C. KNAPP.

Dies for Forming Bezels on Metallic Backs for Jewelry.

No. 161,969. Patented April 13, 1875.

Fig: 3

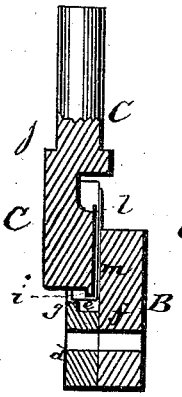


Fig: 4

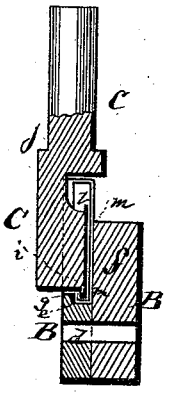


Fig: 1

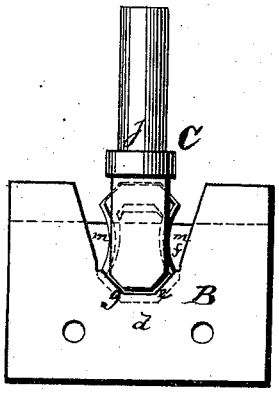


Fig: 6

Fig: 7

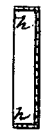


Fig: 8

Fig: 9

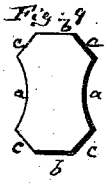


Fig: 5

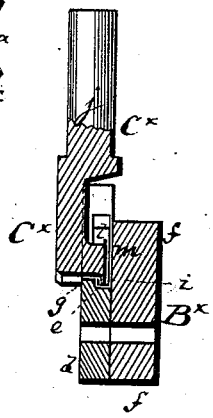
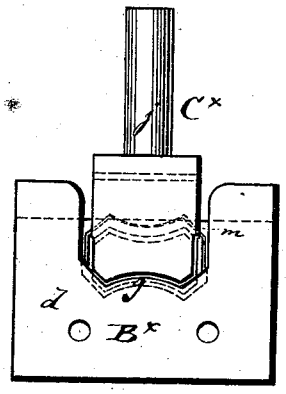


Fig: 2



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UNITED STATES PATENT OFFICE.

CHARLES KNAPP, OF NEW YORK, N. Y.

IMPROVEMENT IN DIES FOR FORMING BEZELS ON METALLIC BACKS FOR JEWELRY.

Specification forming part of Letters Patent No. **161,969**, dated April 13, 1875; application filed March 20, 1875.

To all whom it may concern:

Be it known that I, CHARLES KNAPP, of the city, county, and State of New York, have invented a new and Improved Machine for Forming Bezels on Hollow Metal Articles, of which the following is a specification:

Figures 1 and 2 are face views of two sets of dies of my improved construction. Figs. 3 and 4 are vertical transverse sections of the dies shown in Fig. 1. Fig. 5 is a vertical transverse section of the dies shown in Fig. 2. Figs. 6, 7, and 8 are sectional views of the metal blank in its respective stages of progress. Fig. 9 is a face view of a finished blank.

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

The object of this invention is to devise a machine for forming a bezel on hollow metal jewelry and other hollow metal articles whose outline may be more or less complex—that is, deviating from a circular, square, oval, rectangular, or other plain form.

My invention consists in a die having a recessed face, combined with a punch having double-faced projections, one of the projections of the punch fitting the recess of the die and part of the outline of the article to be shaped, all as hereinafter more fully described.

In the accompanying drawing, the letter A in Fig. 6 represents a longitudinal section of a plain sheet-metal blank, which is to be formed into a piece of jewelry or other article having a bezel. Fig. 7 shows the same blank after its edges have been bent once; Fig. 8, the finished article with the bezel thereon; and Fig. 9, a face view of the finished article, indicating the complexity of the outline. The letter B in Figs. 1, 3, and 4 represents the die for forming the bezel on the ends of the article shown in Fig. 9, and C the punch, adapted to the die B, while the letter $B^{\times}$ in Figs. 2 and 5 represents the die used in forming the bezel on the long sides of the finished article shown in Fig. 9, and $C^{\times}$ the punch fitting the die $B^{\times}$. If the finished article is to be made, for example, as in Fig. 9, which is of octagonal form, the two long sides being concave, it will be necessary to use two sets of dies and punches, one set for bending the concave edges *a a* and the other set for bending the ends *b b* and the contiguous slants *c c*. After the sheet metal has first been cut in proper form it is put in a suitable press, and there bent into the form shown in Fig. 7, with so much of its edges bent backward that the face will take the requisite form, the projecting edge being as much wider than the edge of the finished article as it is contemplated to turn the bezel. The die B is made in the form of a plate, having a smooth face, *m*, and to this face is rigidly attached a plate, *d*, which is rabbeted on its upper edge and inner side, the rabbet *e* being placed between the smooth face *m* of the main plate *f* of the die and the projecting rib *g* of the plate *d*. The rabbet or recess formed in the plate *d* has the depth and form of the bezel to be formed, and the outline of so much of the edge of the finished article as is to be affected by the die. The punch C has a downwardly-projecting lip, *i*, of a size and form to fit into the rabbet *e*, leaving sufficient play for the insertion of the sheet metal within the rabbet. The punch also carries on its shank *j* an upwardly-projecting lip, *l*, that enters within the article to be acted upon.

I have thus far described the die and punch shown in Figs. 1, 3, and 4, and need only to add that in every respect the die and punch shown in Figs. 2 and 5 are like the same, excepting only the difference in the outline of the rabbet *e*, and of the pendent lip *i* and lip *l*.

After the blank has been formed, as shown in Fig. 7, it is placed endwise on the rib *g* of the die, and the punch is then applied to bring its lips *i l* within the blank, the lip *i* being directly above the rabbet *e*, in the manner clearly shown in Fig. 3, whereas the lip *l* will be below the upper flange of the blank. The punch is now forced down to carry the lip *i* into the rabbet *e*, and thereby that much of the edge *h* of the blank that rested on the rib *g* is also forced into the rabbet and bent up, in the manner clearly indicated in Fig. 4, thus forming the bezel $h^{\times}$. The punch is now raised, and serves by means of its lip *l*, which comes in contact with the upper edge of the blank, to raise the blank out of the die. If it were not for the upper lip *l* it would be difficult to remove the blank from the die without disfiguring or bending the same. After one end of the blank has thus been upset or bent, the other end is placed on the die B, and treated

in the same way, and afterward the blank is put on the die $B^{\times}$, and affected by the punch $C^{\times}$ in the same way until it has been entirely completed in the desired manner.

Now, of course, where the article has a form so symmetrical that the two sets of punches can be dispensed with, I will certainly use but one set; though, on the other side, the outline of some articles may be so complicated that more than two sets of punches and dies will be required for the formation of the bezel.

In practice, the plate *f*, which, as to its shape and size, has no effect on the outline of the bezel to be formed, may be used for all the operations—that is to say, the face-plate *d* may be removed from it and another face-plate, *d*, attached to it, to allow the treatment of different-shaped portions of the same article on different dies, all of which are supported on the same plate *f;* so also the punch may be arranged with removable lips *i l*, in order to permit the use of the same punch in the formation of different-shaped articles, or different parts of the same article.

By my invention the bezel may also be formed on solid articles having sheet-metal edges. As to the shape of the bezel it is evident that the same may have a suitable form either in harmony with the outline of the blank or otherwise.

I claim as my invention—

The combination of the die B, having the face-plate *d*, and the rabbet *e* on the edge of said face-plate *d*, with the punch C, which has the lower bending-lip *i* and the upper lifting-lip *l*, substantially as herein shown and described.

The above description of my invention signed by me this 18th day of March, 1875.

CHAS. KNAPP.

Witnesses:
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