



Getting Service from the Hacksaw

By JAMES TATE

BECAUSE the hacksaw is such a simple tool, there is a feeling that "anyone can use a hacksaw." While this is perfectly true, there is a great difference between merely using a tool and getting the utmost in service out of it, and even with such a simple tool as this, there is a right and a wrong way of handling it.

There are a few fundamental rules that are imperative, if the proper service is to be obtained from handsaw blades.

First, having selected the proper blade, strain it well in the frame. This is important to insure true cutting and to prevent breakage of blades. The saw is inverted in the frame with the teeth pointing away from the operator (this may seem foolish instruction, but I have seen them put in the other way), and the "hard edge" or flexible backsaw will be found to need greater tension in the frame than a blade of the "all-hard" type.

For light and medium work, stand at vise and grasp the saw frame as shown

in Fig. 1, with the forefinger of the right hand pointing along the handle of the frame in the direction of the cut, and holding the end of the frame between the thumb and first two fingers of the left hand (Fig. 2). Start the cut easily, using the same stroke as in filing, and be sure to put on enough pressure to make the teeth bite and not slide over the metal, as allowing the saw to rub over the metal on the start of the cut glazes the teeth and starts the saw on the road to the junk box. After the first few strokes retighten the saw in the frame. Lift the saw slightly on the return stroke so as to prevent the teeth from dragging or rubbing on the work, as any pressure on the return stroke also blunts the teeth. Keep the speed of the strokes to from 40 to 50 a minute, and the work will be cut more quickly and with less wear on the blade than if a faster stroke is used. Where a heavy pressure is required the end of the saw frame may be held as shown in Fig.

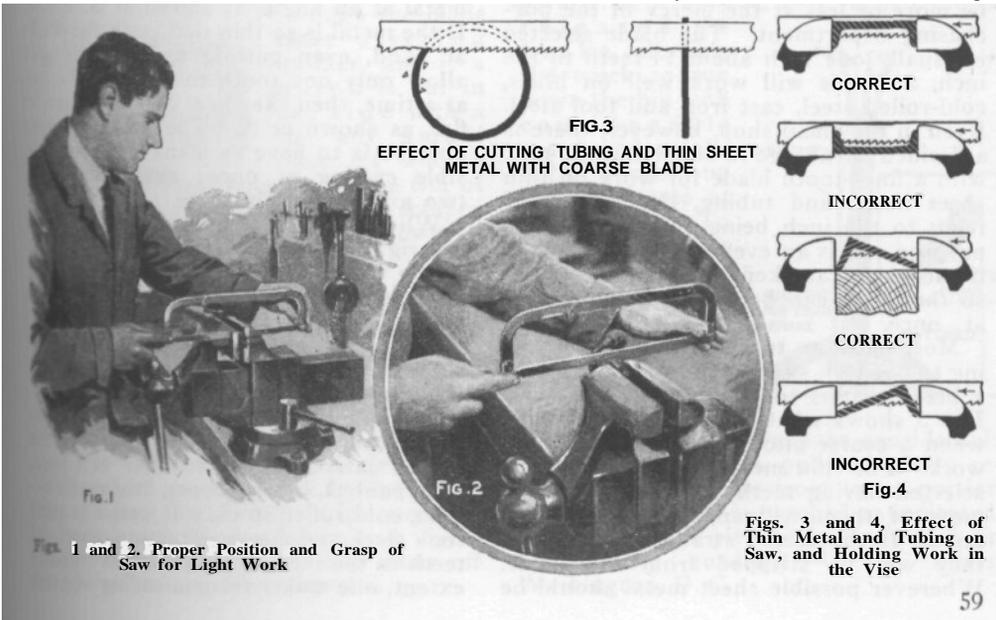


FIG. 3
EFFECT OF CUTTING TUBING AND THIN SHEET METAL WITH COARSE BLADE

CORRECT
INCORRECT
CORRECT
INCORRECT
Fig. 4

Fig. 1 and 2. Proper Position and Grasp of Saw for Light Work

Figs. 3 and 4. Effect of Thin Metal and Tubing on Saw, and Holding Work in the Vise

5, all the weight and pressure of the hand being transmitted to the blade through the fleshy part of the hand at the base of the thumb.

In most small shops each man owns his own frame, and there is comparatively little handsawing done; what there is, being on different materials from time to time as necessary in the course of assembly or erection of machinery. In this case, it is naturally impossible for the men to change blades to suit the material to be cut, and a blade is selected that will work fairly well on all material to be

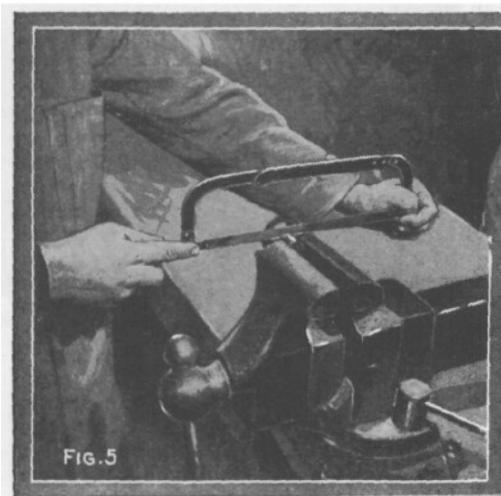


FIG. 5

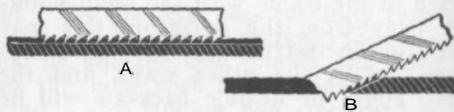
handled; at least that is what should be done, although the men in the shop may be more or less at the mercy of the purchasing department. The blade selected is usually one with about 14 teeth to the inch, and this will work well on brass, cold-rolled steel, cast iron and tool steel. Even in the small shop, however, there is a decided advantage in supplying the men with a finer-tooth blade for work on thin sheet metal and tubing, one having 32 teeth to the inch being suitable for this purpose. It is an even greater advantage if the blades are kept in separate frames so that they can be picked up and used at once.

Most hacksaw troubles come from trying to cut thin sheet metal or tubing with a blade that is too coarse for the work. Fig. 3 shows what happens to the blade when a coarse-pitch saw is used for this work. For thin metal a blade should be selected having teeth so fine that two or more of them will engage the work at once. If the teeth "straddle" the metal, they will be stripped from the blade. Wherever possible sheet metal should be

held between two pieces of wood, as in Fig. 6, when sawing it in the vise, and the cut taken right through wood and metal; this helps greatly in reducing breakage. If this is not possible, then



FIG. 6



CUTTING SHEET METAL

FIG. 7

care should be taken to saw through the metal at an angle, as shown at B, Fig. 7. If the metal is so thin that, with the blade at hand, even cutting at an angle will allow only one tooth to bear on the cut at a time, then the sheet should be sawed flat, as shown at A. The main thing to observe is to have as many teeth as possible cutting at once; never less than two and preferably three.

When cutting structural shapes there is a right and wrong way of holding them in the vise. Fig. 4 shows the correct and incorrect methods for two common shapes, and a little study will show how the correct method makes it easy for the blade. The same principle applies to other shapes.

Recommendations of leading saw manufacturers, who have made a study of the art of saw cutting, are: For cast iron, solid babbitt, brass, copper, bronze, aluminum, cold-rolled stock, soft steel, annealed tool steel and heavy structural steel, 14 teeth to the inch; practice differs to some extent, one maker recommending 14 teeth

Fig. 5, Grasp of Saw for Heavy Pressure; Fig. 6, Sawing Thin Metal between Blocks; Fig. 7, Cutting Thin Metal to Avoid Saw-Tooth Breakage

for solid cold-rolled machine steel, 18 teeth for tool steel, cast iron and brass; for light structural steel, tool steel and hard metals, one recommends 18 teeth and another 24. Both unite in recommending 24 teeth for steel pipe, iron pipe, brass and copper pipe, and conduit, and for thin sheet metals and tubing under 18-gauge, 32 teeth to the inch. Flexible-back saws are not recommended for use in tool steel, cast iron or brass by one maker, while another lists them for use in these metals. However, their recommendations are to be taken merely as a guide, or a basis on which to choose trial blades for any particular purpose, and they are very useful in this respect. In fact, it will pay any hacksaw user to get the literature of the saw manufacturers on this subject, as it contains much practical information on the subject of hand and power sawing as well as charts for saw selection.
