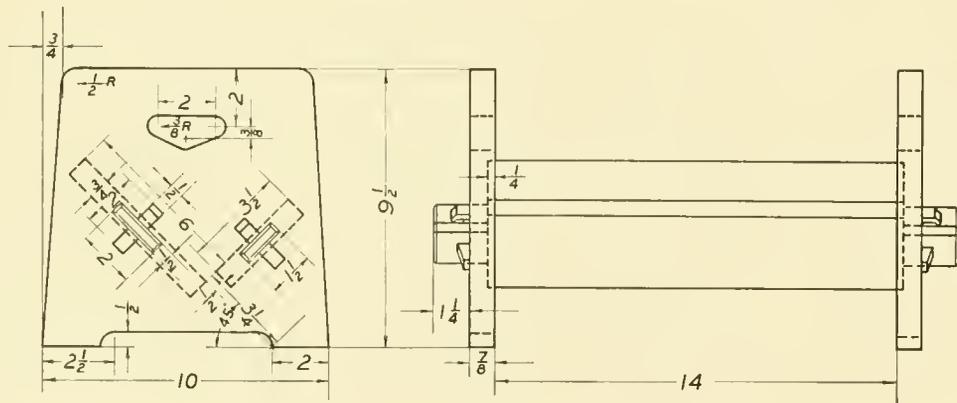
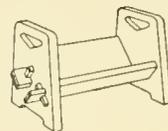
HANDLE FOR CLAW HAMMER



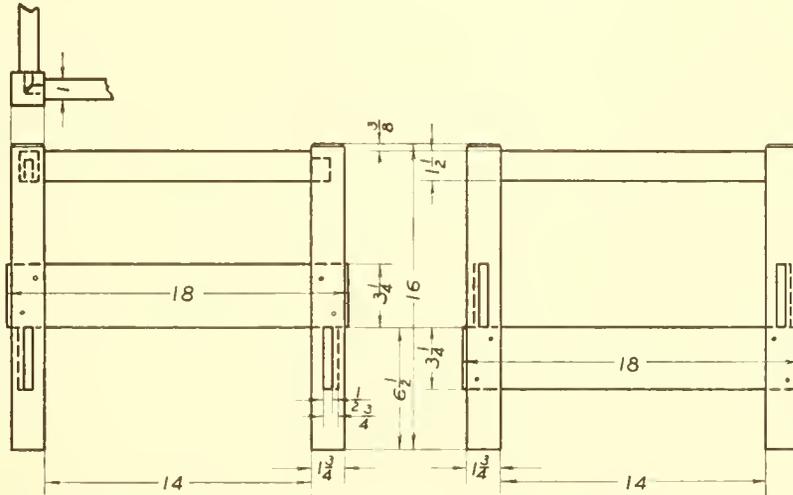
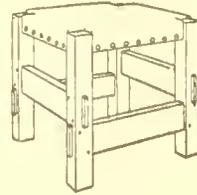
FOOT STOOL



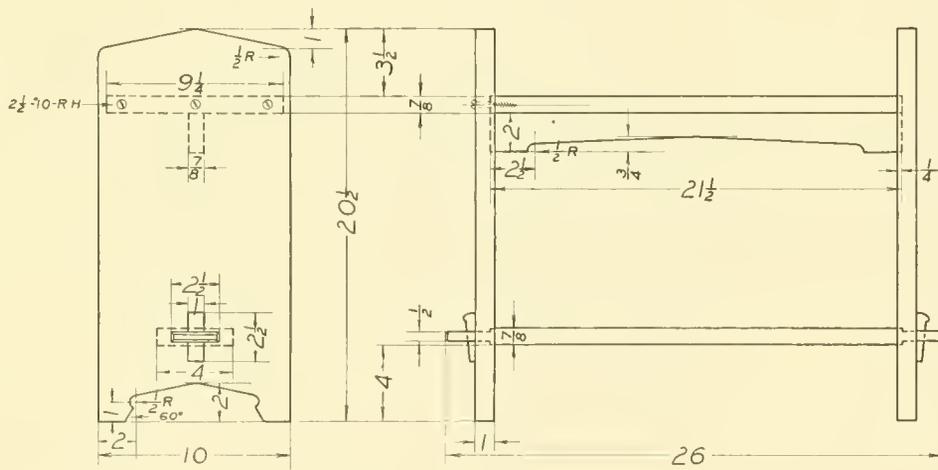
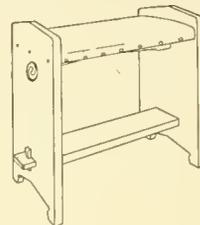
BOOK RACK



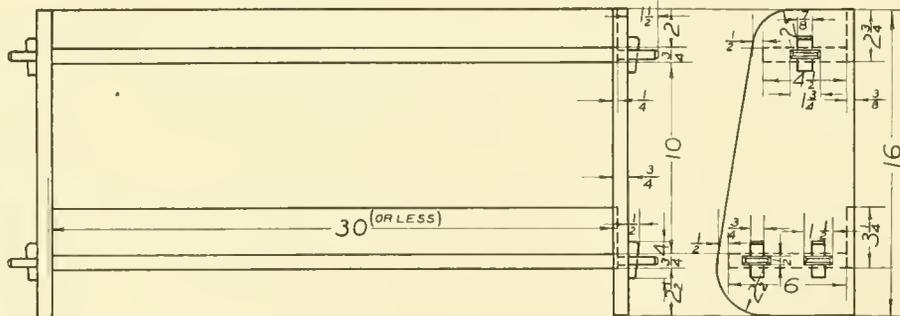
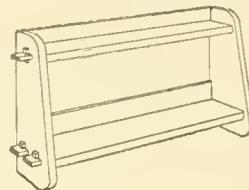
UPHOLSTERED STOOL



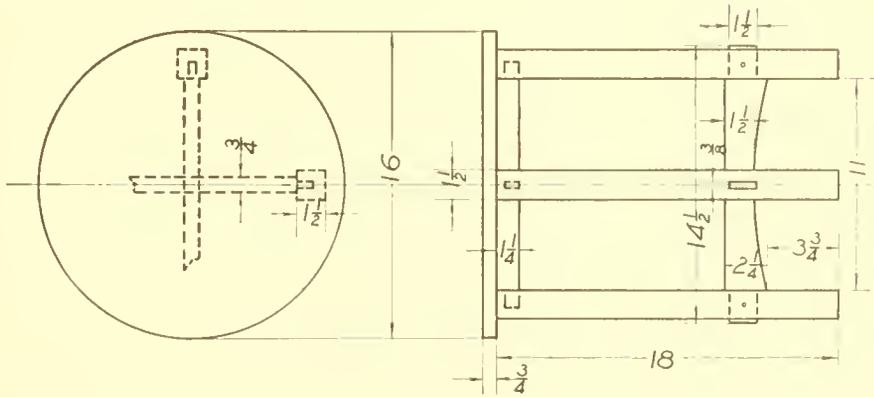
LEG REST



WALL SHELVES



TABORET



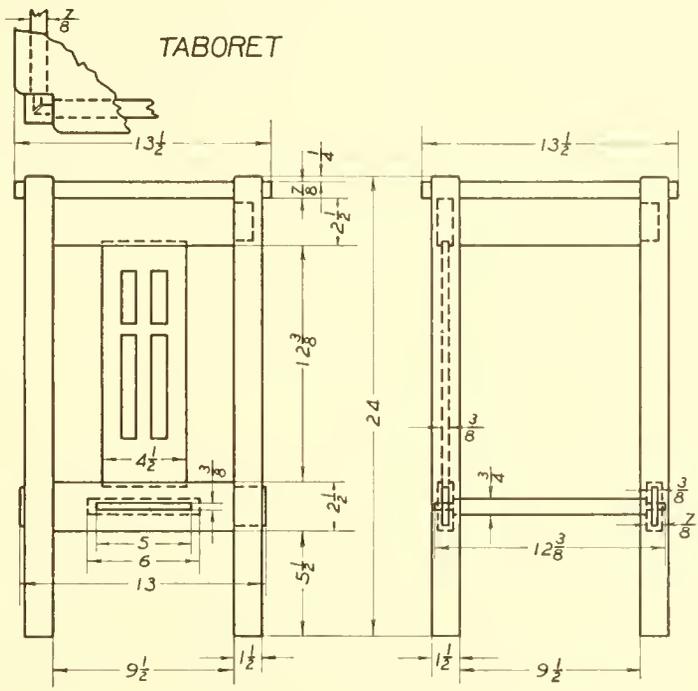
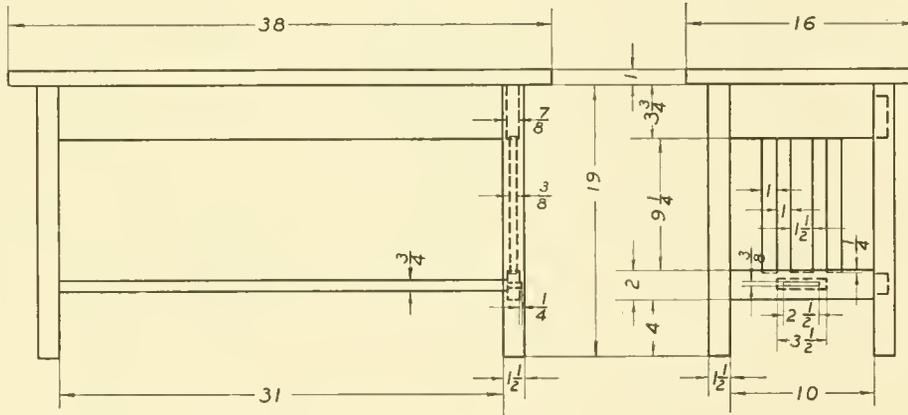
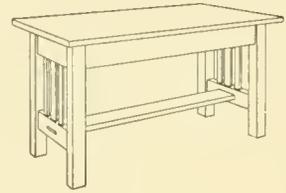
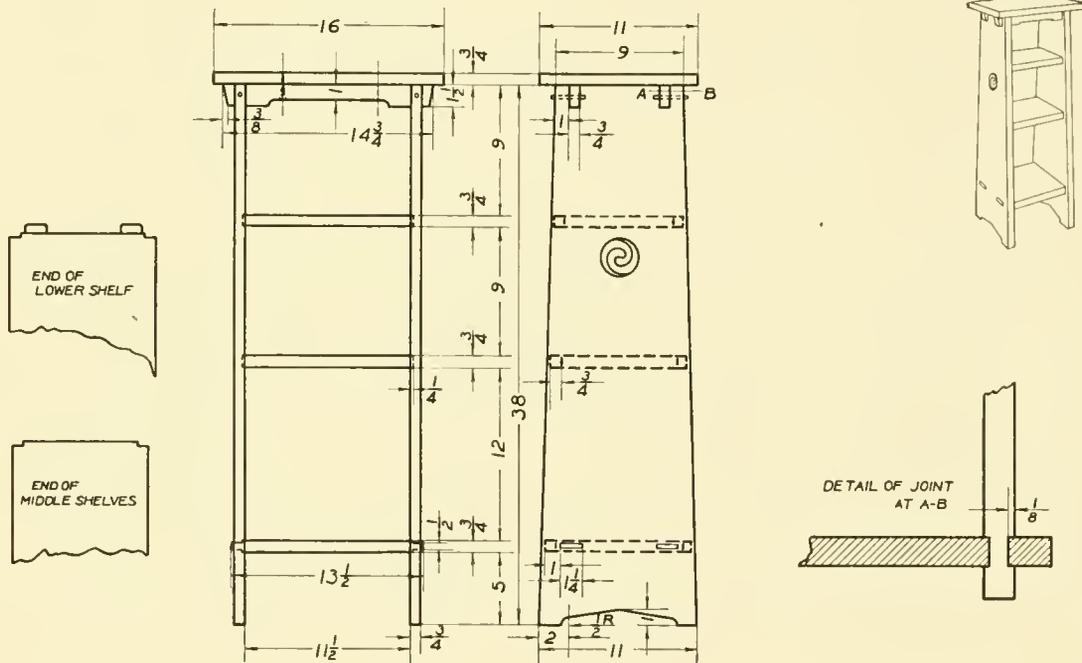


PLATE 15

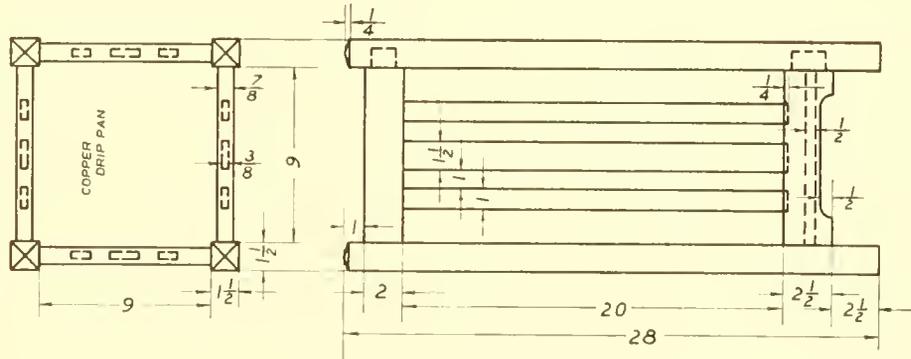
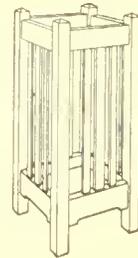
PIANO BENCH



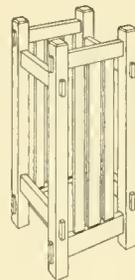
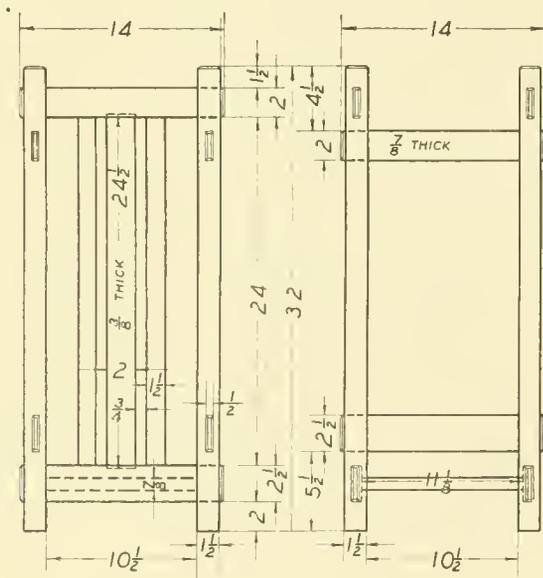
BOOK STAND



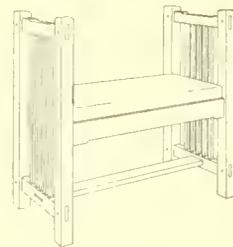
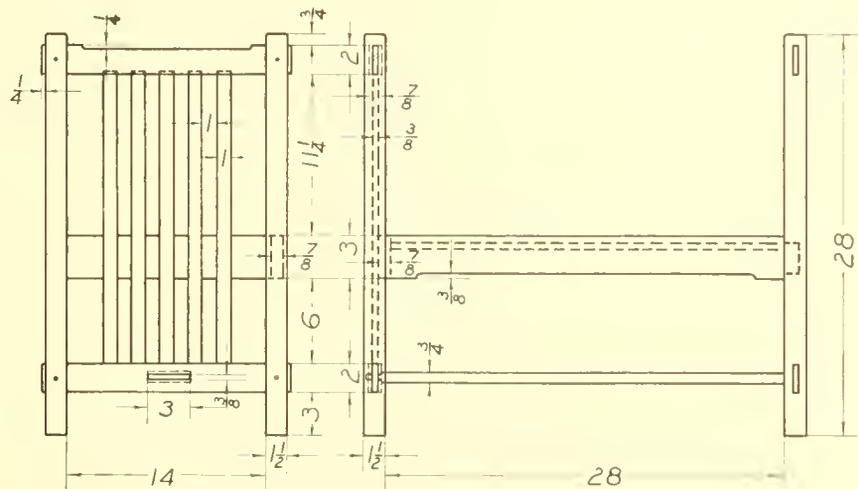
UMBRELLA STAND



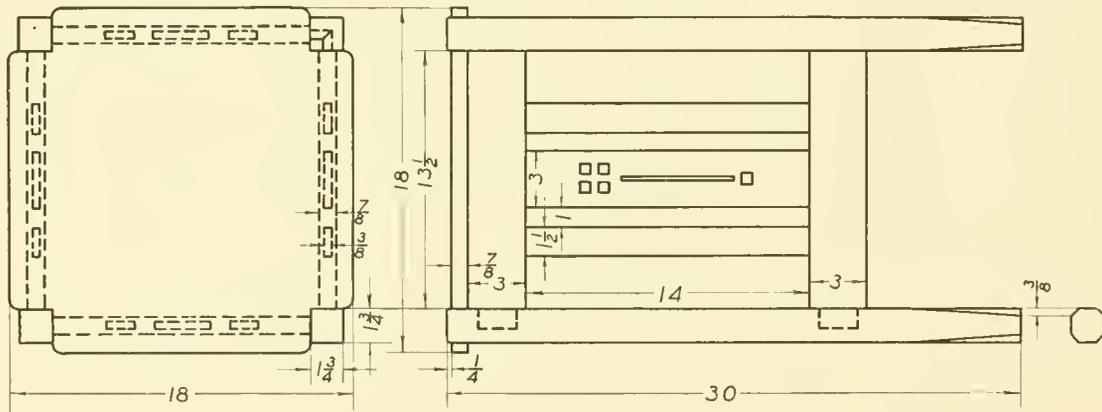
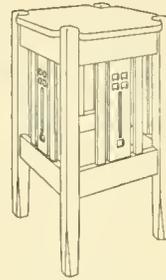
UMBRELLA STAND



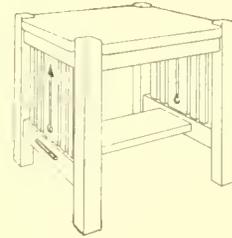
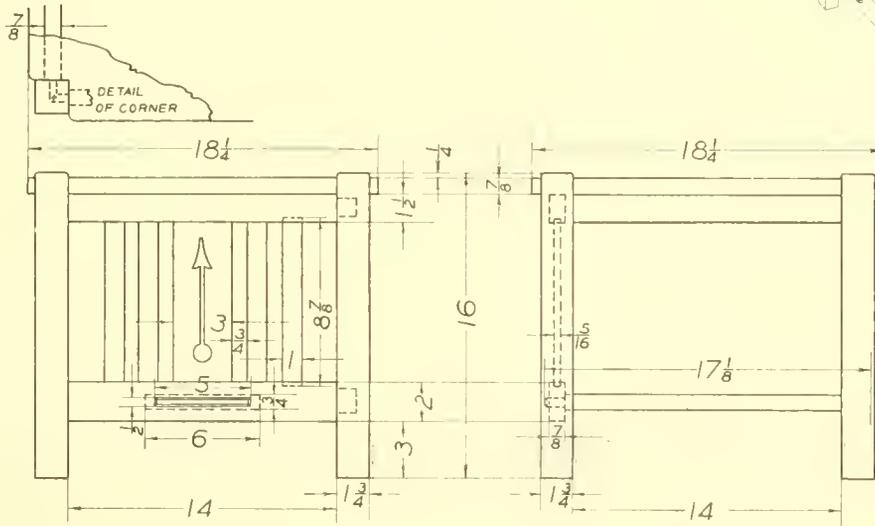
ROMAN SEAT



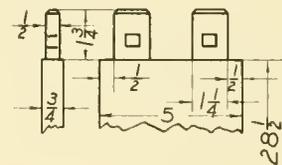
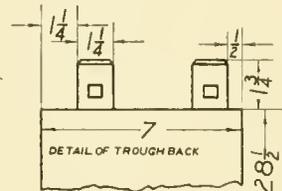
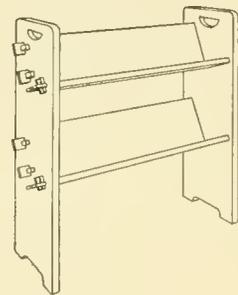
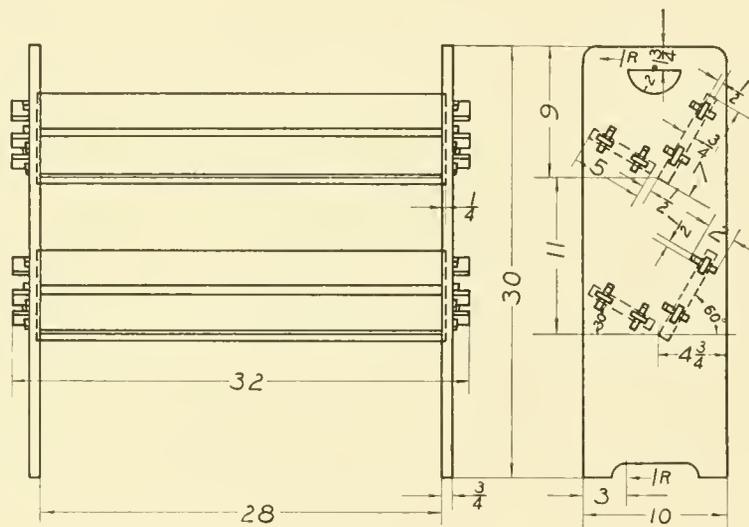
LIGHT STAND



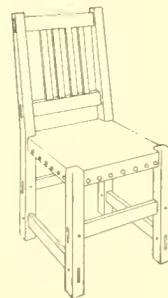
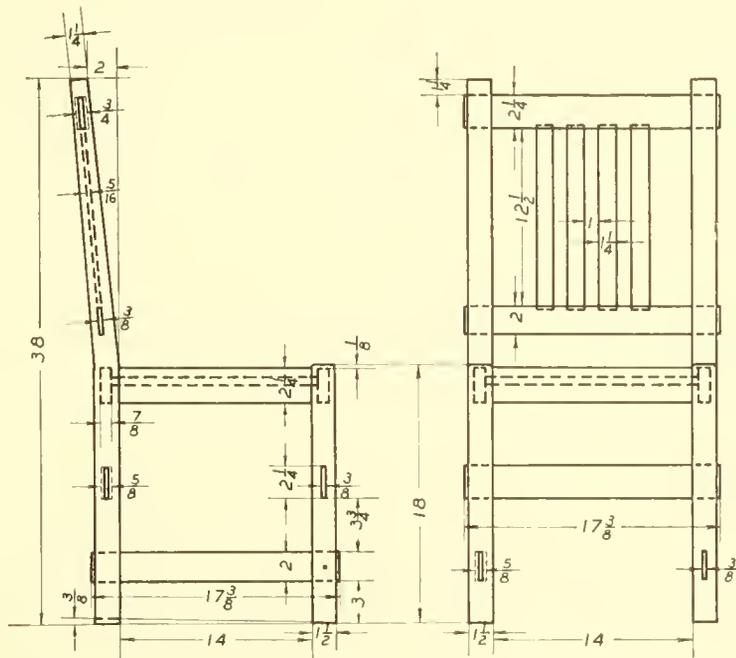
STOOL



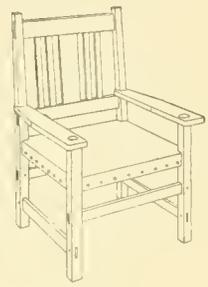
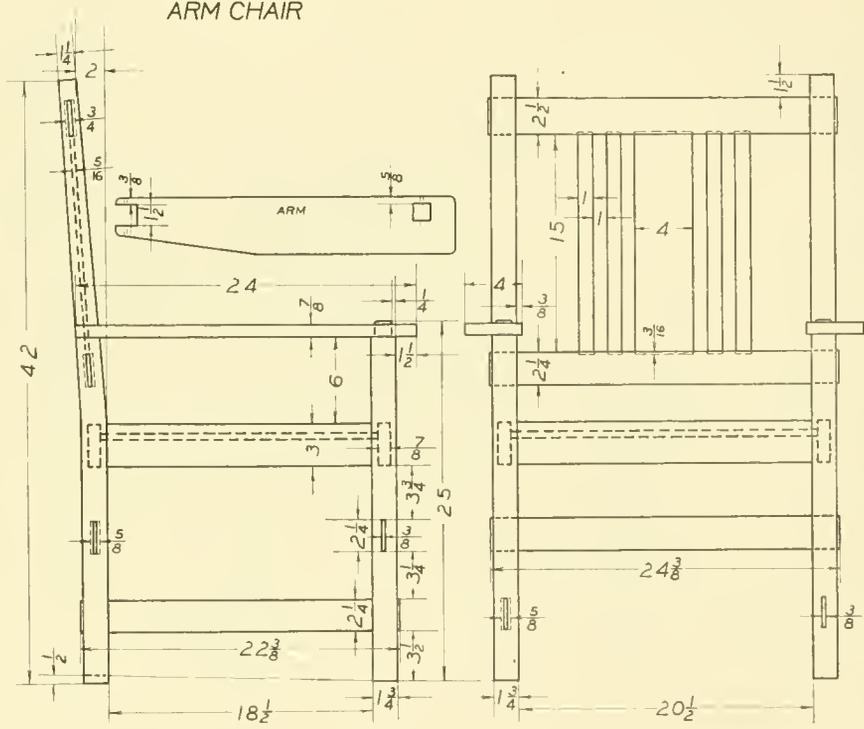
BOOK TROUGH



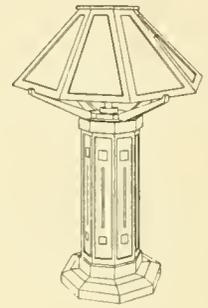
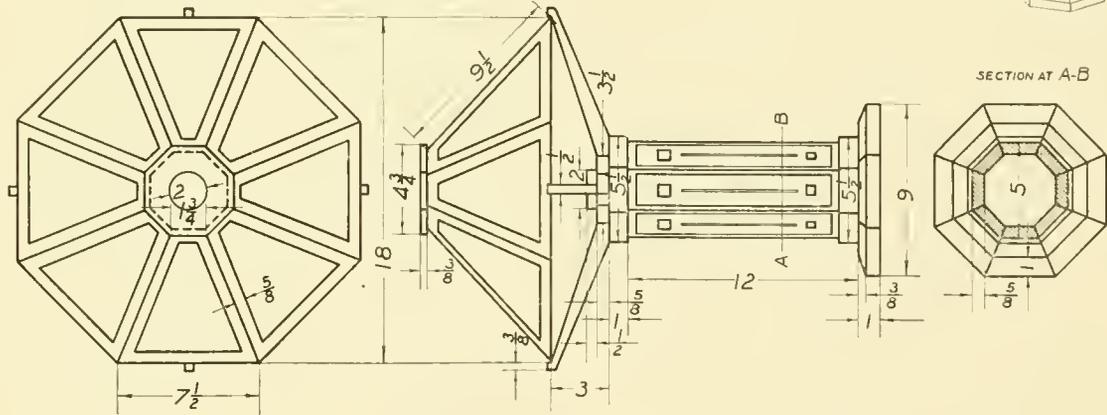
SIDE CHAIR



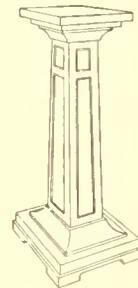
ARM CHAIR



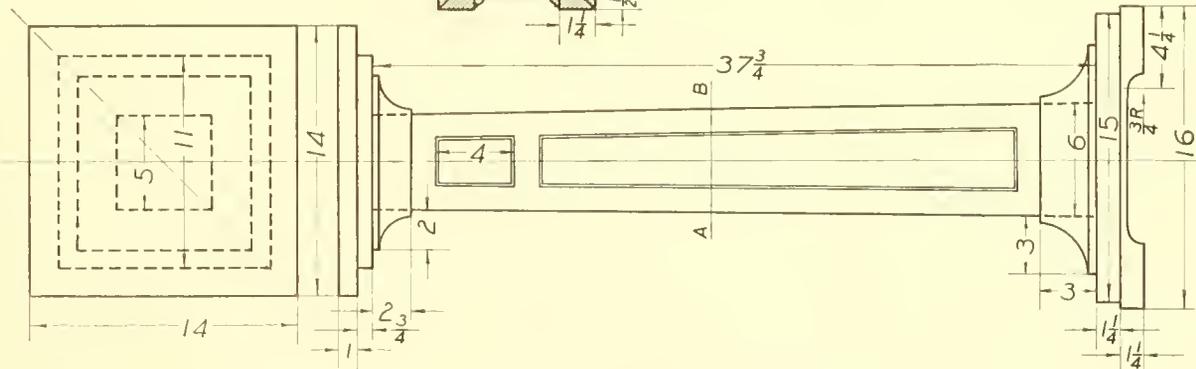
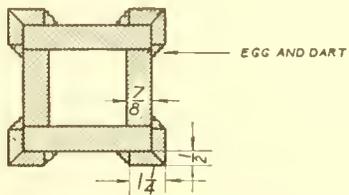
ELECTRIC READING LAMP



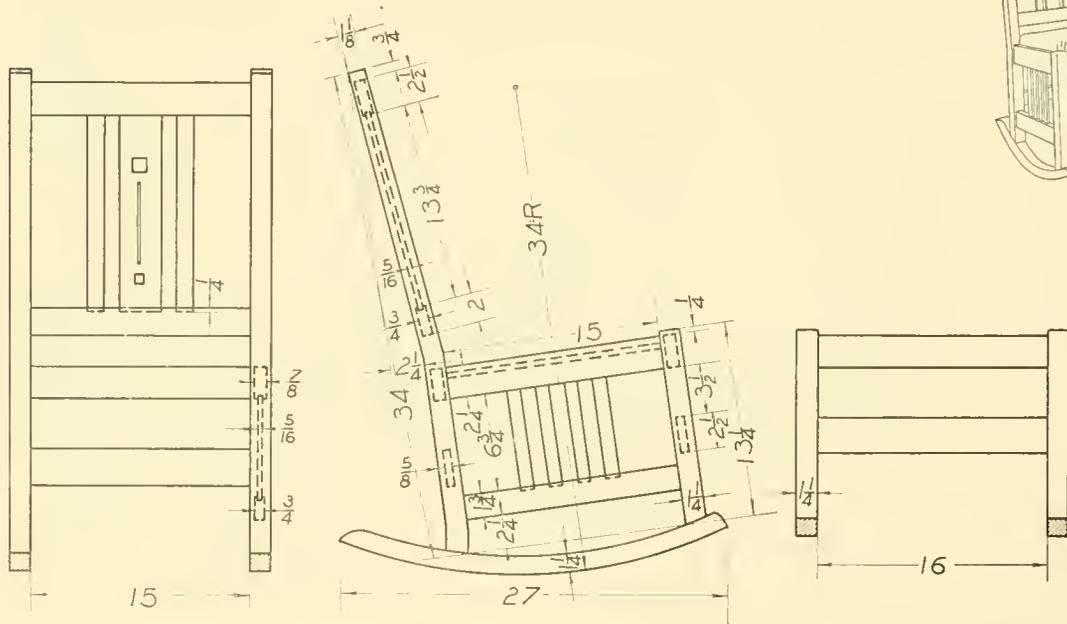
PEDESTAL



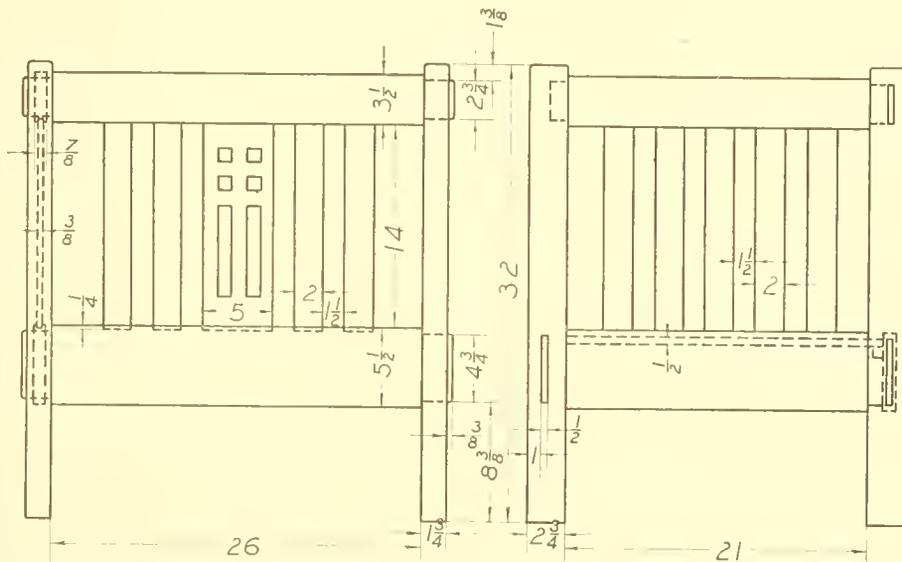
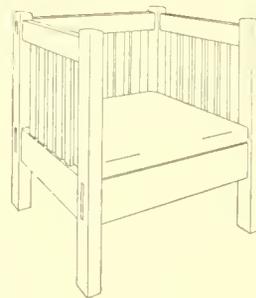
SECTION AT A-B



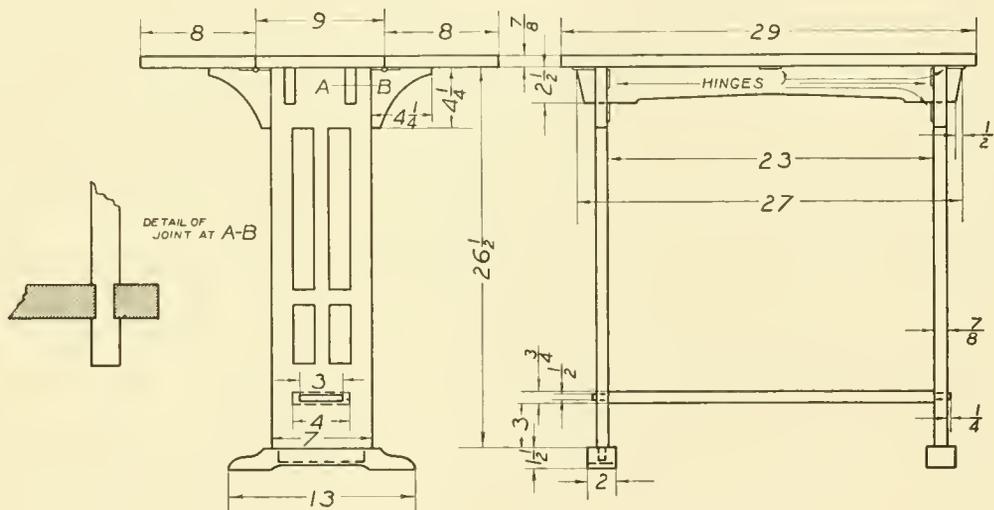
OCCASIONAL ROCKER



MISSION CHAIR

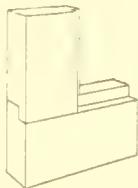


DROP LEAF TABLE

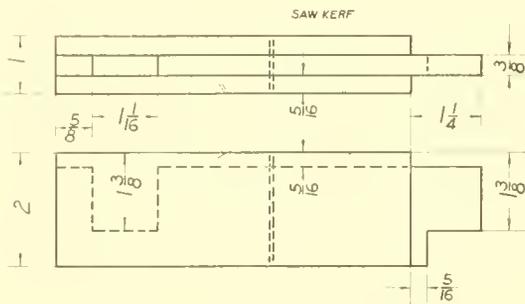
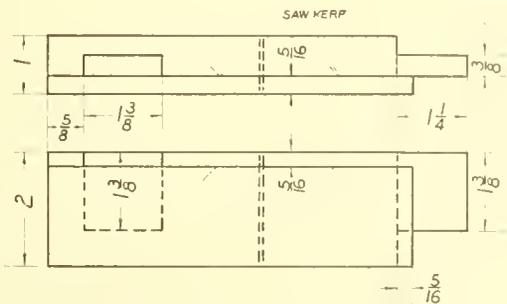
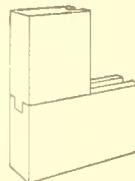


EXERCISE - PREPARATORY TO GROUP X

MORTISE AND TENON-RABBETED

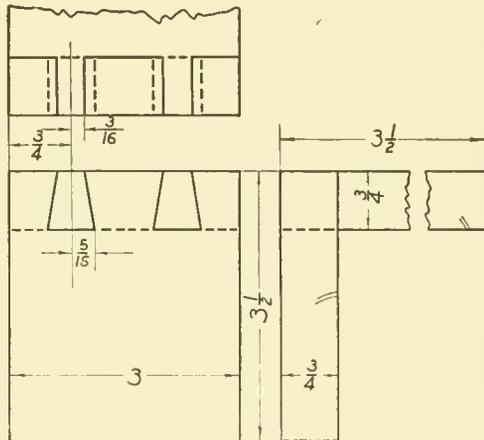
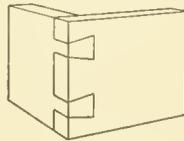


HAUNCHED MORTISE AND TENON-GROOVED

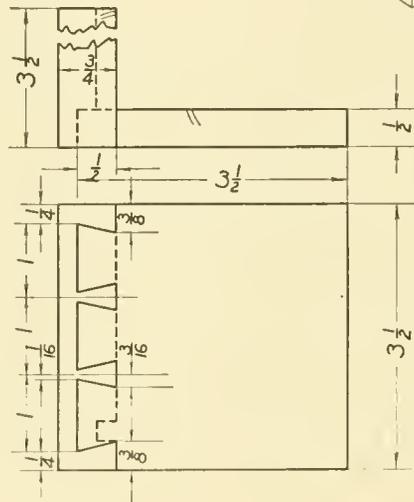
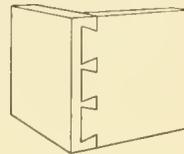


EXERCISE—PREPARATORY TO GROUP X

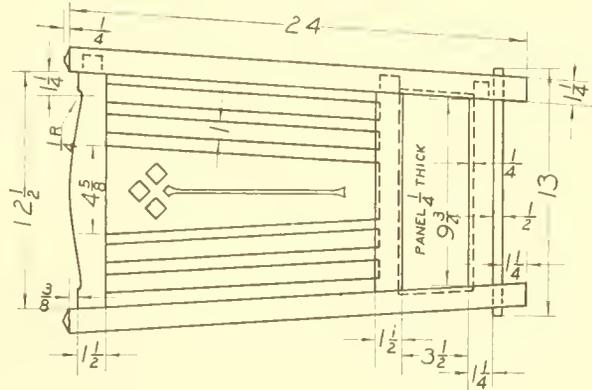
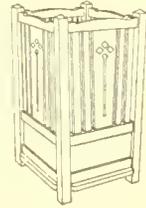
THRU MULTIPLE DOVETAIL



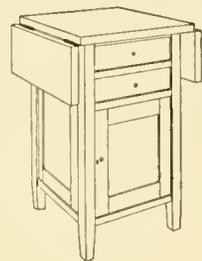
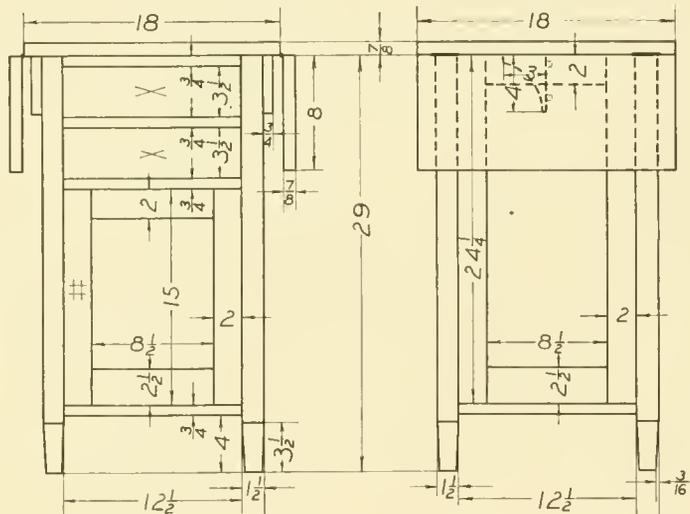
HALF-BLIND DOVETAIL



WASTE PAPER BOX



SEWING CABINET



CABINET

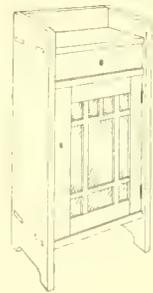
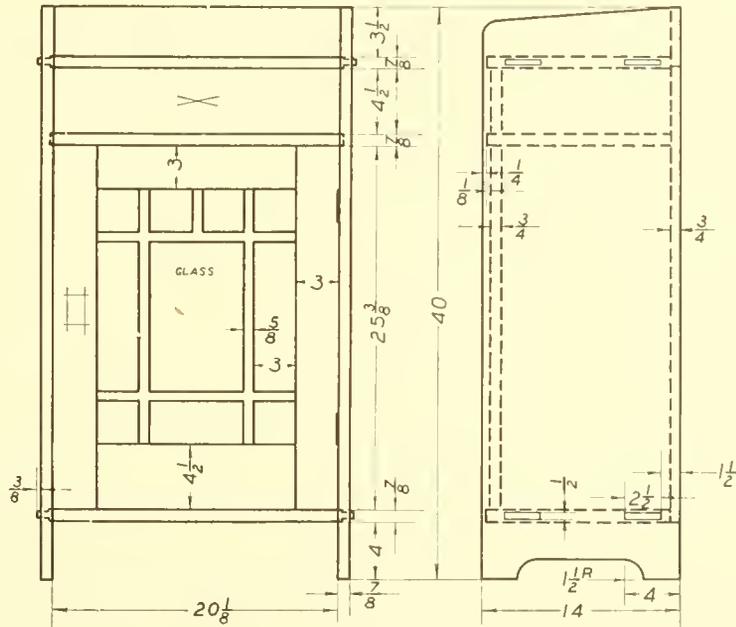
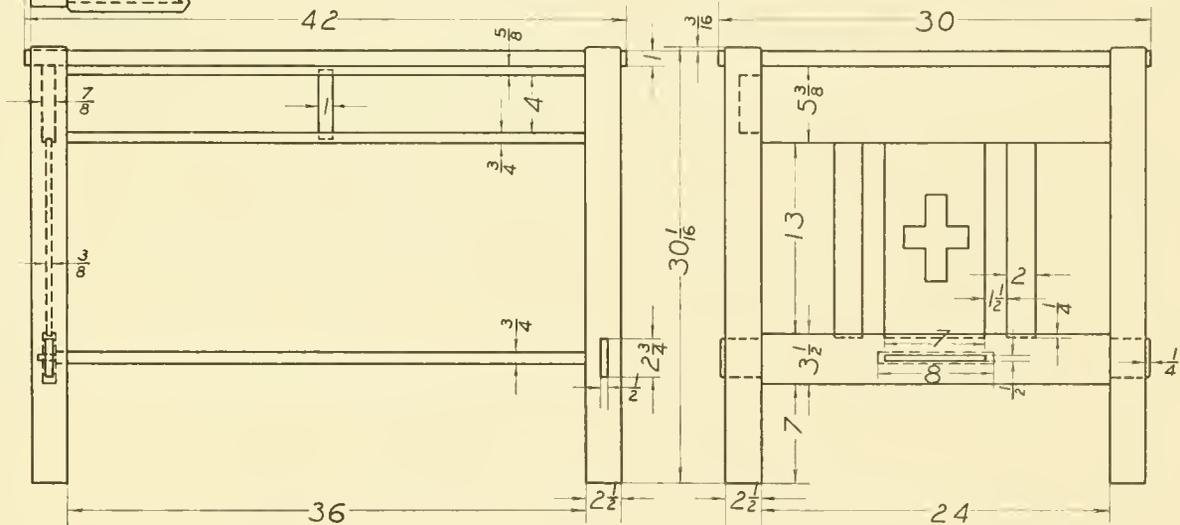
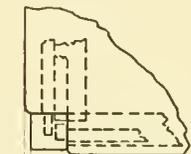
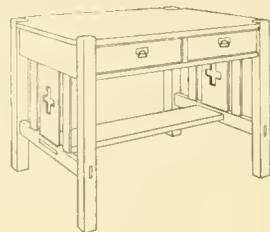
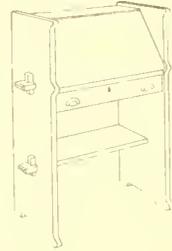
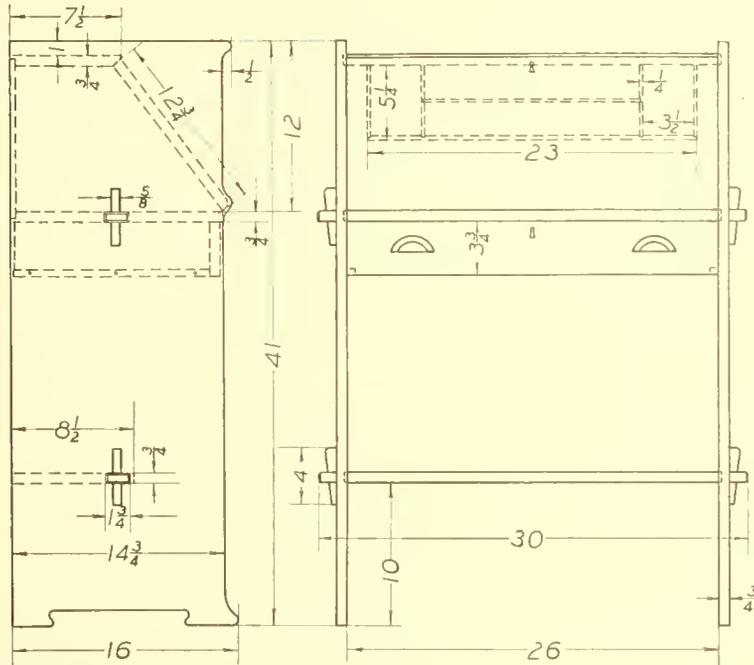


PLATE 47

LIBRARY TABLE

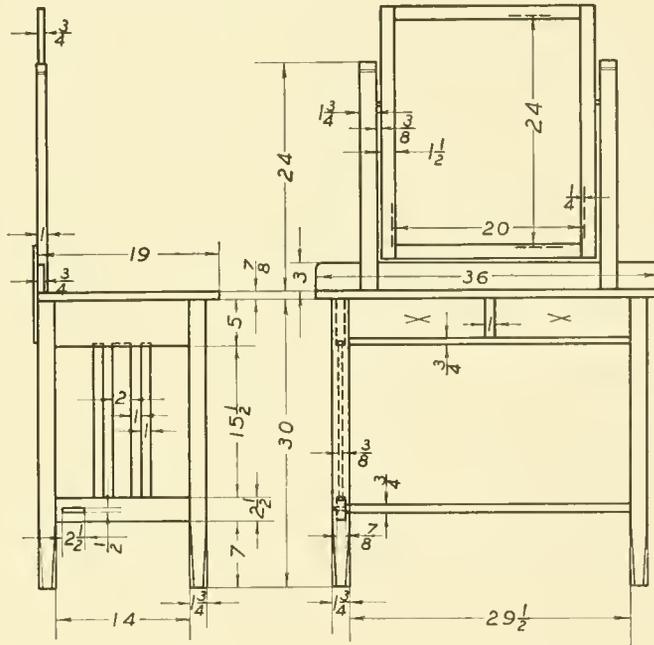


WRITING DESK



COMMERCIAL DESIGN

DRESSING TABLE



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ESSENTIALS OF WOODWORKING. By Ira S. Griffith. A textbook written especially for grammar and high school students. The standard textbook on elementary woodworking. A clear and comprehensive treatment of woodworking tools, materials, and processes, to supplement, but not to take the place of the instructions given by the teacher. The book does not contain a course of models; it may be used with any course. Price, 75 cents.

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WOODWORK FOR BEGINNERS. By Ira S. Griffith. A grammar grade textbook. A clear and simple treatment of the fundamental facts regarding tools, materials and processes as presented in well organized courses in the seventh and eighth grades. Not elaborate yet it meets all requirements. It is well illustrated and is convenient—pocket size. Price, 50 cents.

PROBLEMS IN MECHANICAL DRAWING. By Charles A. Bennett. A students' textbook consisting of 80 plates of problems, classified into groups according to principle and arranged according to difficulty of solution. The problems have been selected with reference to the formation of good habits in technique, the interest of the pupils and the subjects generally included in a first-year high school course. Each problem is given unsolved and therefore in proper form to hand to the pupil for solution. Price, 75 cents.

MECHANICAL DRAFTING. By H. W. Miller. A textbook on mechanical drawing, and advanced high school students. It supplements the work of the instructor in such a way as to reduce lecture work to a minimum. It shows a wise selection of material, a keen insight into the work of the draftsman, and a thoro knowledge of the principles and methods of teaching. Above all it is a practical treatment of subject matter and a students' text easily adaptable to varied schools and conditions. Price, \$1.50.

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SHOP PROBLEMS. By Albert F. Siefert. A new departure in helps for teachers of the manual arts. It is a portfolio of tracings—working drawings of projects printed on tracing paper ready to be blue printed for students use. The problems include a wide variety, many new and all of good design. Published in series 1, 2 and 3. Price per series, 30 cents.

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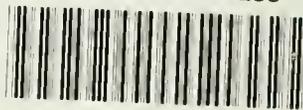
PROBLEMS IN WOODWORKING. By M. W. Murray. A convenient collection of good problems consisting of forty plates of working drawings, of problems in bench work that have been successfully worked out by boys in one of the grades from seven to nine, inclusive. Price, 75 cents.

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