(No Model.)

J. G. WARD.

MANUFACTURE OF FINGER RINGS.

No. 595,929. Patented Dec. 21, 1897.

Fig. 1.

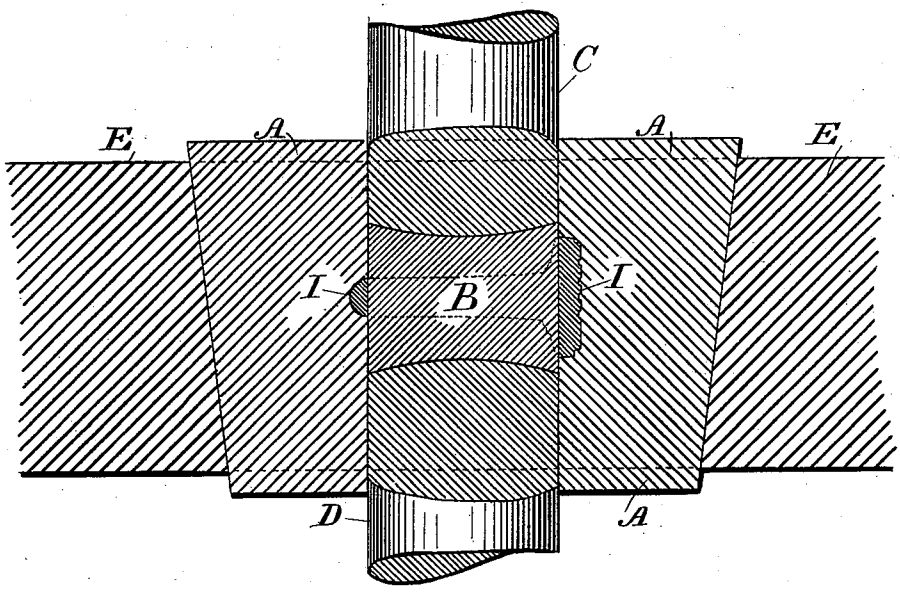
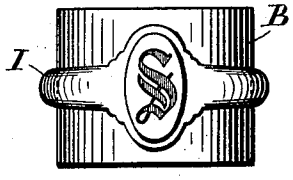


Fig. 2.



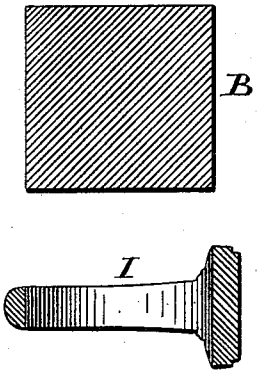


Fig. 3.

Witnesses
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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

JOSEPH G. WARD, OF NEWARK, NEW JERSEY.

MANUFACTURE OF FINGER-RINGS.

SPECIFICATION forming part of Letters Patent No. 595,929, dated December 21, 1897.

Application filed March 29, 1897. Serial No. 629,782. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH G. WARD, a citizen of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented an Improvement in the Manufacture of Finger-Rings, of which the following is a specification.

Finger and other rings have been made from a circular blank of metal pressed between punches, so as be thrown out laterally into a surrounding die; but in this operation there is risk of loss of precious metal in the removal of the web or center portion that remains within the ring, and in addition to this the punches, as one punch is moved toward the other, tend to press the metal at its edges away from the interior of the surrounding die. Thereby the article is not made perfect at these edges, and this is especially the case with finger-rings that are not of uniform width, such as seal or initial rings.

The object of the present invention is to provide for pressing up into a surrounding die a ring, so that it fills the entire die and is sharp and perfect on its edges, regardless of the shape of the ring. I have found that when a ring of precious metal is provided with an expansion-plug of greater length than the widest part of the ring, and such ring and plug are placed within a surrounding die corresponding accurately to the exterior surface of the finished article, and pressure is applied to the ends of the expansion-plug by punches, both of which receive motion, that the expansion-plug will force the precious metal laterally and with uniformity into the interior of the die and make a complete article by a uniform pressure that causes all parts of the ring to spread with uniformity in filling the die.

In the drawings, Figure 1 is a cross-section representing the parts made use of by me. Fig. 2 is an elevation representing a ring upon the expansion-plug, and Fig. 3 is a section illustrating the cast-metal ring and the plug before they are put together.

The die A is engraved or otherwise formed to correspond to the exterior surface of the finished ring, and the same is divided into two or more sections, according to the character of the ring or the ornamentation upon the same. Such ring-die A may be made up into shape solid and the periphery turned off at a bevel or slightly conical, so as to wedge tightly into the die-holder E, and such die is divided into two or more sections sometimes by scoring or sawing the exterior portions of the die to a sufficient extent upon the lines of separation and then hardening the die and afterward breaking the same apart in the manner described in Letters Patent No. 404,522, granted to F. Ecaubert June 4, 1889, for method of making ring-dies. The interior surface of this die is advantageously smoothed and polished, so that the ring formed in the same will need but little labor in completing the same after it is removed from the die. I have represented the ring at I, and within the same is an expansion-plug B, the length of which is to be greater than the ring at its widest portion, and this plug is advantageously cylindrical, and the divided dies A are made with a cylindrical opening at the sides of the ring corresponding, or approximately so, to the cylindrical shape of the expansion-plug B, so that the die A may be put together around the ring I and plug B, and then the die A inserted into the die-holder E, and two punches C and D, at opposite ends of the plug B, are caused to press upon the ends of such plug B by any suitable power, so as to lessen the length of the plug and expand the same to increase its diameter and cause the metal of the plug to forcibly spread the ring I into the interior of the die A and cause the surface of the ring to receive a perfect shape from the interior of the ornamental die, so as to substantially finish the entire surface of the ring by the internal and outward pressure exerted on the ring by the expansion of the plug. After this has been effected the die A is removed from its holder and separated and the ring and plug removed and another inserted.

I find it advantageous to cast the ring A approximately to shape and to clean the surface of such casting, if necessary, by the action of acid or otherwise, and then to provide the plugs B, of brass or similar comparatively cheap metal, and to slip such plugs into the inside of the rings as they are successively applied within the dies, and after the ring has been pressed up as aforesaid the brass may be removed by boring the same out with-

out touching the precious metal and leaving a thin skin of brass within the precious metal, which thin skin may be removed by acid or otherwise, and then the interior of the ring is to be finished by the action of suitable tools. With this object in view I have found it advantageous to provide a hollow chuck, recessed internally to correspond with the ring, so that such ring may be placed into the chuck and the precious metal upon the interior of the ring turned off or otherwise treated in any usual manner.

I do not limit myself to any particular material for the expansion-plug, and in cases where the same is of the same material as the ring the interior of the ring may be finished at the same time that the expansion-plug is bored out or otherwise removed.

Ordinarily cast-gold is porous to a considerable extent and does not receive a perfect finish. In the present instance the pressure upon the ring is so severe that the cast metal is consolidated and rendered abnormally strong and solid and the finish is perfect.

I claim as my invention—

1. In the manufacture of finger and other rings, the combination with a divided die having an interior surface corresponding to the exterior surface of the finished ring, of punches acting in opposite directions and a separate metallic expansion-plug of greater length than the widest part of the ring and extending through the same, so that the ring will be uniformly expanded into the die by the end pressure of the punches upon the expansion-plug, substantially as set forth.

2. The combination with a divided internal die, having a surface corresponding to the exterior of the ring to be formed, and a die-holder rigidly receiving the tapering exterior of the die, of two punches fitting the cylindrical interior surface of the die and acting in opposite directions, and a separate metallic plug extending through the ring and adapted to be expanded by the end pressure to cause all portions of the ring to uniformly fill the internal die, substantially as set forth.

Signed by me this 25th day of March, 1897.

JOSEPH G. WARD.

Witnesses:

GEO. T. PINCKNEY,

S. T. HAVILAND.