

CHAPTER VII

WIRING PROCESS

In constructing work made of tin-plate and light gauge metal several methods are used to reinforce the top of the article, to keep its shape and to withstand rough usage. For very small articles this is done by turning a single or double hem on the edge of the metal, as pre-

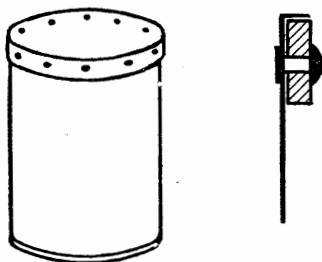


Figure 56.—Sheet Metal Can and Method of Riveting Band Iron to the Top Edge.

viously described. Large sheet metal articles are often stiffened by having band iron riveted to the top edge as shown in Figure 56.

The method most commonly used to increase the strength of flaring and straight articles is to inclose a wire or iron rod of suitable size in certain of their edges. The wire can be laid in by hand or by means of the wiring machine shown in Figure 57.

Allowance for Wiring.—It is important to know the exact amount to be added to the height of the pattern for the take-up of the wire. The amount usually added for this operation is equal in width to two and one-half times

the diameter of the wire. Another method is to allow three-fourths of the circumference of the wire.

When using tin plate and light sheet metal, it is customary to make no allowance for the thickness of the metal, but in wiring heavy plate an allowance must be made for the thickness of the material used. The amount of material for covering the wire will vary according to

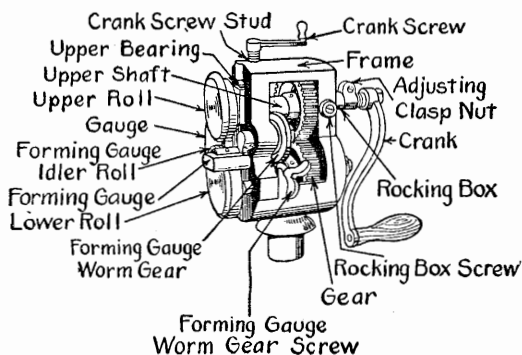


Figure 57.—Wiring Machine.

the thickness of the metal and the size of the wire to be inclosed and is found by the following rule:

Add twice the diameter of wire to four times the thickness of metal.

As an example, suppose in constructing a tank from sheet iron $\frac{1}{16}$ -inch thick, the top is to be reinforced by inclosing a $\frac{1}{2}$ -inch rod; then the amount to be added to the net height for wiring will be $\frac{1}{2} \times 2$ plus $\frac{1}{16} \times 4$, equals $1\frac{1}{4}$ inch.

The most accurate and practical method to determine the allowance for wiring is to take a narrow strip of metal and bend it closely around the wire with the pliers. This will give the exact amount of material required.

In wiring articles made from tin plate, Nos. 8, 10, 12,

13, and 14, coppered or tinned iron wire is commonly used. The amount of material to allow for inclosing the above sizes of wire when using IC tin plate, and the width of edge to be turned on the folding machine, are given in the following table:

No. 14,	Wire Allowance	$\frac{3}{16}$ "	Set Gauge on Folder	$\frac{5}{32}$ "
No. 13,	"	$\frac{7}{32}$ "	"	$\frac{3}{16}$ "
No. 12,	"	$\frac{1}{4}$ "	"	$\frac{7}{32}$ "
No. 10,	"	$\frac{5}{16}$ "	"	$\frac{1}{4}$ "
No. 8,	"	$\frac{3}{8}$ "	"	$\frac{5}{16}$ "

Wiring Operation.—When wiring articles cylindrical in form having straight sides, such as cans, tanks, and

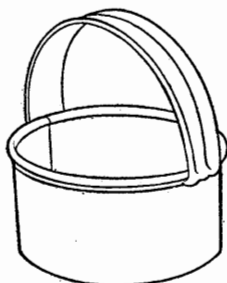


Figure 58.—Biscuit Cutter, Wired in Top Edge.

articles of tin-ware, the wire is inclosed in the edge of the metal while in the flat sheet before being formed into shape. The following problem is given to demonstrate the wiring operation and the method used in laying out patterns for work of this kind:

In Figure 58 is shown a biscuit cutter. This is a useful article made from IC bright tin, having a No. 14 iron wire inserted in the top edge. The seam in the body is lapped and soldered. The handle is double hemmed on the edges. The dimensions of the cutter and the patterns for the body and handle are shown in Figure 59. The

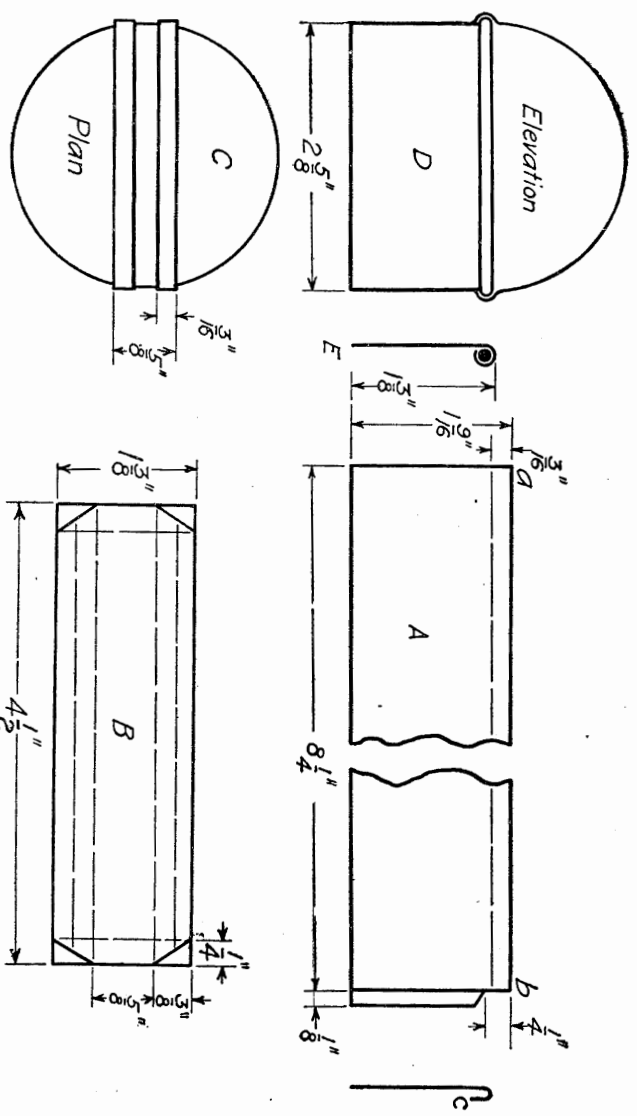


Figure 59.—Plan and Patterns for Biscuit Cutter.

pattern *A* for the body is cut $8\frac{3}{8}$ inches long by $1\frac{3}{4}$ inches wide. To find the length of the pattern, multiply the diameter $2\frac{5}{8}$ inches by $3.1416=8\frac{1}{4}$ inches; to this amount add $\frac{1}{8}$ -inch for the lap seam. The height of cutter is $1\frac{3}{8}$ inches when completed; to this dimension add $\frac{3}{16}$ -inch, the allowance required for inclosing a No. 14 wire; then $1\frac{3}{8} + \frac{3}{16} = 1\frac{9}{16}$ inches, is the width of pattern; the $\frac{1}{8}$ -inch lap is notched $\frac{1}{4}$ -inch at the upper corner to allow for turning the wire edge.

The open or round edge for the wire is now turned on

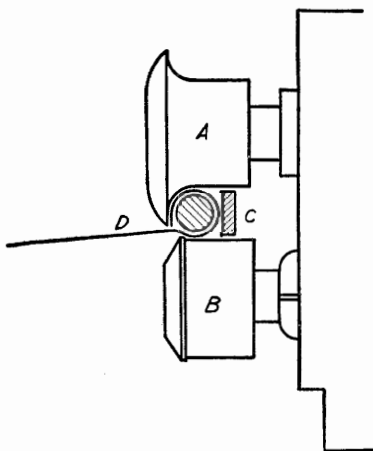


Figure 60.—Sectional View of Wiring Machine.

the folder as shown at *c*, a piece of wire equal in length to *a b* in pattern *A* is laid under the edge, and the metal closed over the wire for about one inch from the end. This is done with the hammer over the horn on the standard of the wiring machine.

Wiring Machine.—In Figure 60 is shown a sectional view of the wiring machine, used to complete the operation. Holding the work *D* in a horizontal position, place

it on the lower roll *B* with the wire edge held firmly against the gauge *C*, bring down the upper roll *A*, and adjust the gauge, having the curved flange on the upper roll fit snugly over the wire. The work is then run through the rolls until the metal is fitted closely over the wire.

In Figure 61 the wiring operation is illustrated, giving a full view of the machine and the proper position of

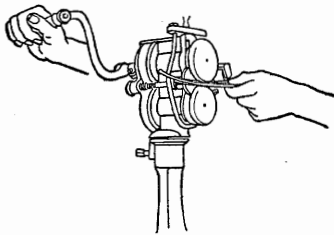


Figure 61.—Wiring Machine in Operation.

the hands. If the rolls should slip when wiring heavy metal, this is overcome by pulling the work lightly as it passes through the rolls.

The next step in the construction of the cutter is to form the body on the forming rolls (Figures 24, 25). The wired edge is placed in one of the grooves cut in the end of the rolls for this purpose, and the body is then formed the same as a cylinder. The wire should never be formed elsewhere than in these grooves.

Before inserting the work in the forming machine, place the work on the conductor stake (Figure 29) and slightly curve both ends of the wire by striking it lightly with a mallet. This enables the work to pass easily over the back roll of the forming machine.

Pattern *B* (Figure 59) for the handle is formed in the usual manner, after which the ends of the wire on the body are joined together, and the seam is soldered

having the lap on the inside. The handle is soldered to the top in the position shown in *C* and *D*, Figure 59.

When forming cylinders in very small diameters, made from stiff or heavy metal, do not attempt to secure the correct diameter by passing the work once through the rolls, but form it gradually by passing through several times.

Wiring by Hand.—In wiring very heavy material, or when the sheet of metal is greater in length than the folding machine, making it impossible to turn the edge

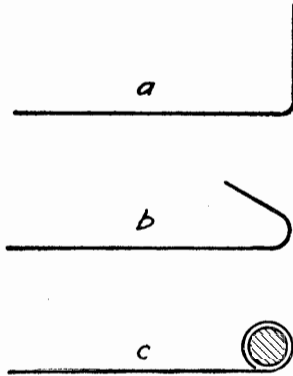


Figure 62.—Operations in Wiring an Edge by Hand.

for wire on the folder, the wiring operation is performed by hand as follows:

After marking the wire allowance on the metal by means of the dividers or scratch awl, lay the sheet with the scribed line directly over the edge of the bench or some other straight edge. Take the mallet and bend the metal to an angle of 90° as shown at *a*, Figure 62. Turn the sheet over on the bench and by means of the mallet bring the edge to the position shown at *b*. The wire is then laid under the edge and the metal is bent closely

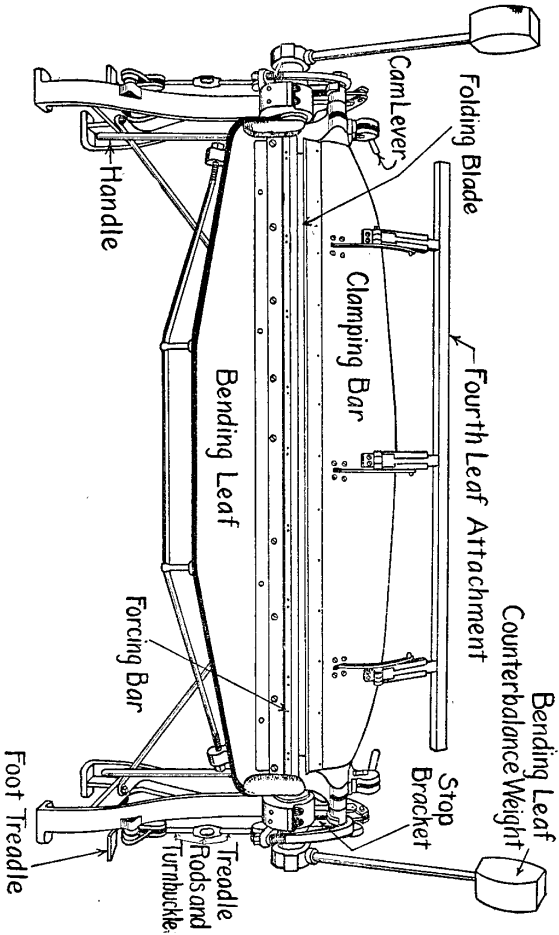


Figure 63.—Cornice Brake.

over the wire as shown at *c*. The operation is completed by running the work through the wiring machine (Figure 57) in the usual manner. The right angle bend *a*, Figure

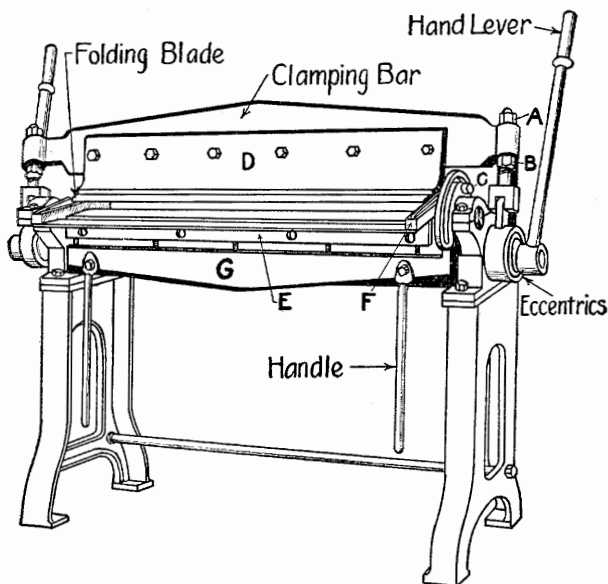


Figure 64.—Combination Brake and Folder.

62, can also be made on the cornice brake (Figures 63, 64, 65) and the wiring operation completed as described above.

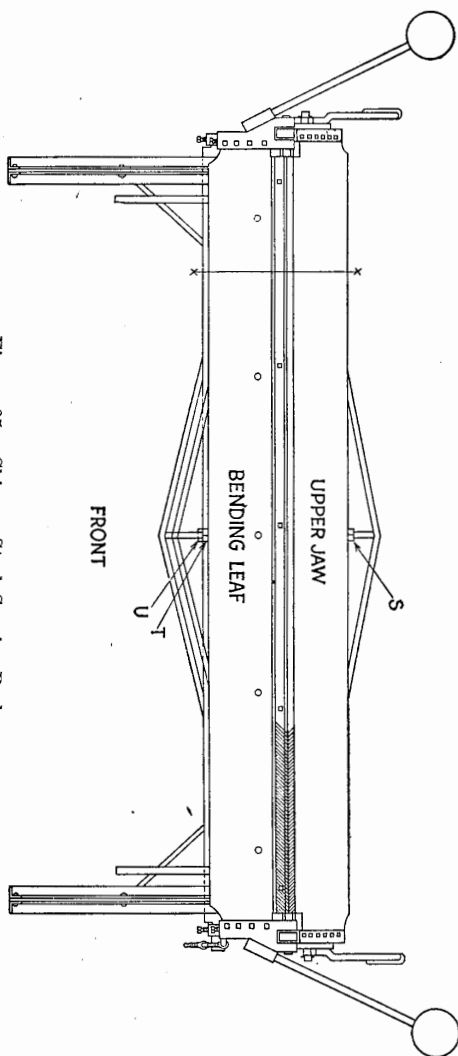


Figure 65.—Chicago Steel Cornice Brake.