

GILBERT  
CARPENTRY  
FOR BOYS

BY  
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YALE UNIVERSITY • 1909

PP 14 - P 27



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

**CHERRY**

Grain: Straight, close  
Color: Light brown, sapwood yellow

Weight: Medium

Elasticity: Medium

Strength: Medium

Qualities:

Takes a fine polish, works up nicely, nails badly because it splits easily, very beautiful High - grade interior work; fine cabinet and novelty work, decorative finishing, cars and boats, furniture, turnings

Uses:

Weight: Heavy

Elasticity: Medium

Strength: Medium

Qualities:

Hard wood to work; difficult to split, polishes well, strong and tough, grainy sometimes; not durable when exposed Quite popular as furniture, interior finishing, carving, pianos, flooring, ceilings, paneling, car constructions, keels for boats and ships, rivals with oak for furniture sets. Also used for machinery and implements, shoe lasts and shoe pegs, wood-carving, tool handles, scroll-saw work

Uses:

**MAHOGANY**

Grain: Crooked

Color: Reddish brown

Weight: Heavy

Elasticity: Medium

Strength: Strong

Qualities:

Extremely hard, warps very little; hard to work; splits easily; hard to nail Quite popular for office furniture and other kinds of furniture; used in novelty and cabinet making; veneer work; is not as costly as is generally supposed

Uses:

Grain:

Color: Light brown

Weight: Light

Elasticity: Medium

Strength: Weak

Qualities: Warps a little, durable, works nicely, does not split easily in nailing, shrinks in drying Nice boxes, all kinds of wood-working, novelty work, furniture and woodenware, cooperage, toy making, wood-carving, turning, carriage bodies

Uses:

**MAPLE**

Grain: Close

Color: Creamy white, light brown in heart

**ASH**

Grain: Straight

Color: Light brown

Weight: Medium

Elasticity: Medium

Strength: Strong

Qualities:

Hard to work, splits easily, does not warp, hard to nail, as it splits, not durable

Uses:

Cabinet making, cooperage, fences, splints, furniture, carriage building, agricultural implements, oar handles

Color: Light brown, sapwood yellowish

Weight: Heavy

Elasticity: Medium

Strength: Very strong

Qualities:

Durable, hard to work, hard to nail, hard to shape, tough, does not split easily, checks and warps

Uses:

Cooperage, bridge timbers, wheels, floorings, construction of cars, wagons, saddlery, boats, harness work, furniture, shipbuilding, machinery and agricultural implements

Grain:

Interlaced

**ELM****FINISHING**

It is hardly necessary to say that the finishing of woodwork is as important as construction, for even though the greatest care may have been used in the construction of an article, the very finest piece of work can be ruined by carelessness in finishing the wood. You have to depend upon your experience, observation, and taste, to determine the style or finish to select for the various kinds of work you are doing. The finish depends upon the wood used, but probably more important than this is the nature of the article you are making and the conditions to which it is exposed.

**PAINT**

The most satisfactory way to be assured of a good finish is to purchase paints already mixed. In adhering to this rule you are almost certain to get the color desired.

**THINGS THAT EVERY CARPENTER SHOULD KNOW ABOUT PAINTS.** Red and yellow mixed together make orange. Blue

and yellow make green. Red and blue make purple. Green and red make brown. White and black make gray.

A variety of other colors may be made by different mixtures of these combinations and by using different proportions.

**CARE OF YOUR BRUSH.** When you are through with your brushes always wash them in turpentine. This will prevent the paint from adhering to them and will preserve the brushes.

### IMPORTANT THINGS TO KNOW IN PAINTING:

1. After dipping the brush into the paint, it should always be scraped on the edge of the paint can to prevent dripping and the consequent spotting of your work.
  2. Start at one end of your work and continue to brush toward the other end.
  3. If your work is quite porous, it is better to put on a priming coat, which is usually done by applying a coat of shellac. This is also necessary, if there are any resinous knots in the wood.
- This filling coat should be dried; then all nail heads and cracks puttied up; and lastly, the entire surface should be sandpapered smooth so that it will be ready for the second coat.

## STAINING

Where it is desirable to follow the grain of the wood and you think your work requires this treatment, staining is the process. Furniture, attractive boxes, and highly grained woods are always stained, as the beauty of the grain is brought out in this way.

**WATER STAINS.** Water stains are used only in the very cheapest kind of work, as they roughen the grain of the wood. Water staining is resorted to quite often in small wood turnings. After staining, these turnings are rolled in wax or sandpapered. Water staining has a distinct advantage over oil staining, as it brings out the delicate lines and grain. We do not recommend water staining except in exceptional cases. It is hard to apply.

**OIL STAINS.** Oil stains give much better results than other stains. In purchasing oil stains you will find full directions accompanying them, or they may be had on application. Let us warn you always to sandpaper

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your work before staining. It is even more important than in painting. We recommend applying the stain with a cloth, rubbing it in vigorously. To get a higher finish you can allow the work to dry a day or two; then go over it again.

**WAXING.** If you desire to improve the finish after staining, apply wax. Prepared wax can be purchased at the paint stores. Like stain, it is rubbed on with a cloth and then polished. The staining gives a dry appearance to the wood and wax will give it a glossy finish that enhances the workmanship very much.

**SHELLACKING.** We recommend white shellac, as it gives the wood a nicer tone, except in the case of soft wood where orange shellac should be used. Shellac should be applied with a brush. If the shellac gets thick, it can be diluted with alcohol, but remember it must always flow freely over the work. It is not necessary to go over the work more than twice, in shellacking. Let the first coat dry for at least a day; then, sandpaper your work and apply the next coat. Do not sandpaper after the last coat, but rub with a soft cloth, dipped in powdered pumice-stone and moistened with linseed oil.

In all painting, shellacking, staining, etc., it is recommended that the nail holes be puttied up after the first coat or priming coat.

**VARNISH.** This is resorted to, as a rule, only in novelty work, where the material is going to be subjected to water. Varnish requires considerable time to dry.

**OILING.** You will scarcely ever have use for oiling. We mention this, because it is used only where it is desired to bring out the grain of the wood very beautifully. It is used in articles made from cigar boxes. Oil is applied with a rag.

**PUTTY.** Putty may be purchased in sealed cans at a small cost. Remember that a very little putty goes a long way; it is well to keep in mind also that it may be kept soft by placing it in water. Putty should be kneaded in the fingers before working.

**WARNING.** Avoid spontaneous combustion caused by allowing waste rags to lie around. These should be burned up immediately after using. Many fires have been caused by leaving these around, particularly in paint rooms.

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## TOOLS

## HOW TO USE AND SHARPEN CARPENTERS TOOLS

**CUTTING TOOLS.** Probably the most important cutting tool is the chisel. The essential feature of the chisel must be kept perfectly flat. The one side only. The back of the chisel must be kept perfectly flat. The face is ground to a bevel. The very best chisels have leather ends in the handle.

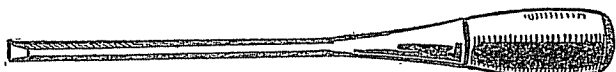
A



B



C



**THE PARING CHISEL.** This is intended to be used with hand pressure only. (See A, Fig. 3.)

**THE FIRMER CHISEL.** This is for heavier cutting, and is built to stand use with the mallet, but it is suitable both for hand pressure or mallet work. (See B, Fig. 3.)

**THE MORTISING CHISEL.** This is thicker than other chisels, consequently stiffer, and is, as the name indicates, for cutting out mortises. (See C, Fig. 3.)

There are many varieties of chisels, such as corner chisels, round-nose chisels, etc., used in various other kinds of work, but these are not essential to wood-working.

**PARING WITH THE CHISEL.** In paring, the chisel should be reversed, that is, the flat side should act as a guide. The object in paring is to remove shavings rapidly. (See Fig. 4.) Note proper method of handling chisel for paring.

**SIDEWISE CHISELING.** Method of holding is the same as in paring. (See Fig. 5 and Fig. 6.)

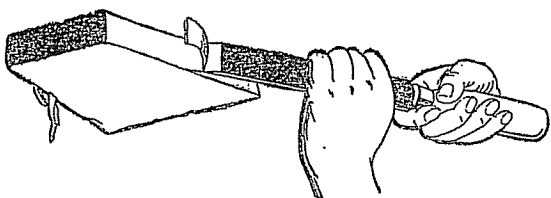


Fig. 4

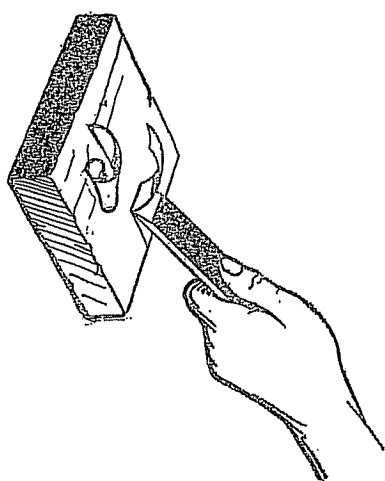


Fig. 5

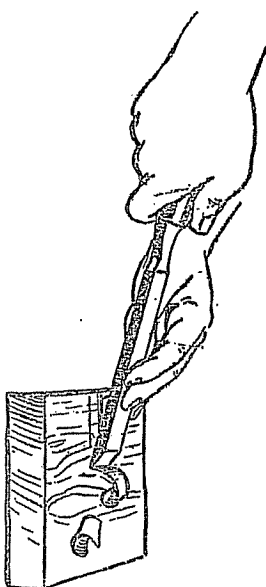


Fig. 6

**ENDWOOD CHISELING.** It is necessary to use considerable force in endwood chiseling, sometimes called perpendicular chiseling. (See Figs. 7 and 8.) Consequently, only thin shavings should be taken off at a time. You may use a mallet, but considerable care must be used if you do so. It is important that your chisel should always be sharp. (See Fig. 9, showing the right and wrong method of perpendicular chiseling.)

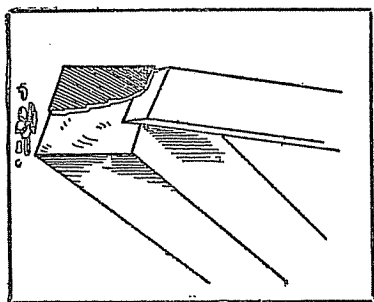


Fig. 7

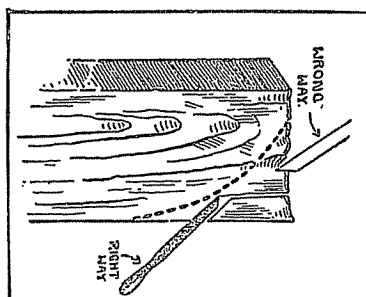


Fig. 9

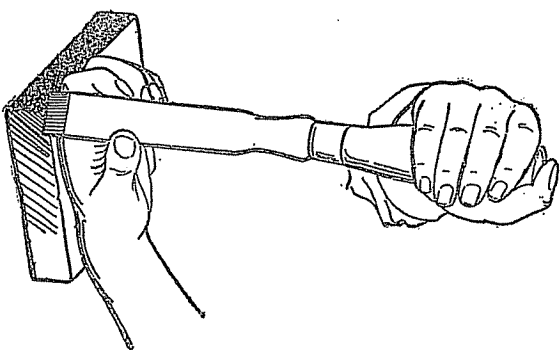


Fig. 8

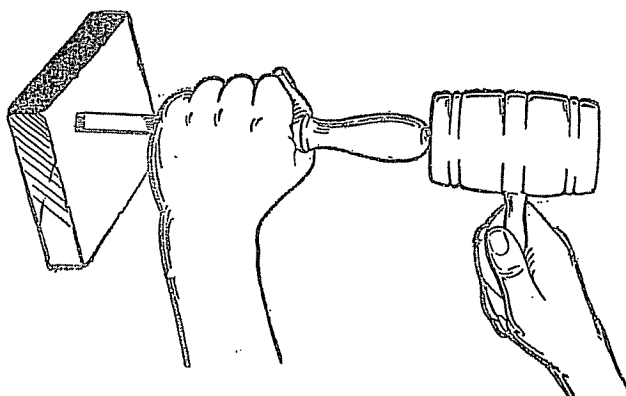


Fig. 10

**USING THE Mallet IN CHISELING.** (See Fig. 10, showing how to hold the chisel when using the mallet.)

**SHARPENING THE CHISEL.** Essential points:

1. Always remember to keep the back perfectly flat.
2. Use grinding stone on the face of the bevel. (See Fig. 11.) The grind-

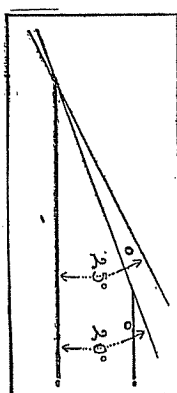


Fig. 11

ing angle is 20° and whetting angle, 25°.

3. In grinding the edge see that you keep it straight, that is, at right angles to the blade.

4. Whetting the chisel should follow the grinding. This should be done on an oil stone, and always see that there is plenty of oil on the stone. (See Fig. 12.)

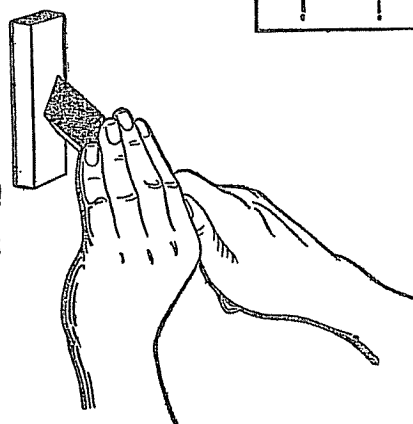


Fig. 12

A spiral movement is preferable, although you may go backward and forward, but it is absolutely important that it is steady and not a rocking motion. You will discover that in whetting you turn a little edge known as a wire edge over on the flat side. This is removed by turning the chisel over and laying it perfectly flat on the stone and rubbing it. This edge being removed the chisel is then whetted again as in the beginning and then reversed, repeating this operation until a keen cutting edge is obtained.

5. The last operation is stropping. This is done on a leather, first on one side and then on the other. But care must be used to hold the chisel in such a way that the bevel will be perfect. You may test the sharpness by running the thumb along the cut edge. If it feels smooth, you will know that it is dull. If it is sharp, it will have a tendency to cut through.

**DRAW-KNIFE.** Little explanation is required to know how to handle a draw-knife. In respect to a chisel, there is this difference—the draw-knife is drawn by the handles, not pushed into the wood. Its main use is in cutting

off large pieces, and consequently, it is extremely useful in drawing down narrow surfaces rapidly. The draw-knife, like the chisel, is ground with the bevel on only one side. The draw-knife is very useful in carved work.

**SAWS.** For practical purposes we are mainly interested in cross-cut saws, the rip-saw, the back-saw, the compass-saw, and the scroll-saw.

**GENERAL.** Generally speaking, the thinner the saw blade, the better; first, because less material will be wasted, and second, and most important, less strength will be required when using the saw. There is a great difference in the quality of saws. The cheaper saws are not drawn to as fine a temper. The ideal saw tapers in the width of the blade, that is, from the handle to the point, and it is thicker also at the heel or handle; its thickness also tapers from the teeth to the back. The idea of this is to give stiffness where it is most needed. The idea of having the saw thinner at the back is, that it gives clearance in its backward and forward movement and reduces friction. More important even than the thickness, is the setting of the teeth. The best saws have the teeth set so that one tooth points one way and the next the other, alternating.

**RIP-SAWS.** The object of the large saw is to cut with the grain; it should not be used to cut across the grain as it tears, leaving a jagged surface. (See Fig. 13, I, II, III.) The teeth on the large saw are filed to a sharp edge which acts like a chisel in that it removes small particles from the ends of the wood fibers.

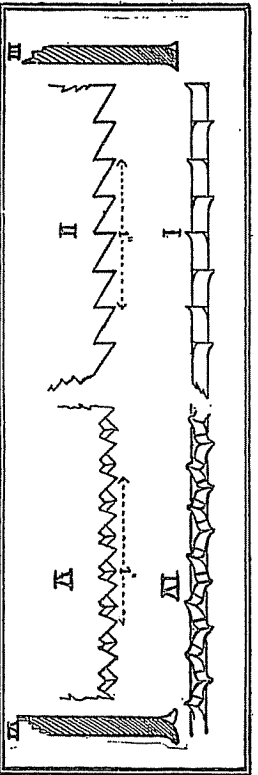


Fig. 13

- |                    |               |                   |                     |
|--------------------|---------------|-------------------|---------------------|
| I. Edge view       | Rip-saw Teeth | IV. Edge view     | Cross-cut Saw Teeth |
| II. Side view      |               | V. Side view      |                     |
| III. Cross-section |               | VI. Cross-section |                     |

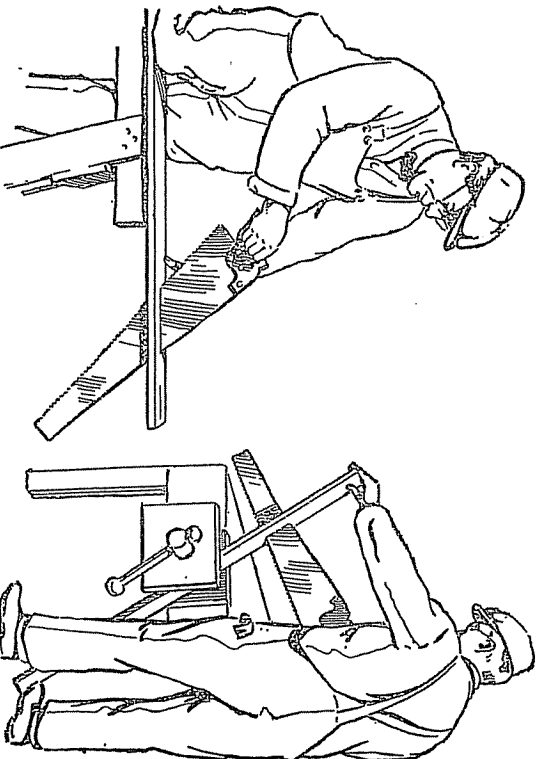


Fig. 14

Fig. 15

**CROSS-CUT SAW.** On a cross-cut saw the teeth are filed to points. (See Fig. 13, IV, V, VI.) A cross-cut saw should never be used to rip boards, because it works slowly (there being no chisel action to cut the fiber away like it does in the rip-saw). It is best always to plane a board after rip-sawing it, because it is apt to be ragged. In starting the cut with a cross-cut saw, saw lightly; that is, hold the saw freely in the right hand. The left thumb should be used as a guide. After you are well started, then the whole weight of the saw can be applied. Do not saw with a furious stroke, but with a natural, easy, light stroke. Sometimes it occurs that the saw will run away from the guide line. By short strokes at the point of the saw, then twisting the blade in the right direction, the saw can be brought back to the line.

If you have difficulty with the saw pinching, which happens sometimes, insert a wedge or screw-driver in the slot above the saw, just forcing it enough to permit an easy saw. A drop of oil will sometimes accomplish the same results. See illustrations of rip-sawing on a horse



(Fig. 14) and with the board held in a vise (Fig. 15). The use of a vise keeps the board from splitting, as the board may be reversed when half-way down.

**BACK-SAW.** The back-saw is a fine cross-cut saw, with a piece of steel along the back to make it rigid. As may be imagined, the saw is intended for fairly accurate and neat sawing, such as picture-frames. It is used quite often in miter-box sawing. The teeth on the back-saw have practically no set.

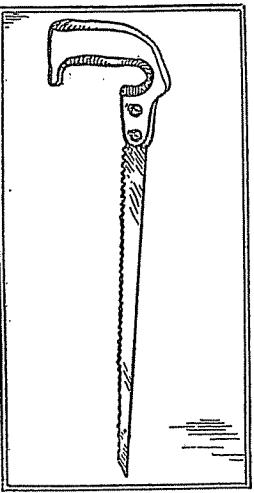


Fig. 16

#### COMPASS - SAW.

The blade is thick, so that it will not buckle up; the teeth are also set wide. (See Fig. 16.) This facilitates the sawing of circles or curves. The teeth are of a shape which is between the shape of those on a rip and a cross-cut saw.

**JIG-SAW OR SCROLL-SAW.** This is held in a wire frame with tension for holding it rigid. The wire handle or jig-saw is so made

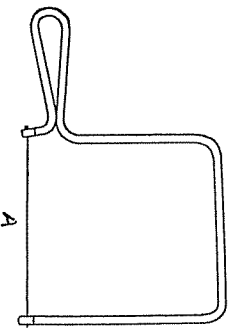
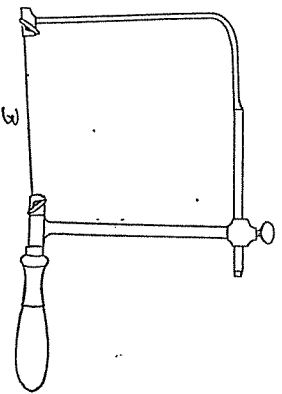


Fig. 17



(See Fig. 17, A and B) that the saw can be inserted at right angles to the handle or straight forward, which facilitates the handling of it in certain kinds of jig-saw work.

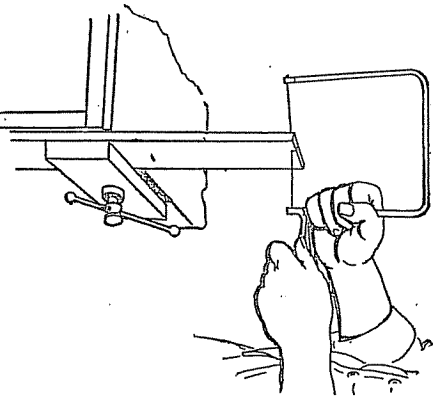


Fig. 18

In sawing with the jig-saw the work is usually fastened to a table. (See Fig. 18.) In handling the scroll-saw, remember that the pulling cut is better than the pushing cut.

**HOW TO FILE AND SET A SAW.** The first thing to do is to hold the saw in a vise of some kind. (See Fig. 19.) The first operation in filing and setting a saw is to level the teeth, which is known as top-

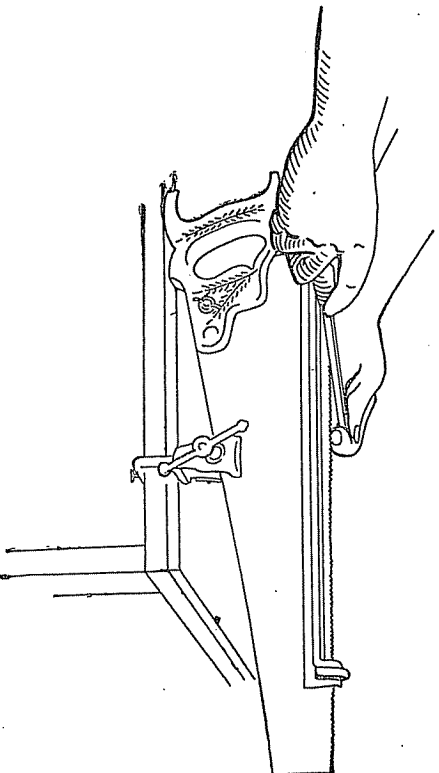


Fig. 19

jointing. The special tool or top-jointer may be purchased, although the flat file will accomplish the same results if carefully used. The idea is to bring the teeth to a level.

After top-jointing, the saw should then be set. This requires a saw-set; the idea of the latter is to bend each tooth in an opposite direction. The saw-set has an adjustable disk on which you can regulate the desired offset or bend.

The next operation after setting comes filing. For this purpose an ordinary three-faced or triangular file is used, the handle of which is held in the right hand. The fingers of the left hand hold the pointer of the file as it moves forward in filing. On the forward stroke of the filing operation, pressure is applied. Do not draw the file back, but lift it out of the teeth on the return stroke. It is important to file in the direction of the set and for this reason you file every other tooth and then reverse the saw. In rip-saw filing, file directly across the teeth. Two or three strokes are sufficient for each tooth.

Filing the saw is not a simple thing. The amateur should have some patience in learning how to file, for it is quite difficult to do this as accurately and as carefully as it should be done. Another important point in rip-saw filing is to see that the tooth is filed on the back with the file just barely touching the face of the next one.

The last operation is to stone the saw; that is, the sides of the blade are slightly rubbed with a stone to remove any little edge caused by the filing.

**PLANE.** The plane is no more than a chisel held in a piece of apparatus which regulates the size of the cut. (See Figs. 20, 21A, and 21B,

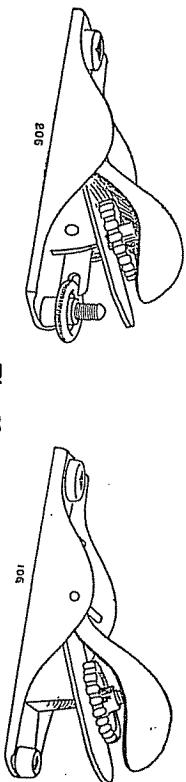


Fig. 20

showing the parts of the plane.) Uneven surfaces will not plane at all until the high spots have been taken off. It is important to be careful in adjusting the plane. If you desire to become a skillful worker this

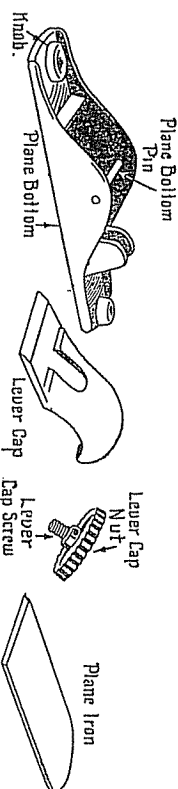


Fig. 21A

rule must be lived up to. Another important thing about the plane is the sighting along the bottom or the sole. Do not adjust the plane so that it will cut too deeply or you will get into trouble.

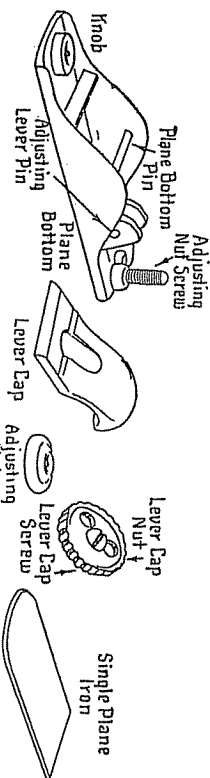


Fig. 21B

### PROCEDURE IN PLANING A BOARD.

In planing a board, or any piece of wood, it is important that you should train the eye to detect false planing or inaccuracies. It is well for the beginner to use a try-square in checking up the edges, but with experience you will soon learn to use the eye with a fine degree of accuracy. (See Fig. 22. Order of Planing a Board.)

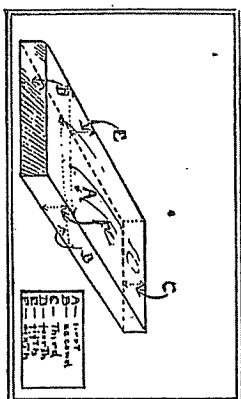


Fig. 22

**HOW TO AVOID CHOKING THE PLANE.** This is a thing the beginner has more trouble with than anything else.