

1919 Disston Handbook On Saws

HAMMERING *and* ADJUSTING

CIRCULAR SAWS.

The many inquiries we have in regard to the method of hammering and adjusting the tension in saws has induced us to print a few simple instructions on the subject, which if carefully followed can not be otherwise than a benefit to beginners and others seeking information in this line. All saws of whatsoever kind, if properly made, are what we will call "loose," through or towards the centre to suit the different kinds of work for which they are intended. The object is to keep the edge strained on a straight line, to prevent it from chattering or cutting a zig-zag kerf through the timber; what applies to any one kind of saw in the method of hammering, applies to all. The circular saw, however, is the most difficult to treat, and even after the most careful instructions we could give, would require practical experience and close observation on the part of those having these saws in charge, before they can successfully hammer them.

The strain in running and the process of gumming will stretch the edge of the saw and it will begin to run snakey, rattle in the guides and make bad lumber. However, before concluding that the saw must be hammered to adjust the tension, see if there is not some other cause for the trouble, such as improper lining, the adjustment of the guides, the collars; the saw out of balance and the dressing of the teeth; these matters, however, are all referred to in this hand-book, and are only mentioned here for those who have not had experience. Our object being to treat here on the hammering necessary to keep the saw true and in proper tension, which means that it must be open sufficiently and properly from the edge towards the centre to suit the motion of saw and feed of the mill.

What is required in the way of tools is an anvil, one round-face and one cross-face hammer, two straight-edges, one from 14 to 18 inches long, one about 48 inches long, and one try-mandrel; we find that these tools for fitting up saws are being put in many of the large mills; the men who handle the saws are making themselves proficient in the hammering of the saws to suit their wants; this knowledge they have acquired by perseverance and practical experience, the only way in which it can be obtained.

In studying the matter of how to hammer circular saws, it would be as well for those who have to take charge of them, to examine the saws as to the tension when first received, taking for granted that they are

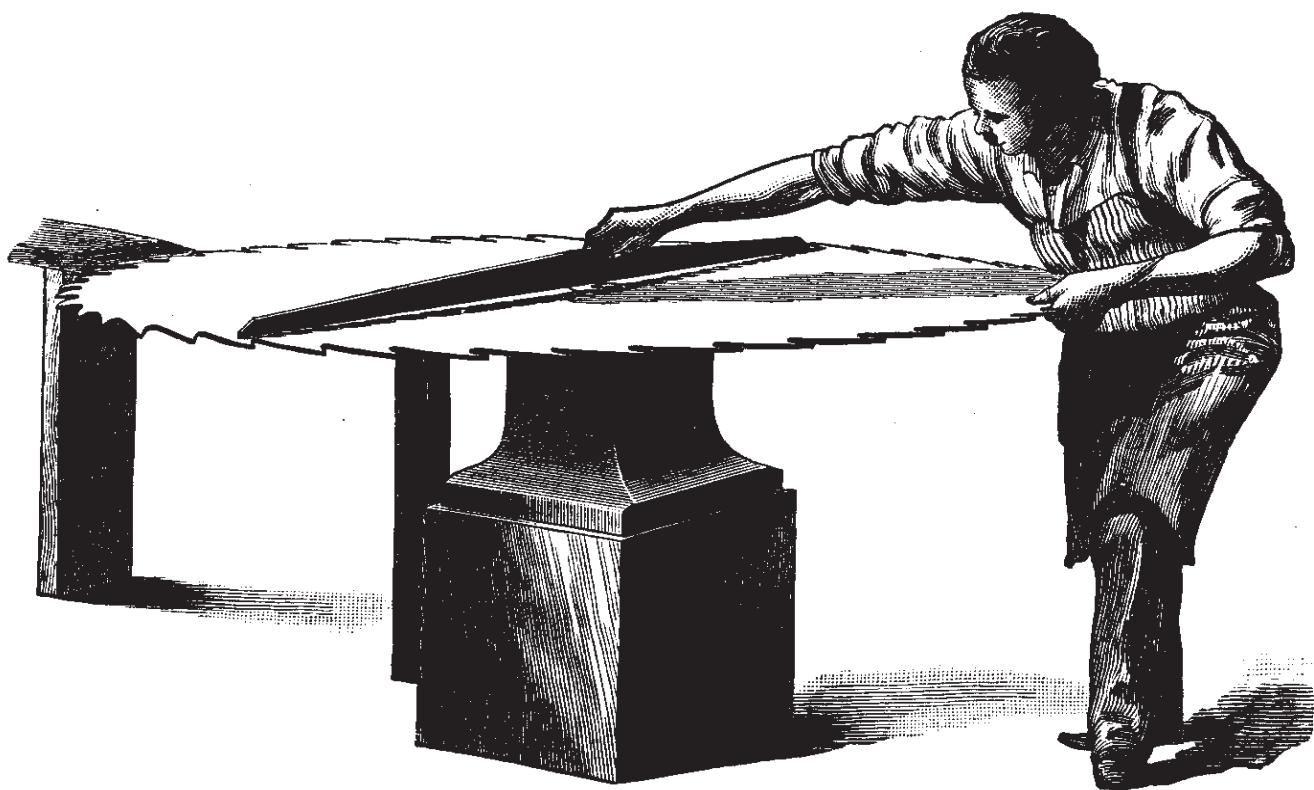


FIG. 1.

right as to the hammering when they leave the maker ; for all the saws

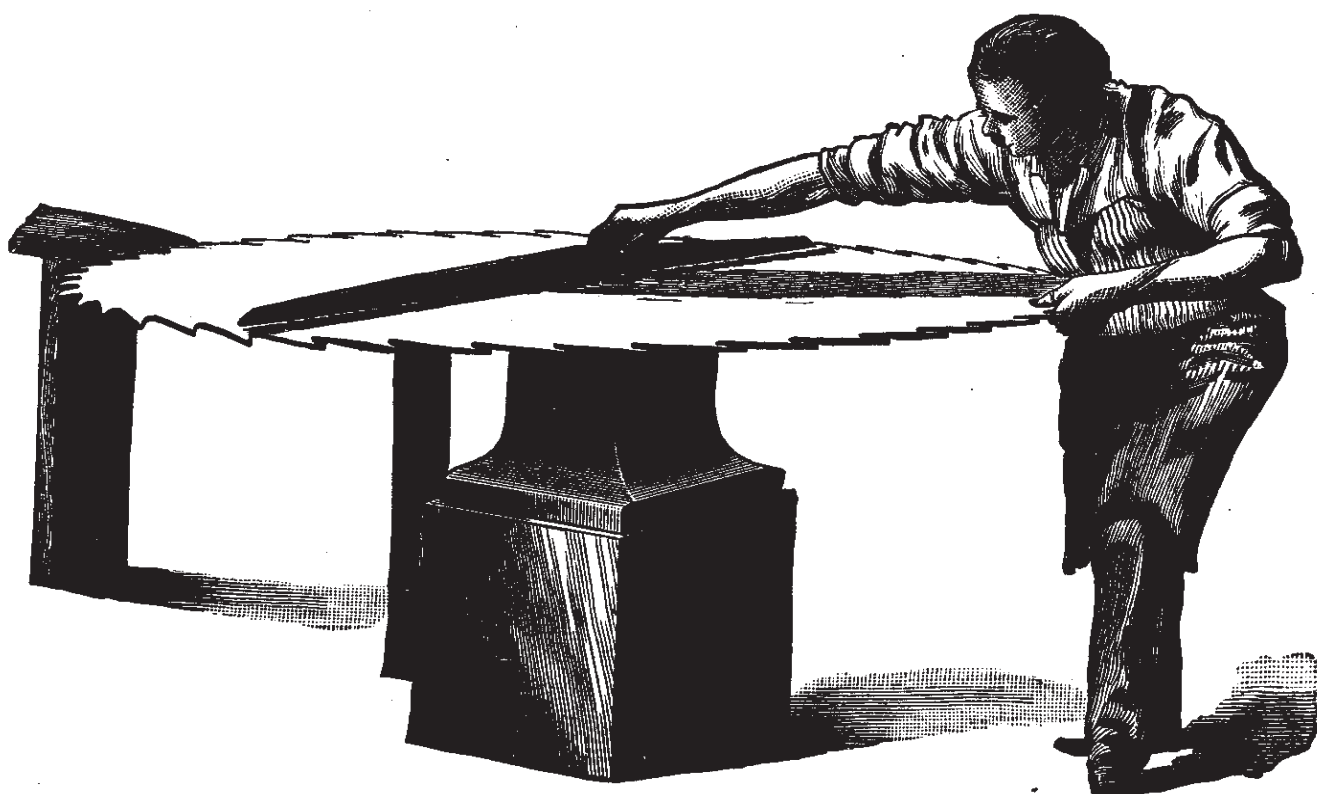


FIG. 2.

made by us will be as true as it is possible to make them, and will appear for tension as shown by figure 1 to a greater or less extent, according to the speed and feed to be used. A saw that has lost its tension will show as at figure 2 and needs hammering with a round-face

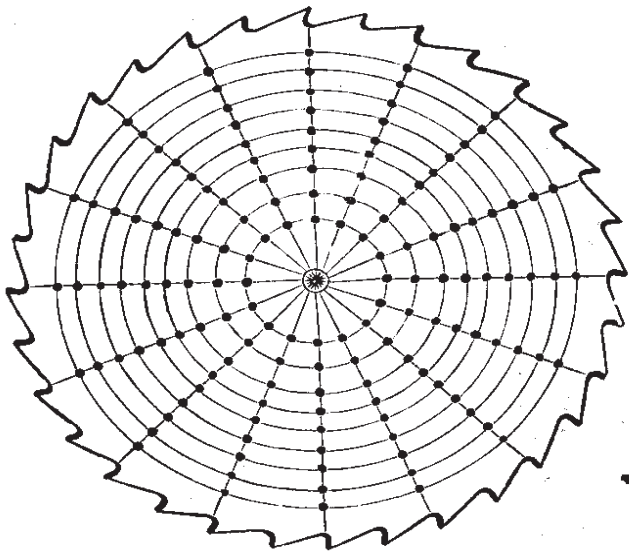


FIG. 3.

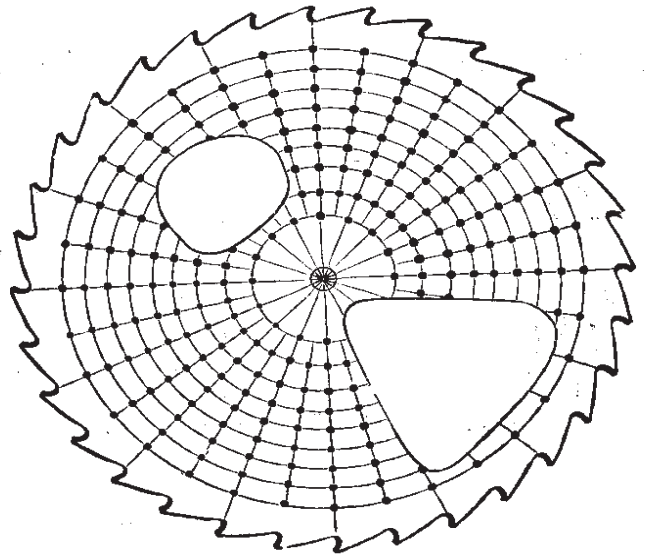


FIG. 4.

hammer, as shown by figure 3, but before commencing to hammer to restore the tension, examine or test the saw all around as in figure 5, and if any part of the saw between edge and centre falls away from the straight-edge, mark around this spot as shown by figure 4, and do not

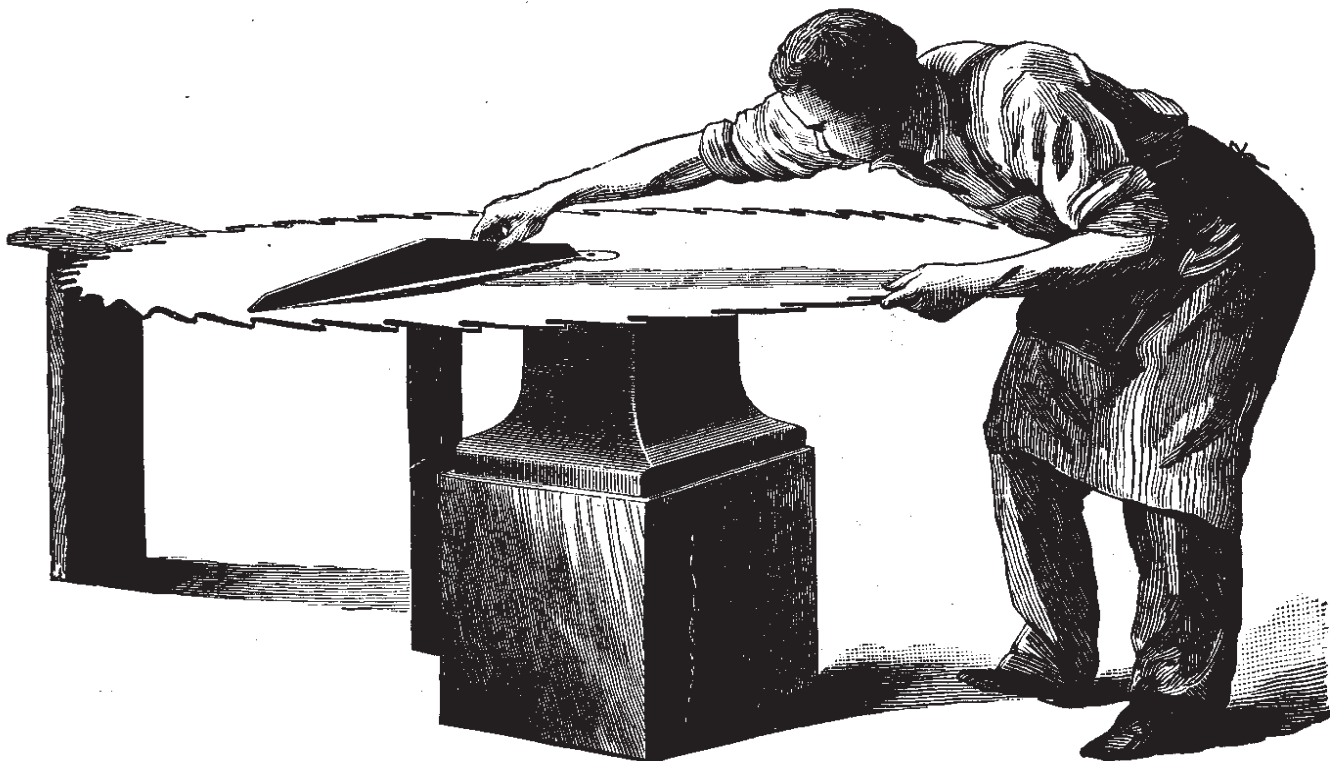


FIG. 5.

hammer as much, if any, at that place. In testing for the tension, be sure to have the straight-edge at right angles with that part of the saw resting on the board and the opposite edge which is being raised with the left hand, while the straight-edge is held and gently pressed down

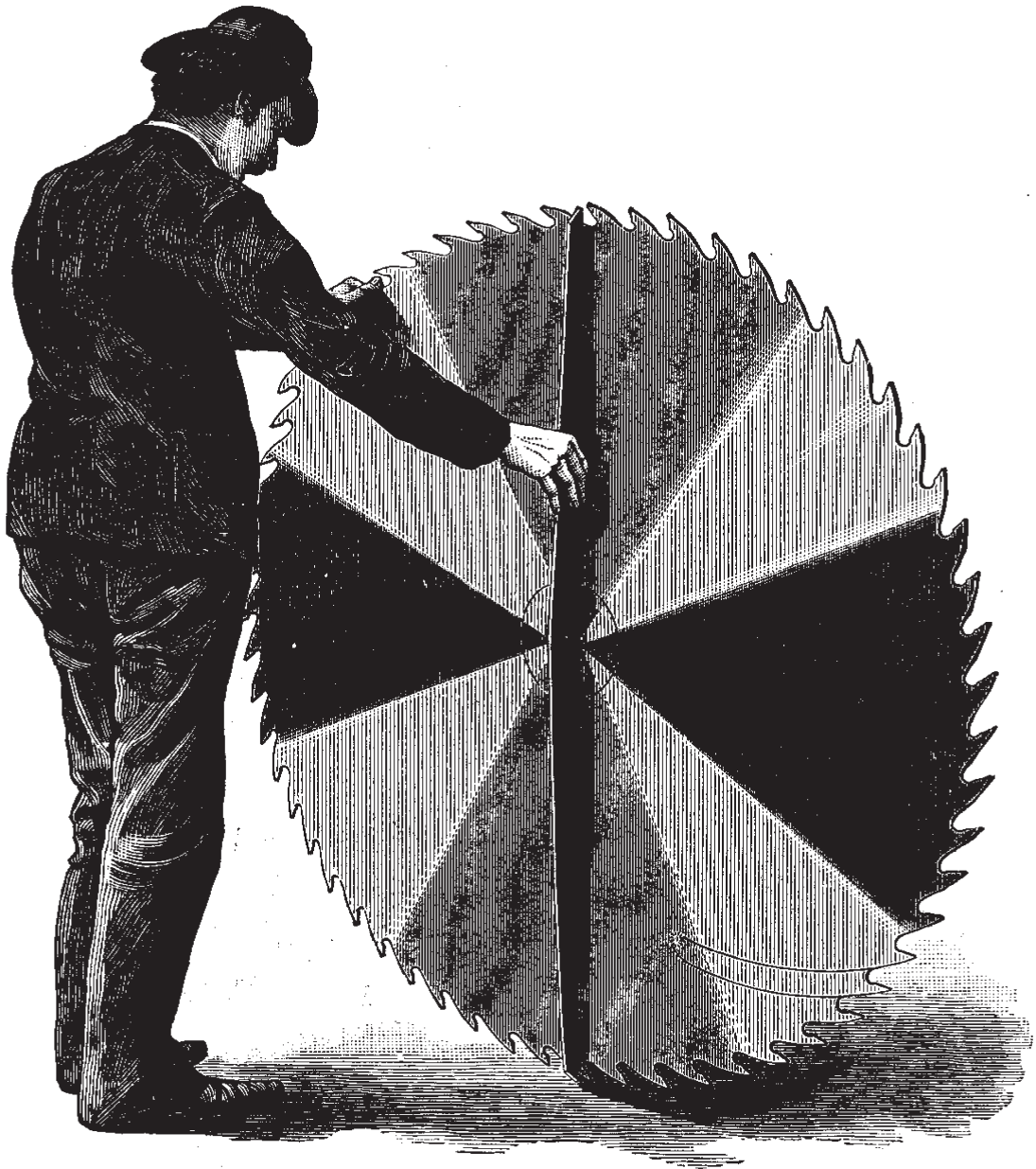


FIG 6.

with the right hand. Do not lean the straight-edge to one side but hold it up straight, or it will fall to the form of the saw and not show what is desired. A straight-edge reaching from the centre hole well out to the edge of the saw is the best to use in hammering to regulate the tension, and when this straight-edge is applied as above, the saw

should fall away from a straight line as shown by figure 5; this will show that the centre of the saw is stiff, as it must always be to run properly and do good work, and if a short straight-edge about 6 inches long was pressed directly over the centre, it would show the saw to be nearly flat or of equal tension at that part. We will here say that it is very seldom necessary to hammer a saw at the part covered by the collars.

When ready to hammer, as at figure 3, see that the face of hammer is ground so that the blow will be round and do not strike too heavy, for it is better to go over the saw a number of times than to

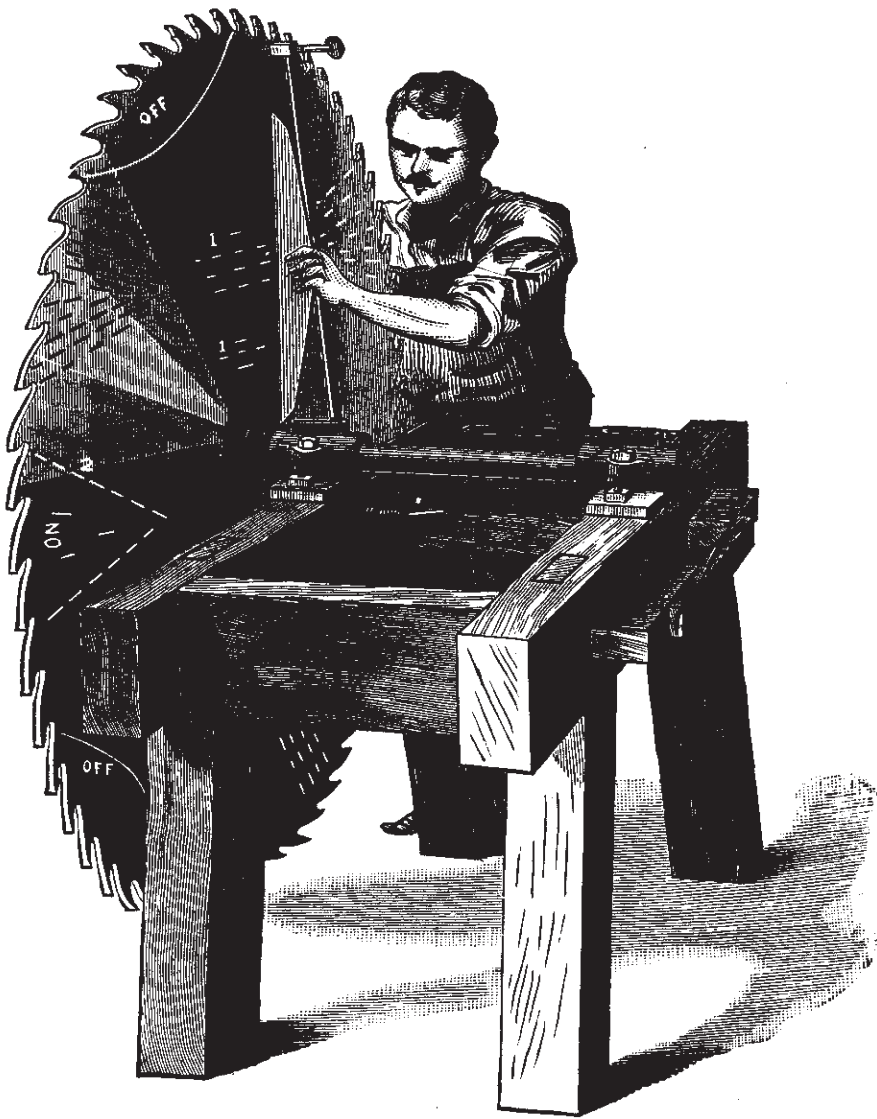


FIG. 7.

hammer too much at one operation, and put the saw in worse shape than it was before it was hammered.

After hammering one side, mark off the other side and repeat the operation with as near as possible the same number and weight of

blows as struck on the first side and as directly over them as can be done. Now, stand the saw on the floor ; hold it up straight and test it with the long straight-edge as shown by figure 6 ; if the hammering has been done alike on both sides, the saw will be very nearly true ; if, however, it shows full on one side and dishing on the other, mark these places that are full.

Place the saw on the anvil with the round side up ; hammer lightly on full places ; test again with the long straight-edge, and if it appears true, put it on the anvil and test it as explained, to see if it has the proper tension ; if not, repeat the operation with the round-faced hammer until desired tension is obtained. After again testing with long straight-edge, put the saw on the try-mandrel to test it with the short straight-edge for running true. This mandrel must also be true,

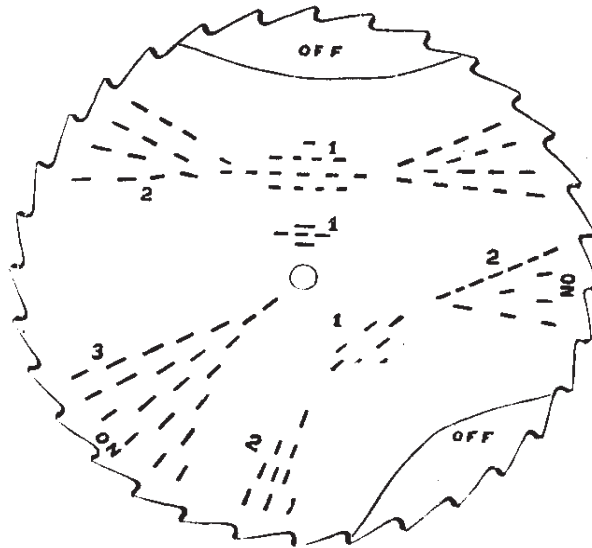


FIG. 8.

which can be determined by changing the position of the saw on the mandrel to see if the same parts of the saw run off and on at the pointer. Mark the places as they run off or on as shown by figure 7. while turning the saw slowly around, and where the saw runs off, lumps will be found most likely as at 1, 1, 1, or what is termed twist lumps as at 2, 2, 2 of figure 8, or both may occur ; these lumps must be taken out with a cross-face hammer and struck as shown in the direction that the straight-edge shows the lumps to run. The saw may also be thrown out of true by lumps running toward the centre as No. 3, figure 8 ; in this case the saw will be on or off at points about opposite each other. This part of the hammering must be done carefully, and if the hammer is of the proper weight and the face properly ground, the saw can be made to run true without altering the tension to any

great extent. The testing on the mandrel by an inexperienced hand should be done with the full side of the saw towards the pointer, and by knocking down the lumps from that side will make the plate flat; when the saw is fairly flat, test from both sides and operate in like

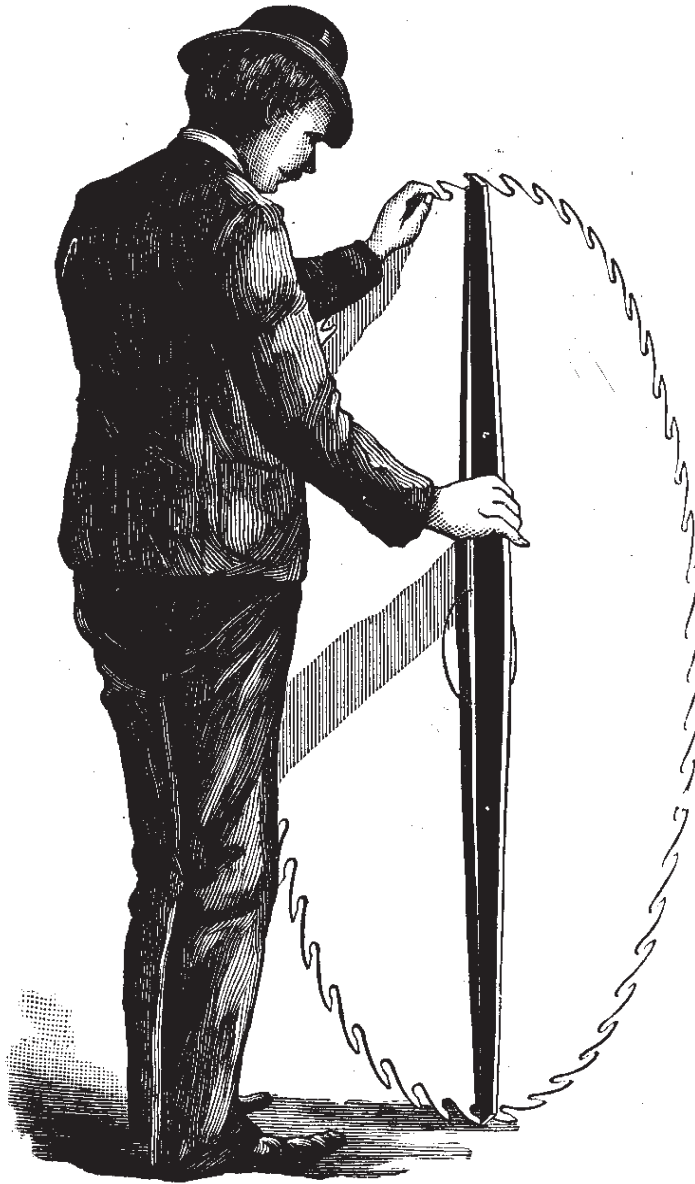


FIG. 9.

manner and get same results. Now put saw on the arbor and if for a high motion, it will sway gently from side to side in getting up to full speed and then run steady and do its work, but if it acts as heretofore stated (runs snakey and rattles in the guides,) it needs to be made more open toward the centre. An experienced man, however, will stand the saw on the floor, taking hold at the top edge and give it a sudden shake and if the centre vibrates and the edge stands stiff, he

knows it to be open towards the centre. He will also test by leaning the saw over, to see if it falls away from the straight-edge sufficiently as shown by figure 9, and consequently knows it to be right before putting it on the arbor. If the saw is too open at the centre it will run from side to side, mostly out of the log, and needs to be hammered as shown by figure 10, and the distance to hammer in from the edge depends upon where the loose parts are on the saw; if the centre is loose on line 1, hammer to that line; if to line 2 or 3, hammer to those

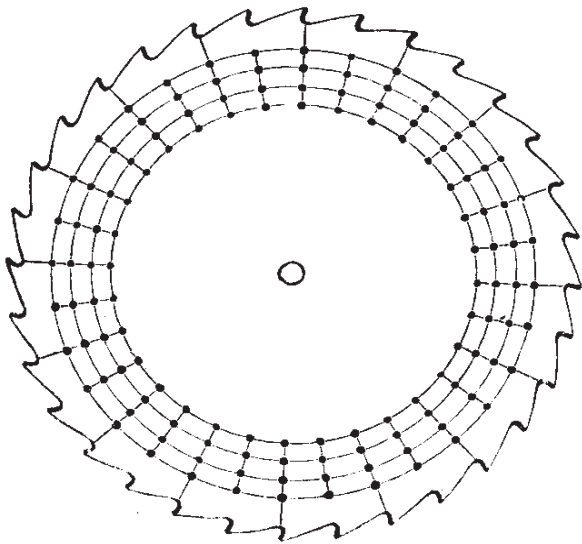


FIG 10.

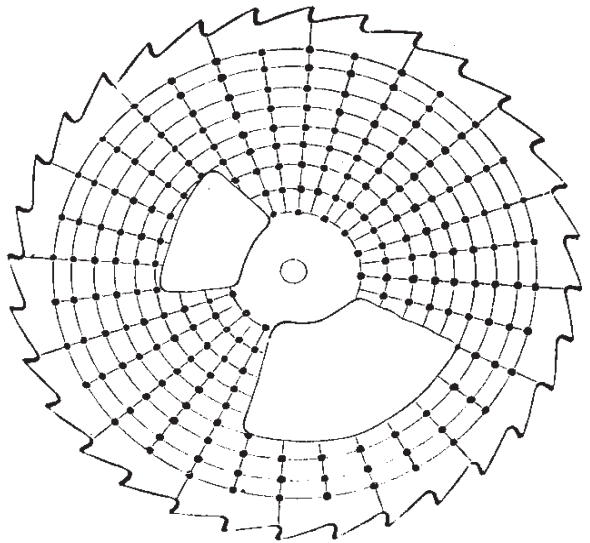


FIG. 11.

lines, or the looseness may be irregular, as shown by figure 11, and needs to be hammered as shown to regulate the tension; after this is done proceed, as explained, with cross-face hammer to free saw from twists and lumps to make it run true. If the saw should be buckled by an accident, true it with the cross-face hammer as explained by figures 6, 7 and 8 before regulating tension and final truing; do the same in case of buckling by burned spots or sharp lumps over the collar line; to remove or level these lumps, lay two thicknesses of strong, heavy paper on the anvil, place the saw on the anvil with the spot or lump resting on the paper and by giving a few well directed blows the lumps can be hammered down without expanding the metal as it would if straightened on the bare face of anvil. When hammering with the round-face hammer, work on lines drawn from the edge towards the centre; this will prevent putting twist lumps in the saw and obviate much of the trouble in truing with cross-face hammer. It is very important to have the blows distributed properly over the surface to be hammered. Hammering too much at one place would

cause a loose spot or lump that would be difficult to take out, or burn a blue spot on the saw in the cut.

If it is necessary to go over the hammering more than once for tension, make lines between those that have already been operated on. The dressing of the faces of the hammers is important; the round face should be nicely rounded so that if a light blow was struck on the oiled surface of the saw, it should show about half inch in diameter; the cross-face so that it would show a blow three-quarter by three-eighth inch, for a sharp cutting blow is not effective in either knocking down a lump or stretching the metal.

In concluding to these instructions, we make the following suggestions to beginners:

Do not be discouraged by the failure of first attempts; make yourself perfectly familiar with instructions given and persevere in properly applying them.

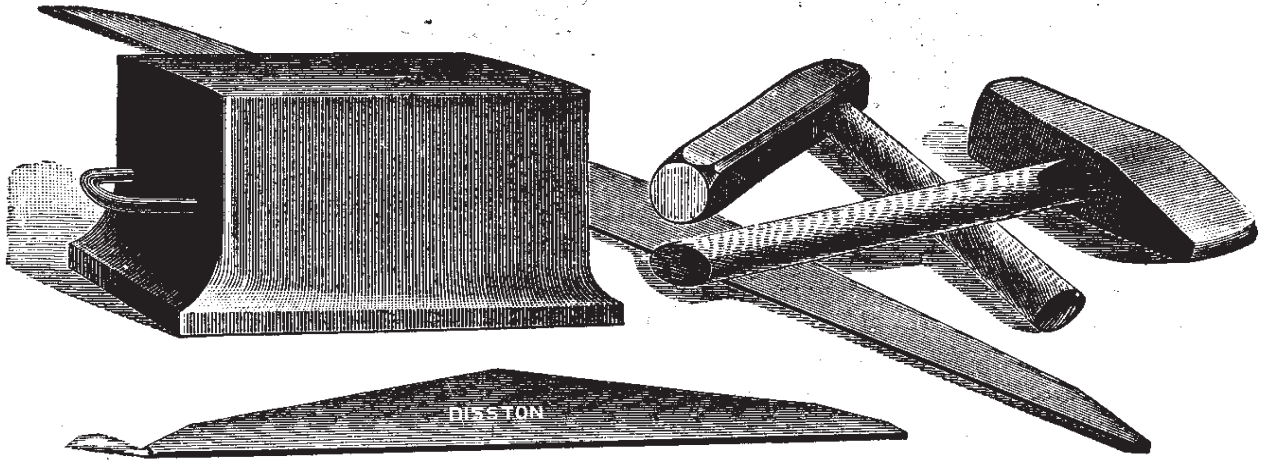
Carefully study the amount of opening the saw requires towards the centre for tension to suit the motion and feed used, and for regulating this, always use the round-face hammer.

The stem of the try-mandrel need only be one inch or less in diameter and bushings used for larger arbor holes.

Beginners in the art of hammering should take a small circular cross-cut saw (for this class of saws, as a rule, are given very little attention in the mills), one that can be easily handled; go through the operation as instructed and, if successful it will show advancement in the art and the ability to operate on larger saws without the same risk of failure.

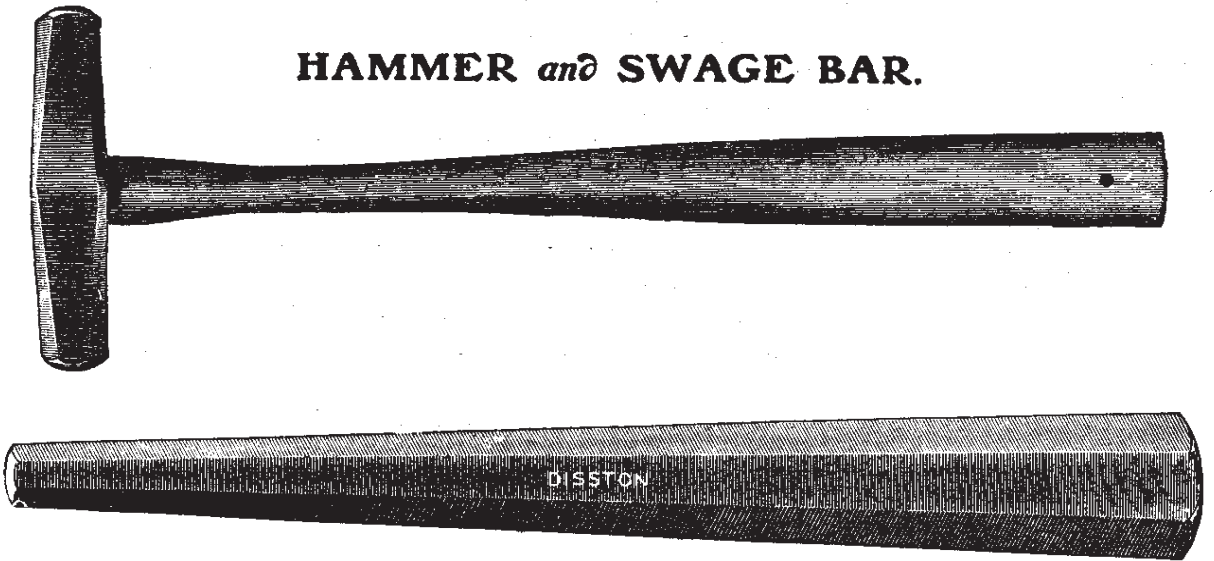
In regard to large circular saws cracking and breaking over the collar line; the saws when first put in use have been hammered or left open enough for a certain speed. If the speed is reduced while in the cut, the saw will run either in or out of the log (most generally out), forming as it were, a wedge between the saw and headblocks, eventually cracking or breaking the saw at or near the collar line by forcing it over this rigid point, hence the importance of maintaining a uniform speed and having the tension adapted to it. In mills where steam feed is used great care should be taken not to crowd the feed on the saw when it loses its speed from any cause, such as insufficient boiler, engine or belt power, for if the feed is not decreased in proportion to the speed, the saw will be "crowded out" and forced over the collar the same as though the tension was not properly adjusted.

**ANVIL, HAMMERS *and* STRAIGHT EDGES for
REPAIRING SAWS**



The above cut represents the tools necessary for altering or adjusting the tension of circular saws. (See page 84).

HAMMER *and* SWAGE BAR.



The above cut represents our swage bar and hammer for use on circular and gang saws. We make the hammers in two sizes ; the bars of any shape, size or weight desired.