SHEET-METAL WORKERS' TOOLS.

Blacksmiths' tools are heavy, those of sheet-metal workers are light, they are usually also longer and much more slender than those of the blacksmith. In-

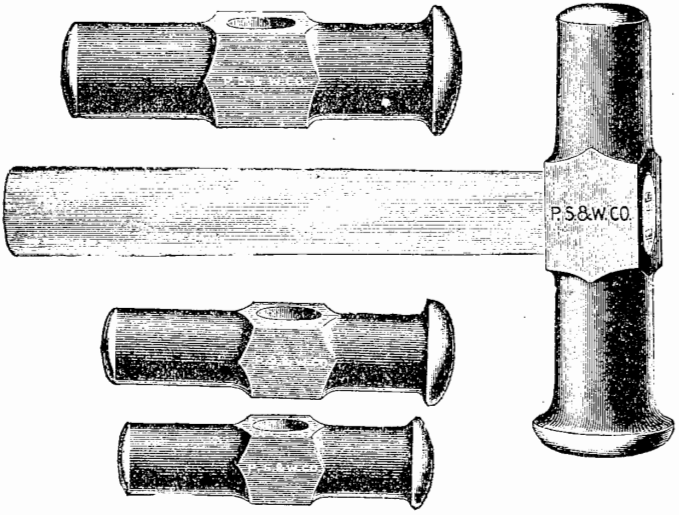


Fig. 128.

stead of being set or fixed in an anvil, they are set in a bench, or block of wood or iron on the ground, or on the workbench.

A detailed description of each tool will not be given, as by the reference to the illustrations, the uses of the tools may in most cases be inferred.

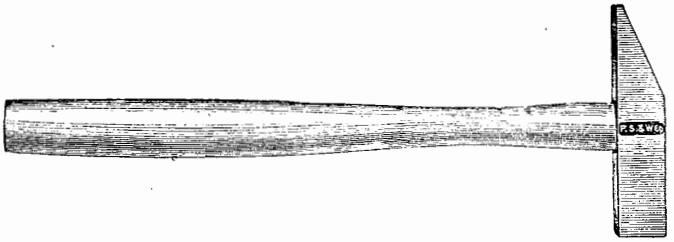


Fig. 129.

Raising hammers of various sizes are shown in Fig. 128, a setting hammer in Fig. 129, and a riveting hammer in Fig. 130.

A set of solid punches are illustrated in Fig. 131, and a wooden mallet in Fig. 132.

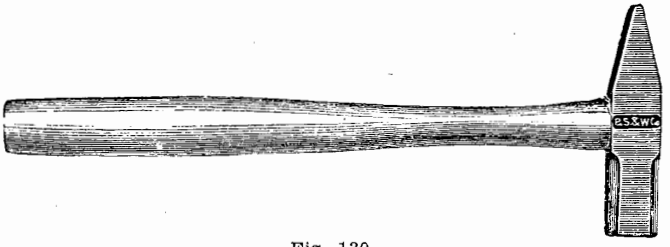


Fig. 130.

Sheet metal is shaped, principally, by being bent over anvils of peculiar forms, known as stakes. These fit into holes cut in the bench, and are of many kinds, as the following illustrations will show:

Figure 133 shows the beakhorn stake, the creasing stake which is used for making grooves for wire, the

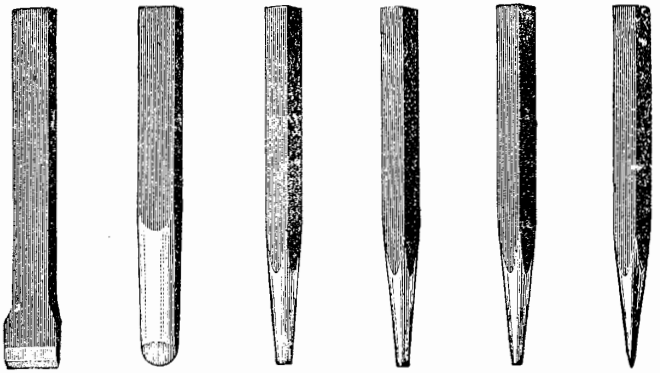


Fig. 131.

blowhorn stake, the needlecase stake, the candle-mould stake, and the square stake.

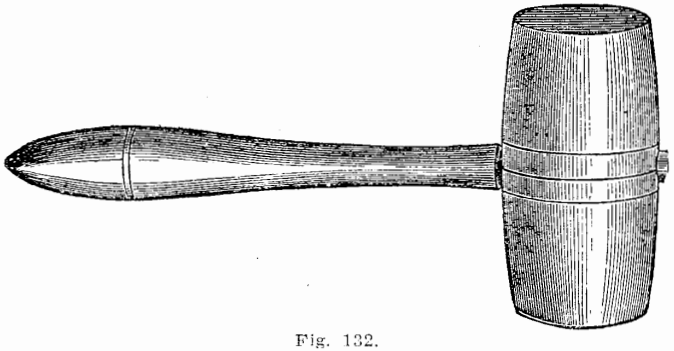


Fig. 132.

Figure 134 shows the double seaming stake, the creasing stake with horn, the coppersmith's square stake,

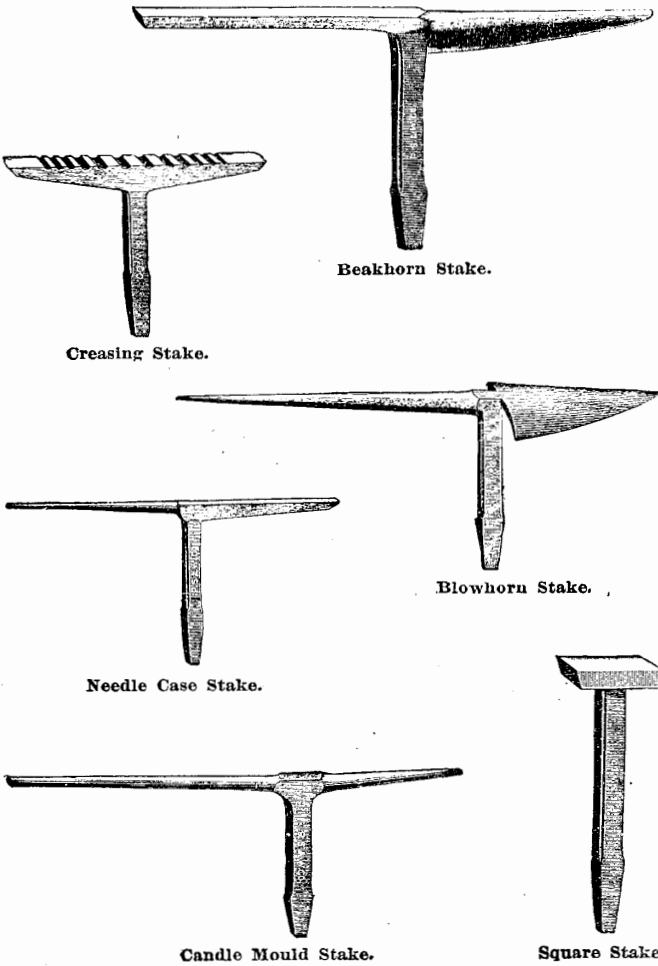
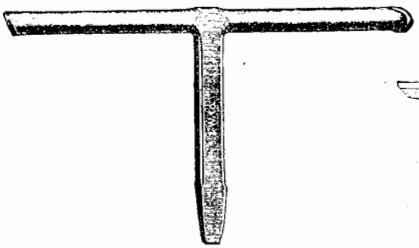
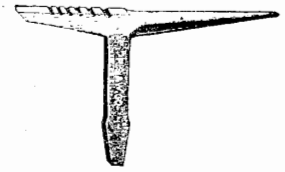


Fig. 133.

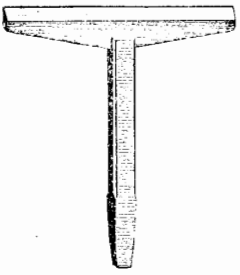


Double Seaming Stake.



Creasing Stake, with Horn.

Coppersmiths' Square Stake.



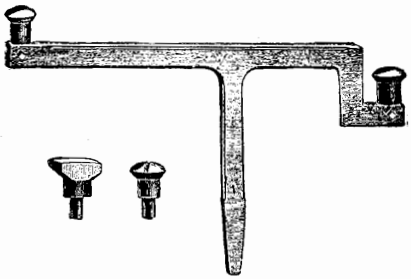
Hatchet Stake.

Bottom Stake.

Fig. 134.

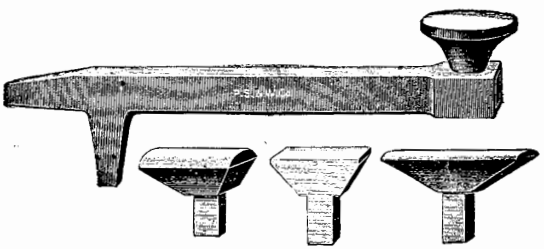
the hatchet stake, which is used for edging up tin plate, when there is no folding machines, the bottom stake and the bevel-edge square stake.

Figure 135 shows a tea-kettle stake with four steel heads, a hollow mandrel stake, and a double seaming stake with four heads.



Tea Kettle Stake, with Four Steel Heads.

Hollow Mandrel Stake.



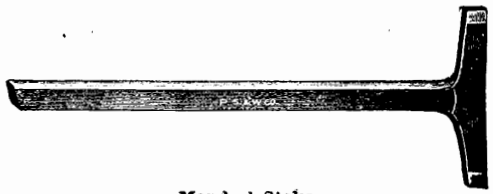
Double Seaming Stake, with Four Heads.

Fig. 135.

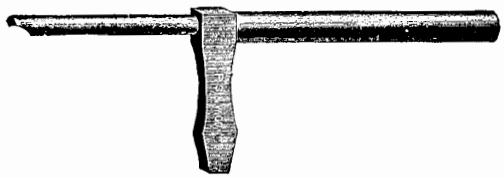
Figure 136 shows a plain mandrel stake, a conductor stake, a bath-tub stake, and a round-head stake.

Sheet metal is cut to the size of the pattern as required by means of shears. These come in a variety of

shapes, but those that are really necessary are the bench shears as shown in Fig. 137, for cutting up stock in large quantities. Hand shears or snips as shown in Fig. 138.



Mandrel Stake.



Conductor Stake.

Bath Tub Stake.

Round Head Stake.

Fig. 136.

Confusion often arises as to the meaning of the terms right and left hand as applied to shears. A right-hand shears is one that when held in the right hand the

lower blade is on the right side of the shears, and a left-hand is one where the lower blade is on the left side

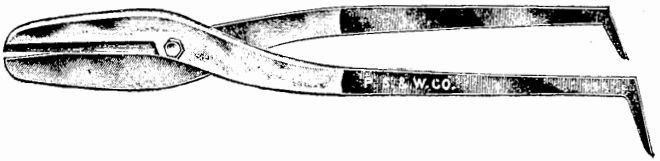


Fig. 137.

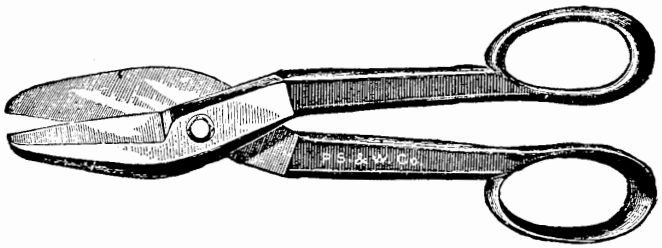


Fig. 138.

of the shears. Left-hand shears are more generally used, and are invariably sent unless right-hand are ordered.

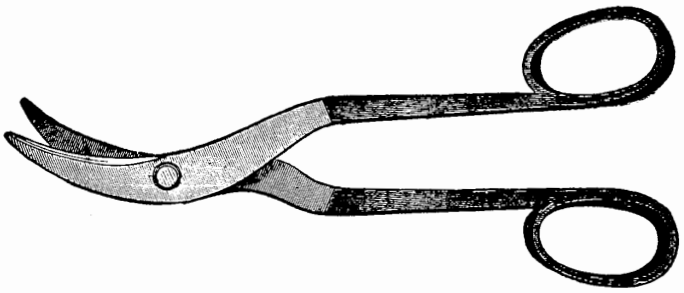


Fig. 139.

Curved shears, as shown in Fig. 139, are required for some kinds of work, it represents a curved shear of real

worth and great merit. It is capable of cutting in sheet-metal openings of any kind and shape. Letters are easily cut out from sheet metal. They are especially adapted for cutting off the bottoms of metal vessels, and for cutting openings in pipes or cylinders of every description, for furnace jackets, thimbles; tee joints, etc. A bottom can be cut from a pint cup or a copper boiler with equal ease.

The double cutting shears, shown in Fig. 140, combined with a pipe crimper are well known. The blade is pointed and readily inserted in the metal at the point desired to begin the cutting. They are adapted to cutting off the bottom of pails, cans, etc., and suita-

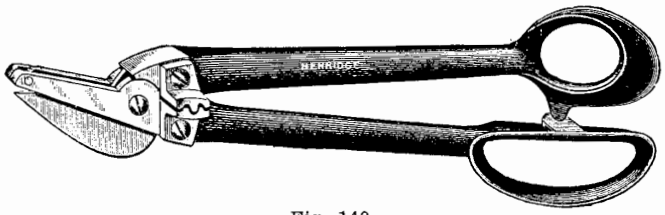


Fig. 140.

ble for cutting round or square work. The crimping attachment is designed for crimping any kind of sheet metal pipe, round or square. The parts are interchangeable, and the crimping jaws are of steel.

Tinners' Firepots. The firepot shown in Fig. 141 is a universal favorite with tinners. It is lined with fire brick and made in the most substantial manner. The draft door is in two sections, which economizes fuel.

The firepot shown in Fig. 142 is so constructed that the ashes fall into a pan beneath the coal, and the fire is kept clear and the draft is good. It is light and

may easily be carried from place to place at the convenience of the workman.

Figure 143 represents a gas furnace for heating soldering coppers for plumbers' or tinners' use. It

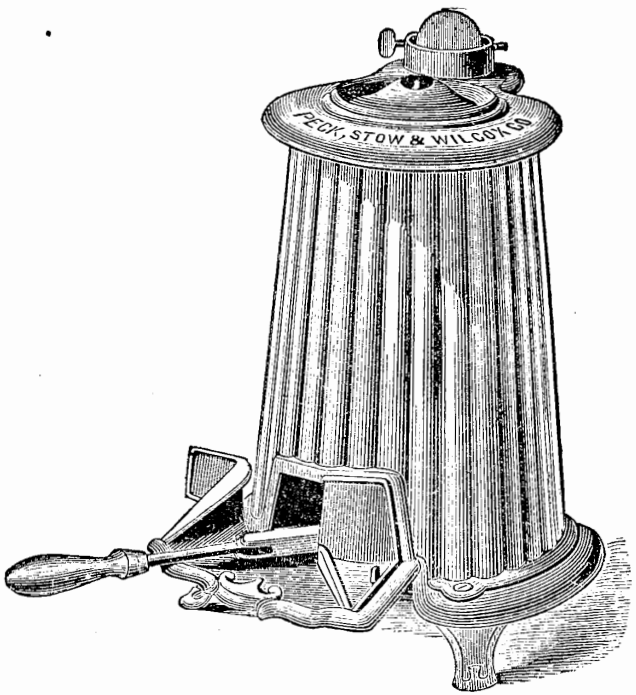


Fig. 141.

is light in weight and consumes but little gas. It economizes time, avoids dust and dirt. By regulating the aperture through which the air passes so that the flame has a blue appearance, the very hottest flame produced by gas can be secured.

Copper Soldering Bits. Soldering bits differ greatly in size and shape, according to the work to be done.

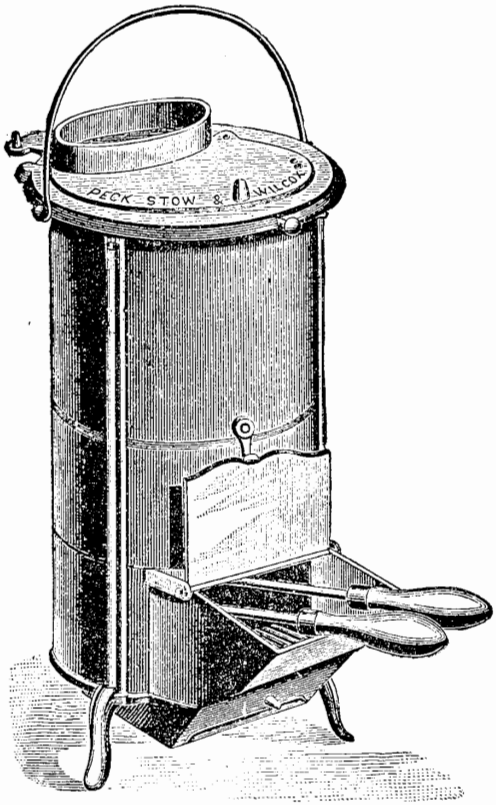


Fig. 142.

The upper view in Fig. 144 shows an ordinary pointed soldering bit such as is used for general work, the lower view shows a much lighter tool, having a bent

point. A bottoming bit such as is shown in the upper view in Fig. 145 is used for soldering round the bot-

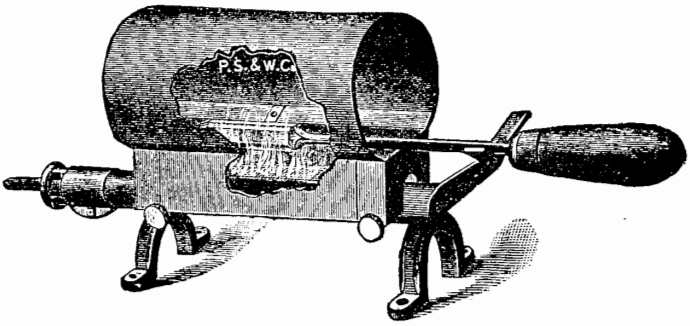


Fig. 143.

toms of saucepans and similar utensils. A hatchet bit is illustrated in the lower view in Fig. 145.

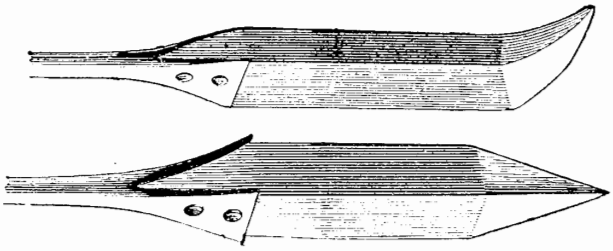


Fig. 144.

Soldering bits should have from 4 inches to 5 inches of copper, in addition to that which is riveted in the shank, as in constant usage the length soon diminishes by filing and drawing out. A copper bit that has a long shank tires the arm quickly, not only by the weight of

the tool, but by the cramped position into which it throws the arm. For general use the soldering iron should be about 16 inches long from point to the ex-

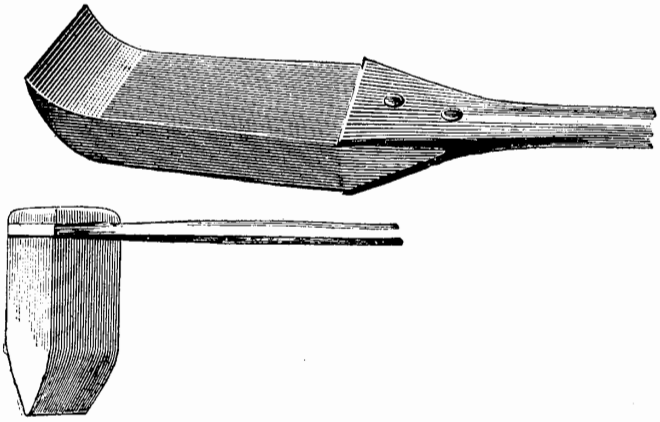


Fig. 145.

tremity of the handle. The latter should be made so as to afford a firm grasp and balance the copper bit.