(No Model.)

H. LEHR.

MANUFACTURE OF FINGER RINGS.

No. 545,597. Patented Sept. 3, 1895.

Fig. 1.

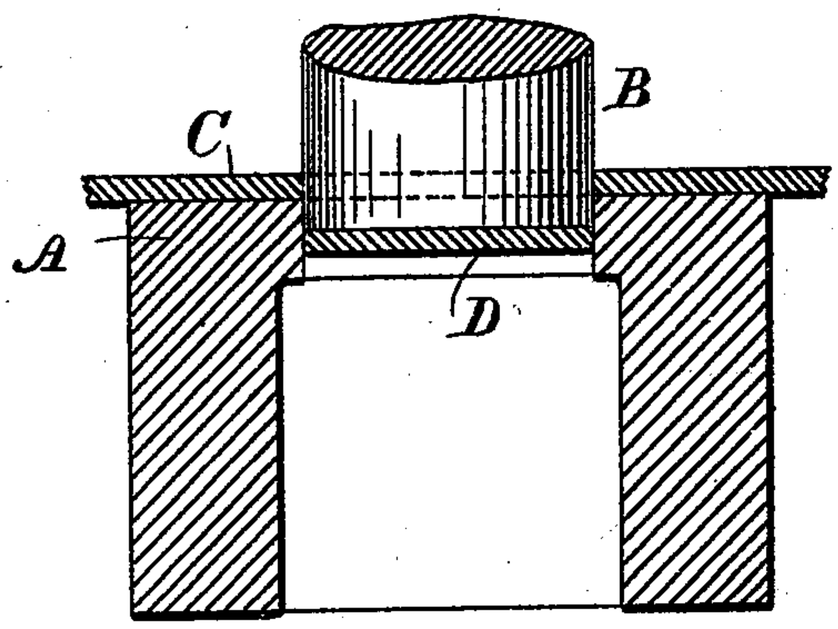


Fig. 2

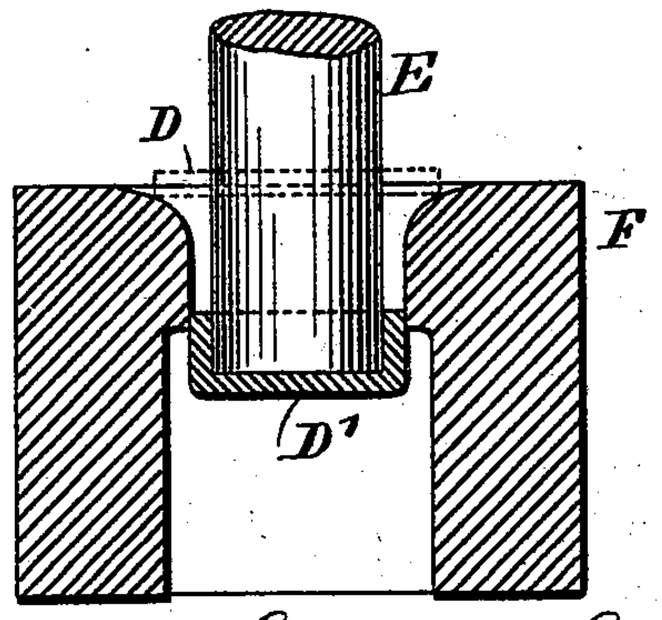


Fig. 3.

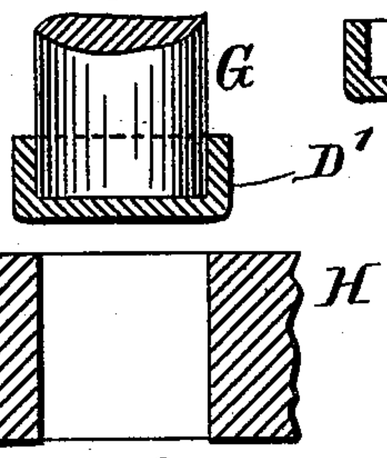


Fig. 4

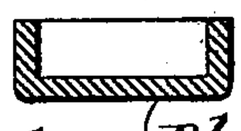


Fig. 9.

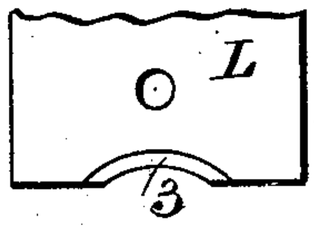


Fig. 5

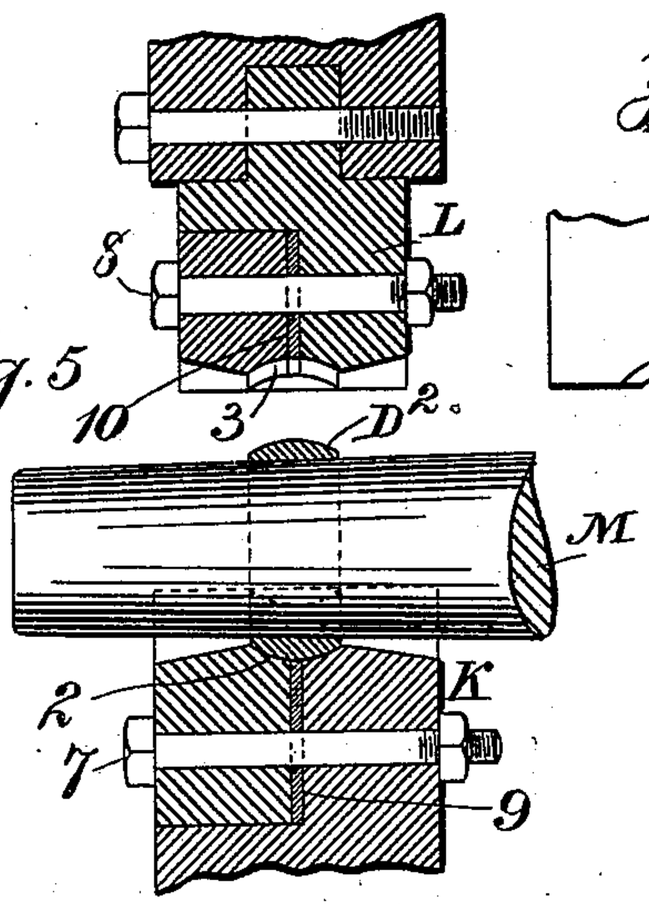


Fig. 6.

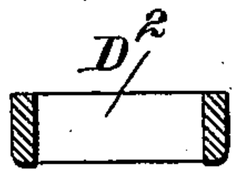


Fig. 7.

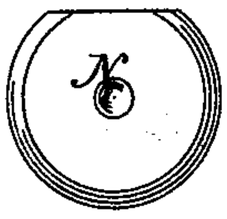


Fig. 8.

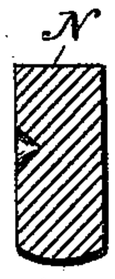
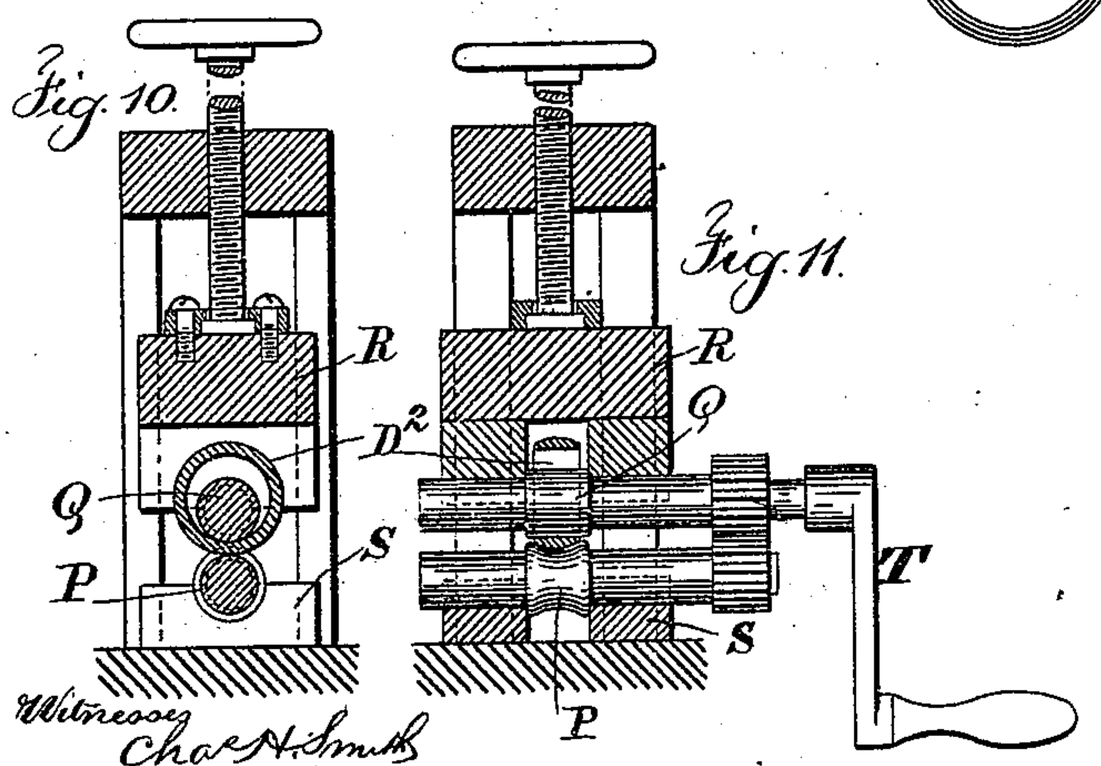


Fig. 10.

Fig. 11.



Witnesses,
Chas. H. Smith
J. Stair.

Inventor
Henry Lehr
by
Lemuel W. Serrell
Atty

UNITED STATES PATENT OFFICE.

HARRY LEHR, OF NEW YORK, N. Y., ASSIGNOR OF ONE-HALF TO THE MEERBOTT MANUFACTURING COMPANY, OF SAME PLACE.

MANUFACTURE OF FINGER-RINGS.

SPECIFICATION forming part of Letters Patent No. 545,597, dated September 3, 1895.

Application filed December 17, 1894. Serial No. 532,028. (No model.)

To all whom it may concern:

Be it known that I, HARRY LEHR, a citizen of the United States, residing in the city, county, and State of New York, have invented an Improvement in the Manufacture of Finger-Rings, of which the following is a specification.

My invention relates to the manufacture of seamless finger-rings from sheet-metal blanks. Finger-rings have heretofore been formed from flat rings of sheet metal by a series of operations with dies that spread the inner edge of the ring-blank and contract the outer edge of said blank.

In my improvement an imperforate blank is by suitable dies struck up into cup shape. The bottom is then by other dies cut out of the cup, leaving a cylindrical ring-blank. This ring-blank is then put upon a mandrel and shaped between said mandrel and dies with recessed surfaces, so as to obtain the desired sectional form of the finished ring.

In the drawings I have represented by diagrammatic sections the successive stages in the operations of cutting out and shaping the rings, Figures 1, 2, and 3 being sections of the dies that are used in succession. Fig. 4 is a section of the cup. Fig. 5 is a section of the swaging-dies and of the mandrel upon which the ring is placed during the swaging operation. Fig. 6 is a section of the cylindrical ring-blank as cut out. Fig. 7 is a side view. Fig. 8 is a section of the form used in making the dies. Fig. 9 is one side of the separable die. Fig. 10 is a vertical section of the finishing-rolls, and Fig. 11 is a vertical section at right angles to the sectional plane of Fig. 10.

The die A is circular and of a size adapted to the ring to be made, and the punch B fits the die A and is adapted to cut out a circular imperforate blank D from the sheet or strip of gold or similar metal C, and this circular blank D is struck up by the punch E and die F into the cup-shaped blank D′, (shown sectionally in Fig. 4,) and the bottom of this cup-shaped blank is cut out by a punch G and die H, (shown in Fig. 3,) whereby the cylindrical seamless ring-blank D^2 is produced that is finished up to form the finger-ring. I provide a recessed die K, adapted to be secured to the bed of any suitable stamping-press, and a similar die L, that is adapted to be secured to the head-block or follower of such press, so that this die L can be raised and brought down with the desired force in swaging the ring D^2 upon the mandrel M, and the recesses 2 and 3 in the respective dies K and L are rounding and nearly segments of a globe, and in preparing these dies K and L it is advantageous to provide a steel blank N, that is turned up to correspond to the exterior rounding surface of the finger-ring that is to be produced, and this form N is hardened and polished, and then it is introduced into a suitable drop-press or stamp, and the die K, in a soft condition, is roughly recessed, and the form N is forced down upon such die and into such recesses to give shape to the same and produce a polished surface on the interior of such recesses adapted to act upon the finger-ring. This die K is then hardened, and the die L is similarly prepared, so that the recesses 2 and 3 in the respective dies correspond and are very smooth and adapted to finishing the exterior surfaces of the ring D^2. The form N is advantageously dressed off at one side, so as to form a flat surface against which the follower presses when using this form for giving shape to the recesses 2 and 3 in the manufacture of the dies K and L, and the other portions of the form N, being circular, correspond to the recesses 2 and 3, and this form can be used between the dies K and L when such dies are being placed in the drop or press, so that after the die L has been secured in the follower or head the die K can be adjusted, so that the form N acts properly between the two dies and in the respective recesses, and then the die K is to be held firmly in position by screws or otherwise, as usual. The mandrel M is tapering, so as to be adapted to different sizes of finger-rings, and the blank D^2 is slipped upon the same, so that the ring can be laid into the recess 2 in the die K, and then the die L is to be brought down by the action of the drop or press to swage the finger-ring D^2 and round its edges, and these operations are repeated while the man-

drel M is rotated until the ring is shaped complete upon this mandrel M by the action of the dies K and L. During this operation the gold is hardened and consolidated, and, if desired, the dies can be manipulated so as to stretch the ring D^2 to the desired size, the mandrel M being moved along into the ring as it is enlarged by the swaging operation; but usually the ring will not be enlarged, because the dies K and L extend over it sufficiently to act in contracting the ring instead of stretching it, if so desired.

It sometimes happens that the finger-ring requires to be enlarged and its edges finished smoothly. To accomplish this object, I make use of rollers P Q, supported in suitable frames or holders R S, which are movable one toward the other, so that by placing the ring over the roller Q and then bringing the same up against the roller P and rotating such roller Q by a crank or handle T the ring will be rolled between the two surfaces and receive a smoothing operation at its edges, and by these rolls the ring can be reduced in thickness and increased in diameter to whatever extent is desired.

Finger-rings, especially those that are plain, are made of various widths, and to accommodate such varying widths the dies K and L are made in two parts separable in a plane passing through the centers of the recesses 2 and 3, and when these two parts of the dies K and L are put together and secured by bolts 7 and 8 such dies are adapted to the narrowest width of ring, and plate-sections 9 and 10 can be introduced between the sectional dies K L so, as to increase the width of the recesses 2 and 3 to any desired extent, according to the thickness of the plates 9 and 10, and such plates are held in position by the bolts and their smooth edges or operative surfaces are to be flush and true with the curved surfaces of the respective recesses 2 and 3.

I claim as my invention—

1. The herein described improvement in the manufacture of finger rings consisting in cutting out a circular imperforate blank, stamping the same up into a cup shape, cutting out the bottom of the cup and thereby forming a cylindrical ring blank, and swaging such ring blank between a mandrel and dies with recessed surfaces to give the blank the required sectional shape, substantially as set forth.

2. The herein described improvement in the manufacture of finger rings consisting in cutting out a circular imperforate blank, stamping the same up into a cup shape, cutting out the bottom of the cup and thereby forming a cylindrical ring blank, and swaging such ring blank between a mandrel and dies with recessed surfaces to give the blank the required sectional shape, and also rolling the ring between rollers to finish the surfaces of the edges, substantially as set forth.

3. In the manufacture of finger rings the dies K and L having plain recessed surfaces and divided into two parts centrally and longitudinally through such recessed surfaces, and removable plates introduced between the two parts of the dies and having plain edges conforming to the curved recessed surfaces of the dies and which plates are changeable for similar plates of different thicknesses, and bolts for securing the dies and plates together so as to adapt such dies to finger rings of different widths, substantially as set forth.

Signed by me this 14th day of December, 1894.

HARRY LEHR.

Witnesses:
GEO. P. PINCKNEY,
S. T. HAVILAND.