

A SEAMLESS DRAWN STEEL BATH TUB

The accompanying illustrations show the product and operations of what is said to be the largest piece of work of the kind produced on this continent by the toggle-press method.

The drawing is done cold in three operations. There is

right to left, one on the front and the other on the rear of the press. These shafts are connected outside of the housings at the right hand end to the piston rod by means of bell cranks and links. The control of this blank holder is independent of the other movements of the machine.

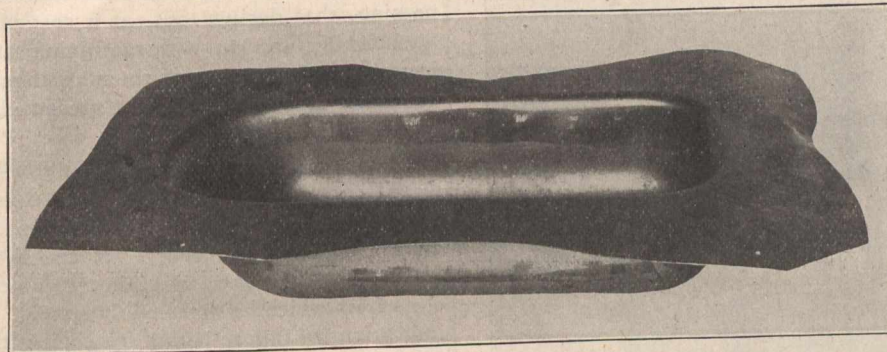


Fig. 1. Product of First Operation.

only one intermediate annealing process. This is necessary to restore ductility to the rim to avoid any possibility of fracture in the third or rim-rolling operation.

The plate is a plain squared sheet of mild steel $\frac{1}{8}$ -inch thick. The product of the first operation is shown by Fig. 1. The product of the second is shown in Fig. 2. This is a

The main steam cylinder which operates the forming plunger is 28 inches in diameter. Its piston stroke is 50 inches. The piston rod is attached to a steel cross-head which weighs 6,000 pounds. To this is keyed the forming punch, which with the cross-head gives a falling weight of about 20,000 pounds.

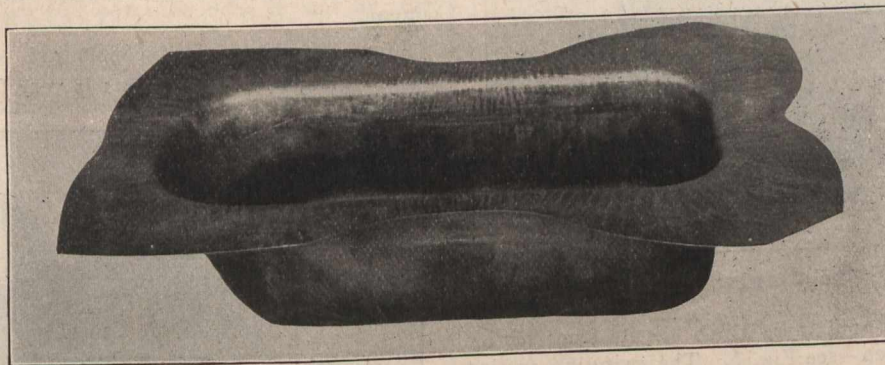


Fig. 2. Product of Second Operation.

completed tub as far as the drawing is concerned. In Fig. 3 we see the tub finished as far as the metal working goes, except the punching of small holes for the supply and waste pipes.

The time required for the three operations is not over three minutes.

The Drawing Press.

In Fig. 4 we see the drawing press. This machine is

The base or anvil is made in three sections, having a combined weight of 90,000 pounds. The main arch, the cylinder, and the housings or uprights are bolted together on the base, and are strengthened by four rods passing through all of these members. These rods are shrunk into position. Some of the general dimensions of this press are: width between housings 96 inches, bed 60 x 96 inches, extreme height, 23 feet, and total weight, 260,000 pounds.

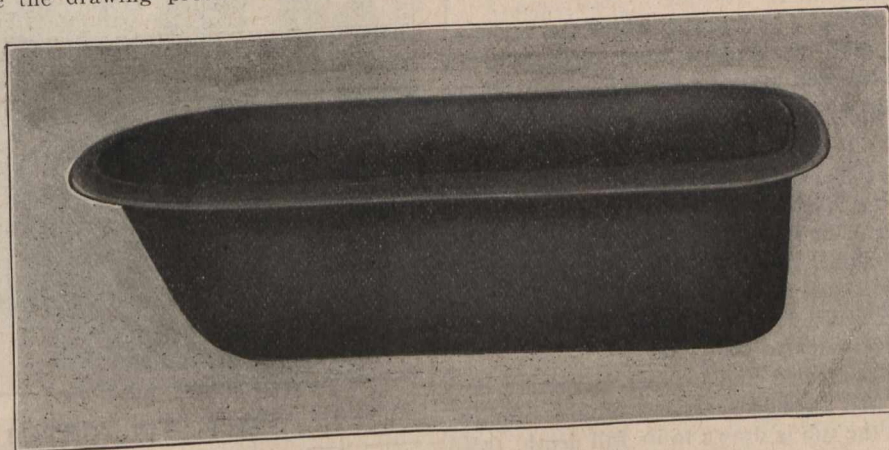


Fig. 6. The Finished Product.

fitted with two steam cylinders distinctly separate in their functions. The smaller is located on the right hand and operates and controls the blank holder.

The blank holder has a vertical motion of 19 inches, and is actuated by four toggles, one at each corner. Their combined pressure is estimated to be 1,400 tons. The toggles are connected in pairs to two horizontal shafts running from

The Drawing Dies.

The drawing dies and attachments were designed to give the metal the greatest protection possible, to avoid the forming of wrinkles or buckles in the sheets. The results are such that no spinning or ironing process is necessary as a finish. The drawing die is adjustable and serves for three lengths of tubs. A separate punch, however, is required for