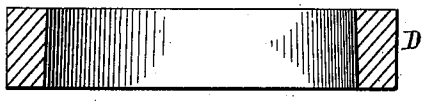
(No Model.)

# T. CONNERS.

## APPARATUS FOR SHAPING METAL WARE.

No. 601,825. Patented Apr. 5, 1898.

Fig. 5.



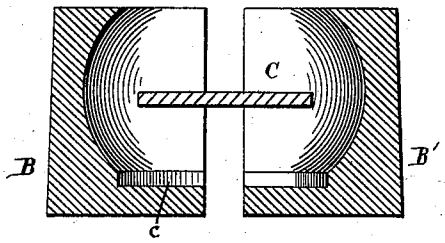




Fig. 4.

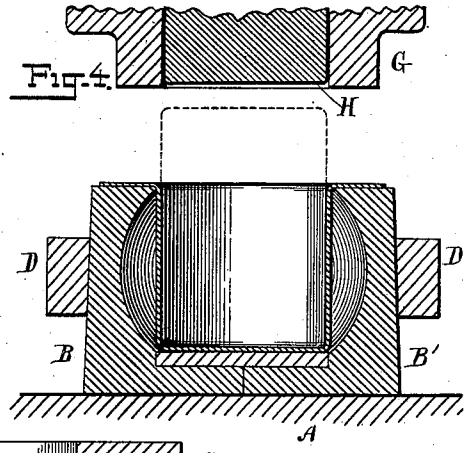



Fig. 6.

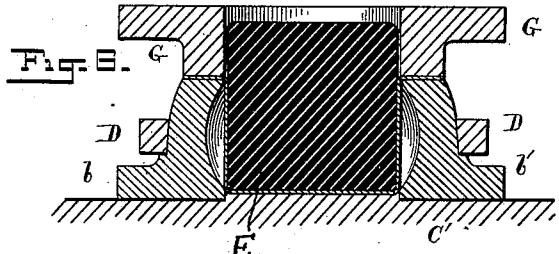



Fig. 1.

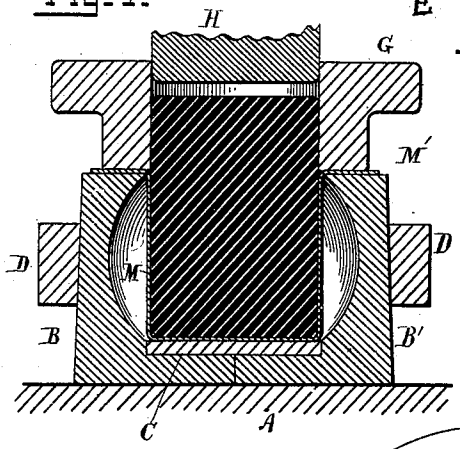



Fig. 2.

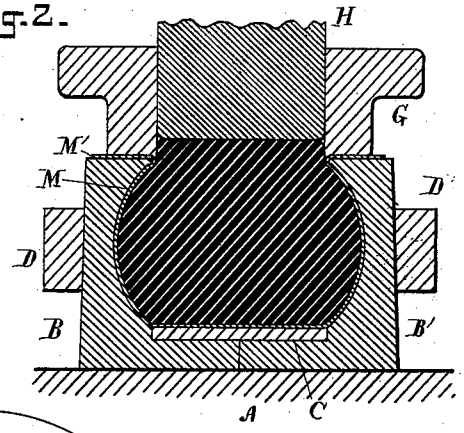
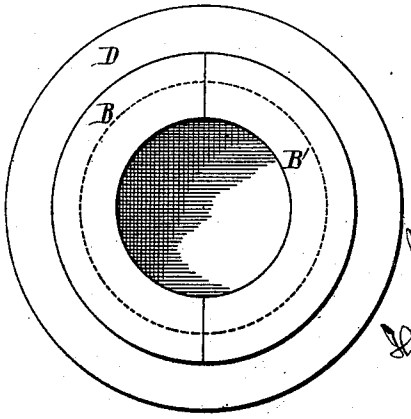



Fig. 3.

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TIMOTHY CONNERS, OF PORTLAND, CONNECTICUT, ASSIGNOR TO THE AMERICAN STAMPING COMPANY, OF NEW YORK, N. Y.

## APPARATUS FOR SHAPING METAL WARE.

SPECIFICATION forming part of Letters Patent No. 601,825, dated April 5, 1898.

Application filed May 17, 1897. Serial No. 636,872. (No model.)

*To all whom it may concern:*

Be it known that I, TIMOTHY CONNERS, a citizen of the United States, residing in Portland, Middlesex county, in the State of Connecticut, have invented a certain new and useful Improvement in Apparatus for Shaping Metal Ware; and I do hereby declare that the following is a full and exact description thereof.

The present invention involves an improvement upon the means disclosed in the patent of F. H. Webster, dated June 24, 1890, No. 430,816. Said Webster patent describes generally the placing of the metal while in cylindrical form between dies and expanding it therein by compression upon an elastic filling, which may be a cylindrical lump of india-rubber longer than the article and receiving the strong pressure on the protruding portion.

I will describe my improvement as applied to the manufacture of saucepans having the top and bottom of equal size and swelled at the mid-height.

The improvement is particularly described in the following specification and pointed out in the claim.

The accompanying drawings form a part of this specification and represent what I consider the best means of carrying out the invention.

Figure 1 is a central vertical section with parts in the press before the operation of my invention. Fig. 2 is a similar view during the operation of my invention. Fig. 3 is a plan view, and Fig. 4 is a central vertical section before the depression of the flange-holder. The upper part of the rubber is indicated in dotted lines. Fig. 5 shows the novel parts separately in detail. It is a vertical section. Fig. 6 is a central vertical section showing a modified form of the parts.

Similar letters of reference indicate corresponding parts in all the figures where they appear.

A is the bed of a press, and B B′ are two intaglio dies, which together mold the article to be shaped. They are formed separately and smoothly finished on their interiors to the required shape, but with space *c* below for a bottom plate.

C is the bottom plate, applying within the mold in the obvious manner.

D is a stout ring which is dropped upon the slightly-tapered exterior of the parts B B′.

E is a cylindrical mass of india-rubber which may be molded and vulcanized by the ordinary processes. It should be of such size as to loosely fill the sheet-metal article in its cylindrical condition before it has been distended. It should be longer than the interior of the article, so that there will be a sufficient quantity projecting at the top to be pressed down by the plunger or punch in the act of distending the article.

M is the sheet-metal blank to be treated. It will be understood that it has been previously brought to the required shape for the blank by annealing and drawing at one or more operations and that it is left with a considerable flange M′ at its upper edge. (See Fig. 4.)

G is the flange-holding die of a drawing-press, operated in the ordinary manner to hold the flange M′ by compressing it strongly upon the upper faces of the dies B B′.

H is the punch, which, as usual with this class of presses, comes into action after the flange-die has taken a firm hold. This punch-die H acts on the rubber E, depressing it strongly, which pressure is distributed through the elastic action of the rubber over the whole interior of the cylindrical portion M of the blank with the effect to distend it. As the punch H is depressed by the powerful action of the press (not shown) the originally cylindrical portion M of the blank is distended until it is supported by the dies B B′, thus taking a corresponding form. At the completion of the operation the punch H and the flange-die G are again elevated and the parts below are withdrawn. To save time, another set of removable parts with another blank may be introduced and the die-press again operated, while the shaped article is liberated by lifting the ring D and separating the dies B B′. The article is subsequently further advanced by trimming the flange, wiring, or otherwise treating the edge, applying the handle, and finishing by any desired process for surfacing, &c.

The ring G performs two important functions—one by pressing in the ordinary manner of this class of presses on the flange M′, and thereby holding the ware immovably or controlling its movements and preventing the formation of wrinkles, and another and radically different function peculiar to this invention by confining the upper portion of the rubber E and preventing its spreading laterally under the strong force impressed by the punch H and insuring that the force shall be utilized in the distending of the ware.

In the form shown in Fig. 6, which may for some reasons be preferable to that first shown, the intaglio-dies, which I will here designate *b b′*, perform the same duty as the parts B B′, except that they are not provided with bottoms. The plate C′ (the same letter as before with a supernumeral) is extended out under the dies. This figure also shows variations in some of the details—the exterior of the dies and the depth of the binding-ring. It will be understood that it may be worked in the same press and subject to the action of the same flange-holder G and punch-die H and that the action is the same as with the other form.

I attach importance to the removable bottom plate C, matching in the space *c* in the separable dies B B′, as shown, because in addition to its providing a continuous surface to mold the entire bottom, thus avoiding any showing thereon of the line of junction of the dies, it allows sufficient thickness for the inner parts of the dies at the bottom in executing all ordinary and extraordinary forms. The raised bottom in Fig. 6 allows the same stoutness of the base of the dies, but limits the capacity of the machine to the execution of only one size of base on any given bed. The construction shown in my invention, Figs. 1 to 5, inclusive, is preferable because it allows a plane bed and ready changes of parts for every required size.

I claim as my invention—

In apparatus for the manufacture of swelled ware, the externally-tapered dies B B′, recessed to conjointly present the circular bottom space *c*, a plate C adapted for said space, together with the confining-ring D, and rubber filling E, in combination with the punch H and flange-holding die G of a die-press, all arranged for joint operation substantially as herein specified.

In testimony that I claim the invention above set forth I affix my signature in presence of two witnesses.

TIMOTHY CONNERS.

Witnesses:
ASAPH H. HALE,
JNO. C. BARRY.