G. STETTER.

Dies for Making Metallic Bases for Jewelry.

No. 160,967. Patented March 16, 1875.

Fig. 1.

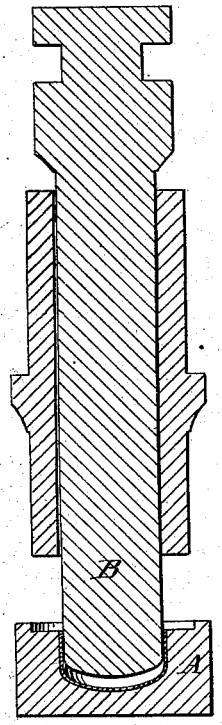


Fig. 2.

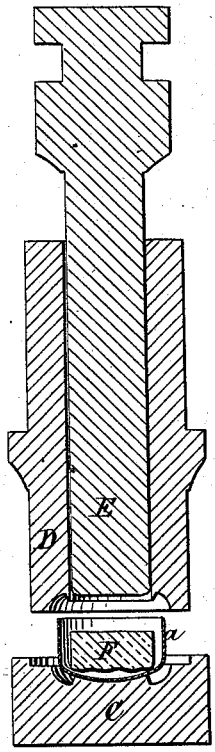


Fig. 3.

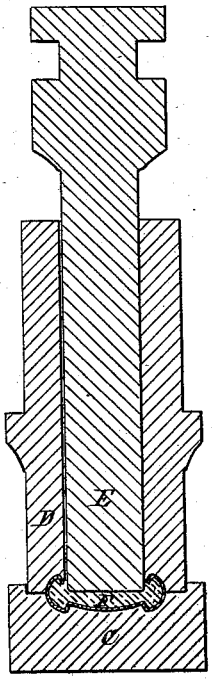


Fig. 4.

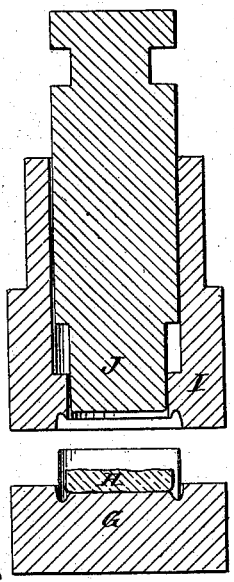


Fig. 6.

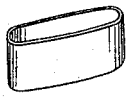
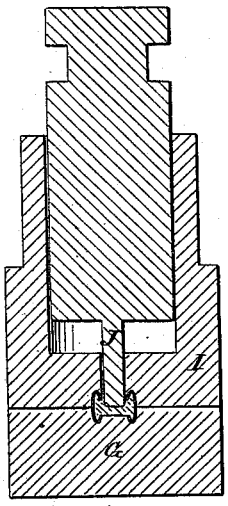


Fig. 5.



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UNITED STATES PATENT OFFICE.

GEORGE STETTER, OF HOBOKEN, NEW JERSEY, ASSIGNOR TO MULFORD, HALE & COTTLE, OF NEW YORK CITY.

IMPROVEMENT IN DIES FOR MAKING METALLIC BASES FOR JEWELRY.

Specification forming part of Letters Patent No. **160,967**, dated March 16, 1875; application filed February 5, 1875.

To all whom it may concern:

Be it known that I, GEORGE STETTER, of Hoboken, in the State of New Jersey, have invented certain new and useful Improvements in Apparatus for Shaping Articles of Jewelry and other articles of ductile metals, of which the following is a specification:

This invention relates particularly to the manufacture of hollow articles of ductile metal, having overhanging edges, which contract the entrance to the interior of the article, and make it smaller than the interior space. Heretofore the said edges have been closed or bent over by closing-dies, without any interior support to said article, the consequence of which has been that the sides or body of the article would very frequently pucker or buckle. In some cases interior support, in the shape of a sectional former or filling, has been provided, but this expedient has not been available in all instances, particularly in the manufacture of the smaller articles, and besides has not been entirely effective.

Under my invention I bring the article to a form approximating the ultimate shape required, in the usual way and by ordinary or suitable means. I then take this approximately-formed blank, and finish it in dies of usual construction, save that the closing-die is provided with a plunger which will penetrate the interior of the article. In the blank, before it is operated on in the finishing-dies, I place a block or piece of an elastic or yielding material, such as india-rubber. When the blank, thus furnished, is put in the female die or mold, the closing-die is brought down, and then when the dies are closed together the plunger is forcibly driven forward against the elastic and expansible former, which is thus made to fill the interior of the blank, and to force the walls of the same out into intimate and thorough contact with the walls of the mold, causing the metal to fill the minutest recess and depression of the mold. At one operation the blank is thus completely finished. On the withdrawal of the plunger the rubber reassumes its original condition, and when the closing-die is removed can be taken out from the metal article without difficulty.

Apparatus thus organized can be used in the manufacture of all articles of ductile metal struck up in dies, whether having overhanging edges or not, provided said articles are inclosed by the walls of the two dies that form the mold, so that the rubber must, when subjected to pressure, expand against said walls. The elastic former causes the article to take a noticeably accurate, sharp, and well-defined impression in all instances.

In the accompanying drawing I have illustrated the manner in which my invention is or may be carried into effect.

Figure 1, 2, and 3 represent the necessary steps in the manufacture of the head or body of a button, brooch, or like article.

The apparatus in the several figures are represented in vertical central section.

A blank is cut of the proper size, and is, by means of the die and plunger B, in Fig. 1, drawn to a cup or disk shape. This is an ordinary and well-known operation, and requires no further explanation. The blank *a*, approximately shaped to the ultimate form required, is then put in the lower finishing-die C, Fig. 2, which is termed the female die. Above the female die C is the closing-die D, which bends over the edges of the blank. The two dies when brought together form a mold, to which the blank is required to conform. Through the closing-die works a plunger, E, of a diameter to fit accurately the opening in the finished article. In the cup-shaped blank, before the two dies come together, is placed loosely a block of india-rubber, F. Fig. 2 represents the position of the parts when the closing-die is in readiness to descend. Fig. 3 shows the same parts in the position they assume after the descent of the closing-die, and at the moment the plunger has been driven down upon the rubber former. The closing-die by its descent has bent over the edges of the blank, the two dies brought and held closely and firmly together form with their recessed interior a mold, and the rubber spread outwardly by the forcible impact of the plunger (which is operated independently of the closing-die) has forced the metal into intimate contact with every position of the mold surface. Thus, at one operation, the cup-

shaped blank is converted into the completed and finished article. Figs. 4 and 5 represent in vertical central section, an apparatus for making scarf-rings, and like articles, such as chain-links, bracelets, &c. The plane of section in Fig. 5, is at right angles to that in Fig. 4. The blank, previously brought to the shape shown in Fig. 6, is put in the lower die G, and within it is placed a piece of india-rubber, H. The closing-die is shown at I, and the plunger at J. Fig. 4 shows the parts in readiness for descent of the closing-die. Fig. 5 represents the same parts after the closing-die has descended, and the plunger has delivered its blow.

These illustrations are sufficient to indicate the scope of my invention, and the advantages to be derived from the method of manufacture which it contemplates.

In lieu of rubber, any other suitable body possessing proper coherence, and yet susceptible of being displaced by the action of the plunger, may be employed.

By the method of operation herein described, it is practicable to reproduce on the article any desired engraved pattern or ornamentation, thus dispensing with the laborious, expensive, and often imperfect operations of embossing, striking-up, &c., heretofore required for such purposes. When embossing the article with fine or delicate figures, it is found desirable, after the first blow of the plunger, to take the article from the dies and anneal it, and then replace it in the dies, and subject it again to the action of the plunger, which removing and annealing may be done three or four times, or as often as may be required, until the impression is perfectly distinct.

What I claim, and desire to secure by Letters Patent, is—

The combination of the female die, closing-die, plunger working independently through one of the dies, and the yielding and displaceable former or block, for joint operation, as shown and set forth.

In testimony whereof I have signed my name to this specification before two subscribing witnesses.

GEORGE STETTER.

Witnesses:
W. H. L. LEE,
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