GILBERT
CARPENTRY
FOR BOYS

BY
ALFRED C. GILBERT
YALE UNIVERSITY · 1909

PP 28 - PP 41

PUBLISHED BY
THE A. C. GILBERT COMPANY
NEW HAVEN, CONN.

THINGS THAT CAUSE THE PLANE TO CHOKE.

1. The cutter is dull.
2. The blade projects too far.
3. Improper placing of frog.
4. Improper setting of the cap on the cutter. Cap trouble may be avoided by seeing that it fits close to the cutter.

For sharpening the plane, use the same directions as for chisel. Be careful about throwing the plane carelessly around the bench, and by all means avoid nails.

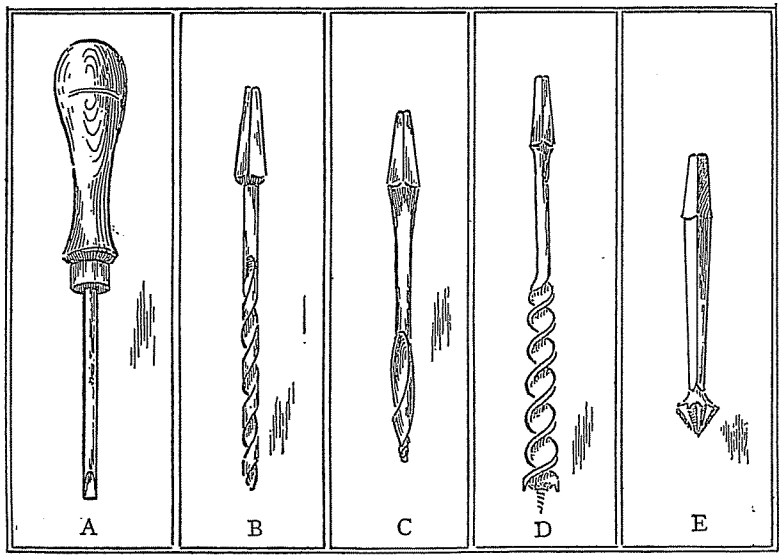

Fig. 23

BORING TOOLS. The most important of boring tools (See Fig. 23) are the brad-awl (A), twist-drill (B), gimlet-bit (C), and auger-bit (D).

THE AWL. There are scratch-awls and brad-awls. The scratch-awl is a pointed tool and the brad-awl is wedge shaped. Awls work by forcing material apart. Care must be used so that they will not split the wood. The use of the awl is limited. It is useful in soft wood where small holes have to be made, and particularly in jig-saw work. The scratch-awl is important for marking, and is much more accurate and better than a pencil. The awl has the advantage over other types of boring tools in that it is easily sharpened.

TWIST-DRILLS. Twist-drills are, generally, highly hardened and, consequently, are particularly useful in the drilling of metal. They are also quite necessary in wood-working, because you will sometimes drill holes where you are not sure that the wood is free of nails. Therefore, if you are working on anything where there may be nails always use the twist-drill.

GIMLET-BITS. This is a cheap bit for drilling small holes and certain classes of work require its use. Although they are small, they will drill deep holes, and have one distinct advantage, that is, centering.

AUGER-BITS. Twist-drills, gimlet-bits, and auger-bits remove materials. There are three distinct features of the auger-bit: first, is the pointer screw which places the auger-bit and also pulls it into the wood; second, the nib on the outside of the cutters which scores the circle; and third, the lips which cut the wood out of the circle after the nibs have scored the circle.

HOW TO BORE HOLES WITH AN AUGER-BIT. Do not bore clear through, for if you do you will splinter the wood on the opposite side. When the point comes through, the work should be turned over and the hole either cut out from the opposite side or the auger-bit reversed and the hole bored through. This is done by putting the point of the auger-bit on the opposite side, which will center it exactly, making a nice clean hole.

DISTANCE BORING. This method of boring is used where you do not intend to bore through the piece but wish to form a hole for dowels, etc. Experience will teach you how deep to bore, but the novice will find it advantageous sometimes to cut off a piece of wood the proper length and drill a hole through that, using it as a guide. Do not ever attempt to mark the auger for depth.

HOW TO HOLD THE BRACE IN BORING:

1. Train the eye to bore perpendicularly to the surface. Practice sighting from the front and side and you will soon be able to drill a straight hole.
2. A try-square placed along the side of the auger-bit will sometimes assist.

3. If augers are in good shape, sharp, and of good steel, it is not necessary to press down upon the brace, for the threaded point of the auger is intended to and should pull the auger through the wood. Sometimes, however, a little pressure should and must be used. If you use too much pressure, you will find that you will force the bit through and break the wood away, whereas if the pressure of the brace in your hand is applied only when the bit is nearly through the board, the auger will pull itself out of the hole. After a little practice and experience in boring, if you have followed this advice, you will not need to be so cautious about watching the other side of the board for the point coming through.

SHARPENING THE AUGER-BIT. A special file is made for this purpose, called the auger-bit file.

1. File the nibs on the inside of the bit.
2. Sharpen the cutting lips from the upper side.

NOTE. The most common mistake beginners make, and a serious one, is filing the nibs on the outer surface. If you will give this a little thought, you will be impressed with the fact that if this is done it makes the cutting nibs begin a hole, the diameter of which is less than that of the twist. The result is a wedging action which stops further cutting.

In filing the under side of the lips be sure to get a good clearance. In boring, the lips move downward at a rapid rate.

COUNTERSINKS. From observation of Fig. 23, E, you will see that the purpose of countersinking is, as the name implies, for setting the hole down, after it has been drilled, for the heads of screws, etc.

SCRAPING TOOLS. Scrapers are just pieces of flat steel with square sharp edges. The cutting properties of scrapers depend upon the burr on the edge of the scraper. They are useful in dressing up woodwork.

SANDPAPER. Sandpaper should be fine, and its only purpose is to make the work smooth. Sandpaper simply makes a fine dust, while the scraper, if properly sharpened, actually takes off very minute shavings. Sandpaper always follows scraping. Always sand in the direction of the grain. If large surfaces are to be sandpapered, it is sometimes well to tack the sandpaper on a block, as it will expedite the work and make it much easier.

THE HAMMER. There are two types of hammer — the bell-faced and the flat-faced hammer. On bell-faced hammers the face is convex. This enables driving the nail so that it is flush with the surface or below it. The disadvantage of the bell-faced hammer is, that it is difficult to strike a nail squarely.

THINGS TO AVOID ABOUT THE HAMMER

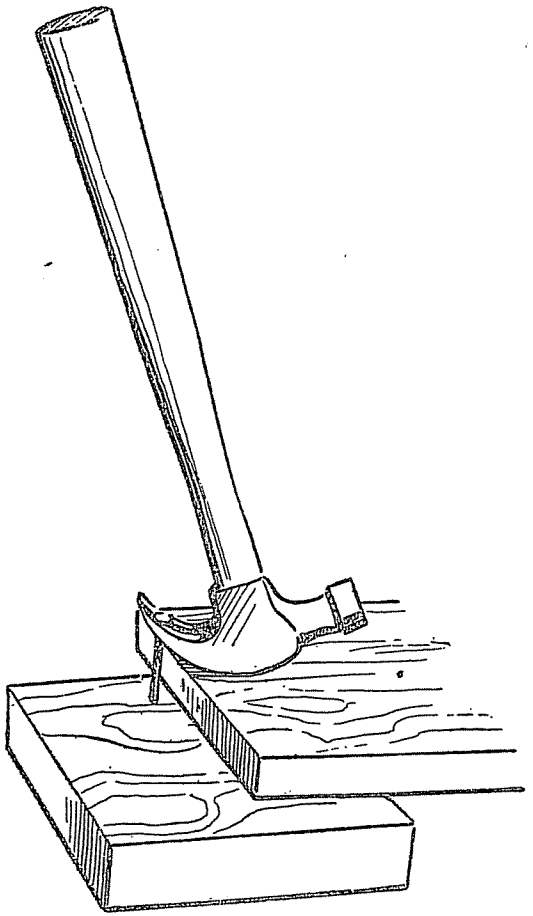

Fig. 24

1. Keep the hammer smooth, for if any sticky material gets on the surface, it is apt to bend the nail.

2. Don't use the hammer on your chisel, for hammers are intended to hit iron only. Mallets are used for hitting wood.

HOW TO USE THE HAMMER. Hold the hammer at the end. Follow the nail with a quick drive, except on the last blow, when the hammer should be drawn back with a rebound. (See Fig. 24, showing how the hammer should be held for pulling a nail.)

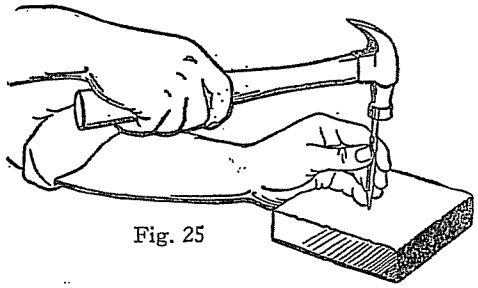

Fig. 25

NAIL SETS. Nail sets are hardened steel tools for driving nails below the surface of the wood. In using the nail set, the point should be held onto the head of the nail between the third and fourth finger. (See Fig. 25.)

MARKING GAUGE. This is quite an asset at times for marking, as the head is adjustable. (See Fig. 26, A and B.) This tool is not absolutely essential for general work.

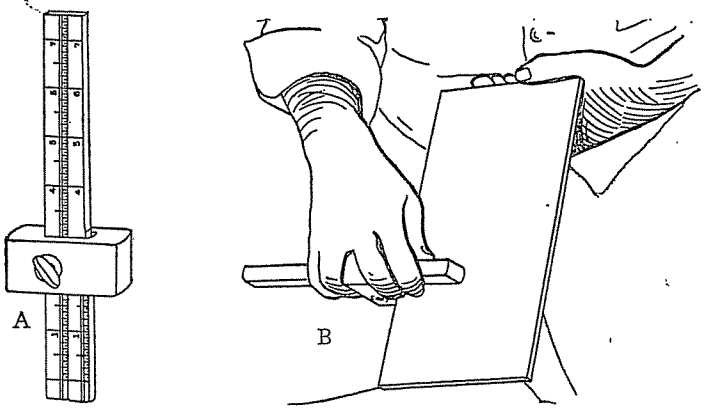

Fig. 26

MALLET. The mallet is hard wood throughout, head and handle, and is used mostly in chiseling. Nothing but a wood mallet should ever be used in driving a chisel.

SAWHORSE. This is extremely useful in wood-working room and particularly for sawing materials. (See Fig. 27.)

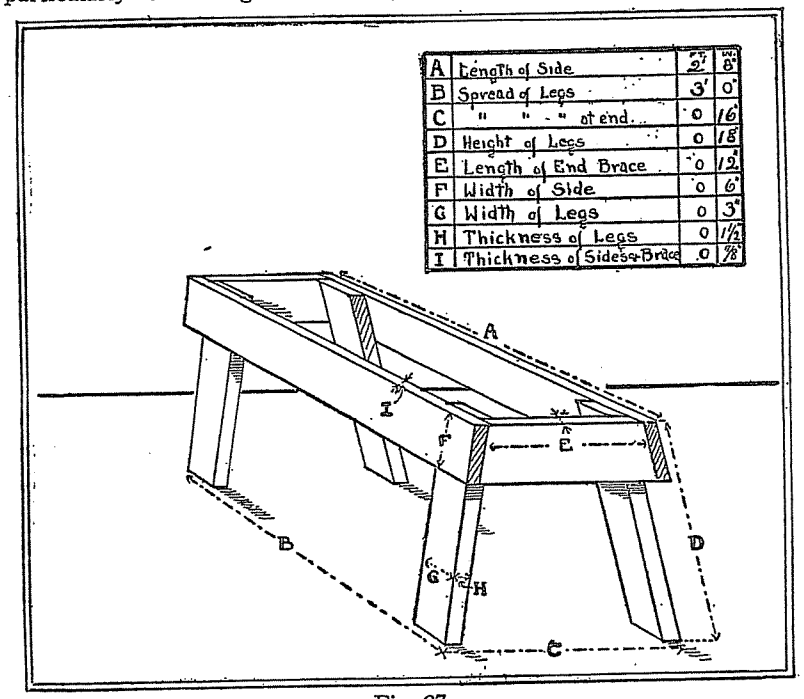

Fig. 27

SCREW-DRIVER. The important thing about the screw-driver is to have the right temper at the tip; not too hard so it will break off, and not too soft so it will bend. If you should break your screw-driver point, it can be reground. The important thing in grinding a screw-driver is not to make the angle at the point too obtuse; if you do, it will slip out of the slot of the screw. Remember that a long screw-driver is better than a short one, and is more powerful, giving a better leverage.

THE STEEL SQUARE. For more advanced carpentry the steel square is quite essential. All sorts of measurements, graduations, etc., are on the best steel squares. We refer the reader to other books on the

steel square (usually technical books) for detailed information of measuring, etc.

TRY-SQUARE. This is a more useful tool for general novelty woodworking, as it will answer most purposes for measuring, and is in every respect more practical and convenient for fine work. For squaring up and matching the surfaces of the wood it is ideal, as it is for getting right angles, for marking, and drawing lines.

NAILS

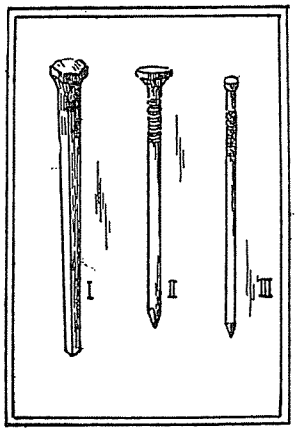

Fig. 28

There are the common cut nails, flat-headed wire nails, and finishing nails. (See Fig. 28, I, II, III.) Wire nails are probably the most useful, as they do not crack wood as quickly as cut nails, and have the advantage of holding just as well as the cut nail. They may be clamped without breaking. It is well to remember that when nails point together the strength of the holding qualities in the nail can be increased by driving them at right angles to one another.

The size of nails is indicated as follows:

1d (penny) nail
4d (penny) nail — 1½" long
6d (penny) nail — 2" long
¼" is added for each penny

The advantage of the finishing nails is that the heads are small and they can be set easily with a nail set, thus permitting the space left to be plugged with putty. They are especially useful for fine work.

GLUE

HOW TO TELL A GOOD GLUE. A good glue should be transparent, and without spots. When in a cake it should be hard and of an amber color.

HOW TO TEST GLUE. Put it in water when it will become jelly-like and swell. The better quality of glue swells without dissolving. Glue that dissolves is poor.

HOW TO MAKE HOT GLUE. Break it into small pieces, cover with cold water and let it soak until it is soft. This generally takes about twelve hours. Then heat. Remember that repeated heating and re-use of the glue will weaken it. In using glue it should be thin; thin enough so it will drip from the brush. It is very important that the work should be warm and the glue hot. It is a good plan to scrape the work before gluing. It will hold better. If you are making articles that are going to be subject to water it is necessary to have waterproof glue. This can be accomplished by adding one part of potassium bi-chromate to fifty parts of glue.

Another essential thing is that, as soon as the glue is applied, put the parts together at once. Work fast. When the work is glued it must be held together for at least six hours by clamps.

SCREWS

There are flat head, oval countersunk head, drive screw, square head cog screw, round head and fillister head screws. (See Fig. 29, I, II, III, IV, V, VI.) The size of the screws is indicated as follows: a ⅜", 8/32 screw is ⅜ inch long, of No. 8 wire with 32 threads to the inch.

In putting screws in wood it is well to remember that it is always best to drill the hole before inserting the screw, and it is a good rule to make the hole large enough so that the screw will not have to be forced in too tight. Before inserting the screw the hole should be countersunk. There are many times when it is advantageous to use screws.

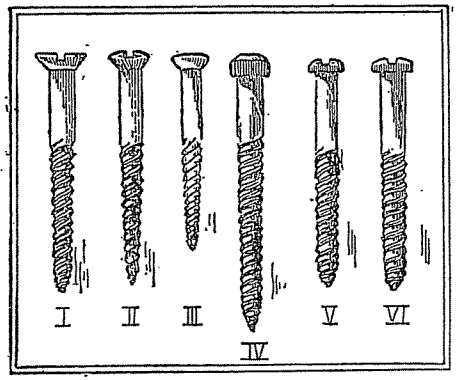

Fig. 29

The advantages are:

1. It makes the work stronger to use screws.
2. Screws have an advantage in that they may be taken out easily.
3. Screws may be retightened if they get loose.

The disadvantages of the screws are:

1. Too expensive.
2. Slow to work with.
3. Hold poorly in ingrained wood.

SHELLAC

Every wood-worker should have a glass of shellac. Do not keep the shellac in metal cans.

JOINTS

There are many varieties of joints, and for detailed description of the various mortises, joints, etc., used in extra fine cabinet work, reference should be made to more elaborate works on carpentry, as the illustrations shown on pages 37 and 38 (Figs. 30 and 31) are of the common joints and mortises, used almost daily. You will be able to select the most appropriate joint for the kind of work you are attempting, from the illustrations shown, as we feel sure they are sufficiently clear to enable the amateur to use his own imagination in devising plans and layouts for doing successful work.

* * * * *

Reference Books:

"Handwork in Wood." William Noyes.
"Wood and Forest." William Noyes.
"Handicraft for Handy Boys." A. Neely Hall.
"The American Boys' Work Shop." Clarence B. Kelland.
"Carpentry and Woodwork." Edwin W. Foster.
"The Field and Forest Handibook." Daniel C. Beard.
"The Boy Craftsman." A. Neely Hall.

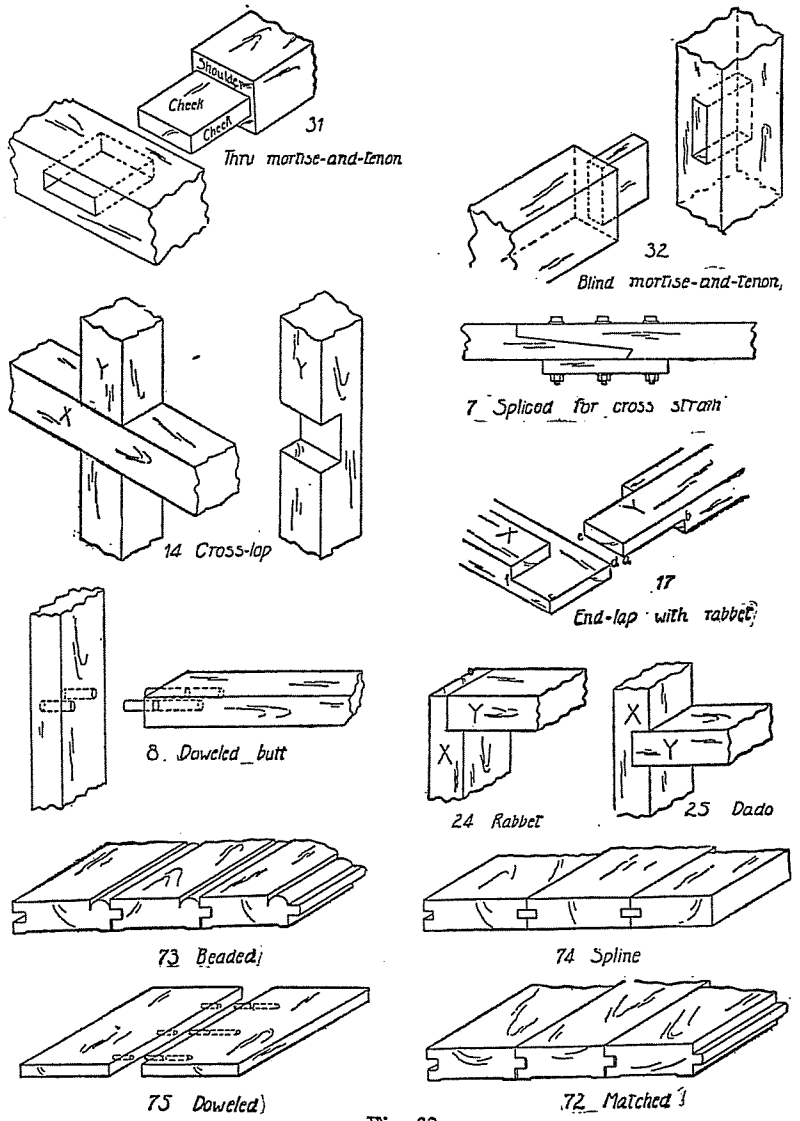

Fig. 30

(Cuts of joints, through courtesy of Manual Arts Press, Publishers, "Handwork in Wood.")

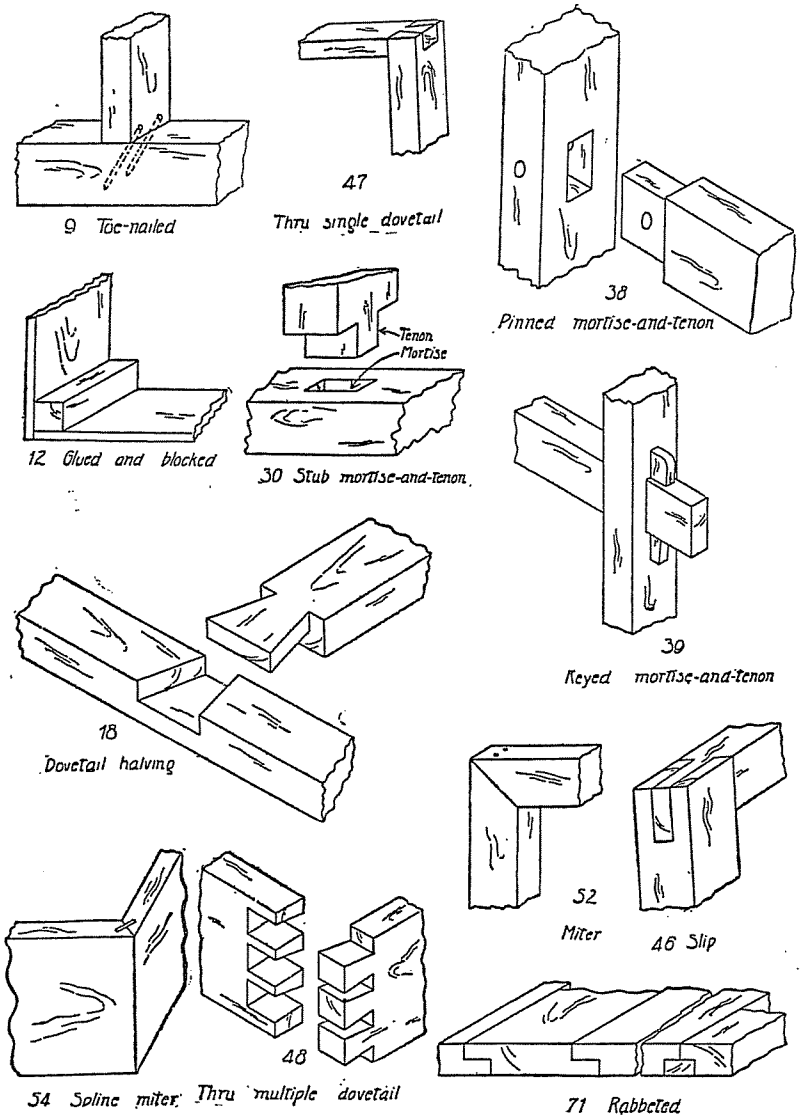

Fig. 31

(Cuts of joints, through courtesy of Manual Arts Press, Publishers, "Handwork in Wood.")

PART II

USEFUL AND INTERESTING ARTICLES THAT CAN BE BUILT EASILY

The following pages contain working drawings and detailed descriptions of a number of useful articles that can be built in the home workshop.

Dimensions are given on all drawings as well as all necessary information on proper woods and the materials to be used.

CLOCK CASE Fig. 32

This is a most excellent article for a gift. It will be acceptable for any season of the year, though particularly appropriate for Christmas.

The general dimensions of the case shown in the drawing will permit the use of a clock, the face of which may vary from two and one-quarter to two and five-eighths inches in diameter. It will be necessary that you have at hand the clock which you wish to use, or that you are very sure of the size of it, as the dimensions to which the case is made depend upon the size of your clock.

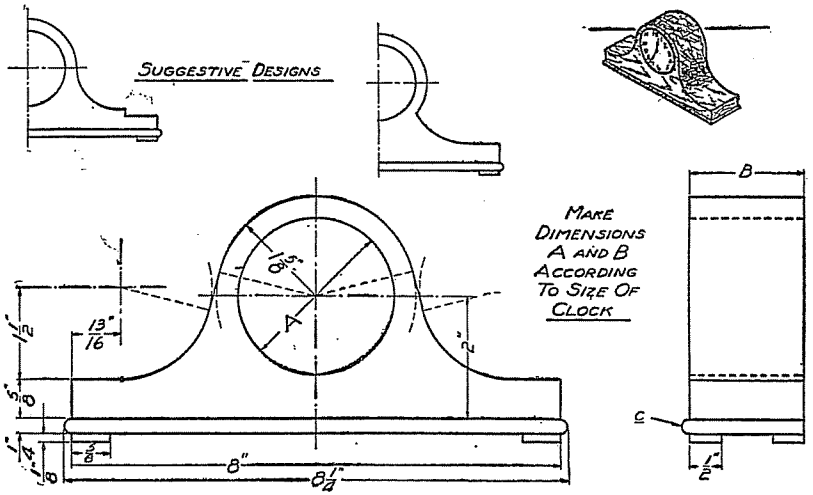

Fig. 32

Gumwood will make a very good wood for this case as it will take a very good brown or mahogany finish. Select wood of a thickness to suit the size of the clock, or glue two pieces together to produce this dimension. Square the piece to the largest dimensions, then lay out the design as desired. The suggested design fits the general dimensions of the case shown. Bore the hole for the clock before working the design to shape. For this an expansive bit will be necessary. The hole should be bored from both sides, hence its location should be laid out on both sides of the stock very accurately. Next cut to shape according to the

design used. For this a turning or coping saw will be necessary. In using the latter, great care will be necessary. Next make the other parts shown in the drawing, then sand all parts well, and assemble. The sanding is important, especially on the end grain, a great deal of which will be exposed. Unless this part is very smooth, the stain will show darker than on the other surfaces. Even with good surfaces, the stain should be applied very sparingly and wiped off immediately, rubbing the parts well. It may even be necessary to go over the end grain very lightly with sandpaper to bring that portion to the same shade as the balance of the piece.

A wax finish will look very well. Shellac is also very good. Apply the latter in very thin coats, rubbing lightly with fine sandpaper after each coat.

CANE-TOP STOOL Fig. 33

For the cane-top seat or stool first plane up the legs 1⅝" x 1⅝" x 14½". Then lay out the location for the holes and bore them. According to the dimensions on the drawing a one-inch bit should be used, but if dowels smaller than one inch are to be used, the holes will have to be bored accordingly. Chamfer the top of each leg ¼" and taper to 1¼" on the bottom, beginning 6½" up from the end that rests on the floor.

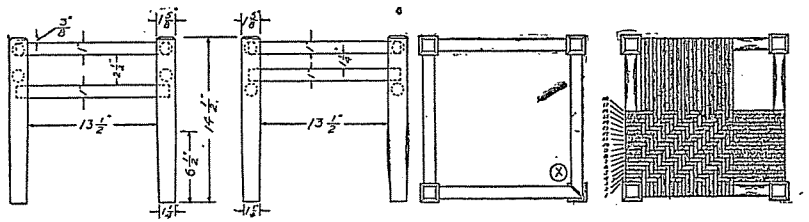

Fig. 33

Make the dowels or spreaders about 15" long. To make these, plane up eight pieces one inch square and then plane the corners until as round as possible, after which finish with sandpaper. The ends are mitered, as shown at **X**, on the four upper rungs only.

Assemble the parts, see that they fit well and then take apart and reassemble, using glue to hold them together. Sandpaper all parts,