

No. 764,862.

PATENTED JULY 12, 1904.

F. MOSSBERG.
PROCESS OF MAKING METAL RINGS.

APPLICATION FILED OCT. 12, 1903.

NO MODEL.

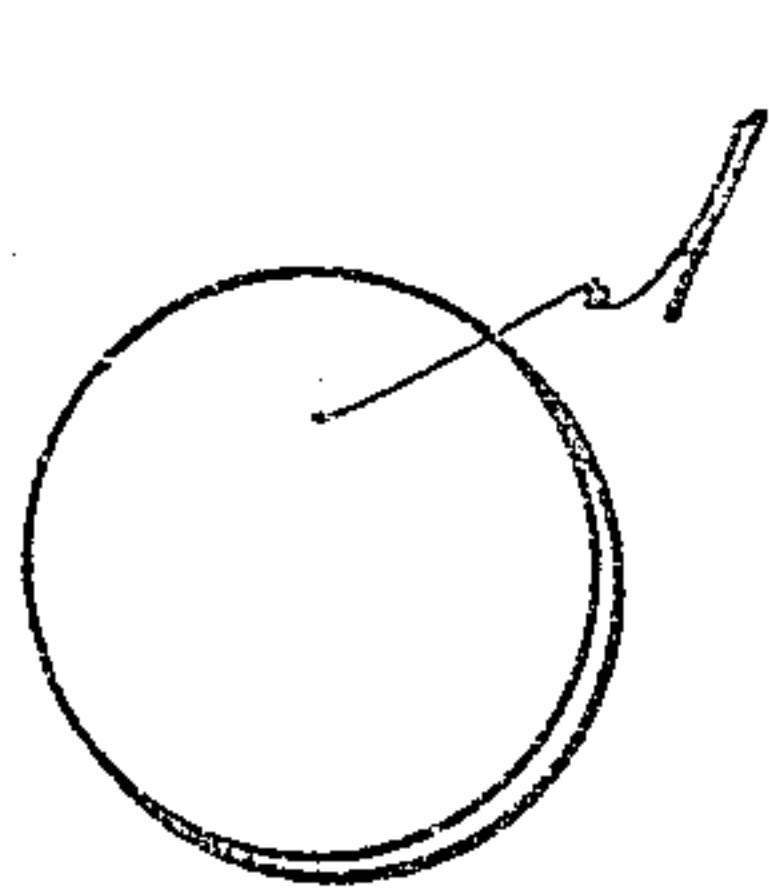


Fig. 1.

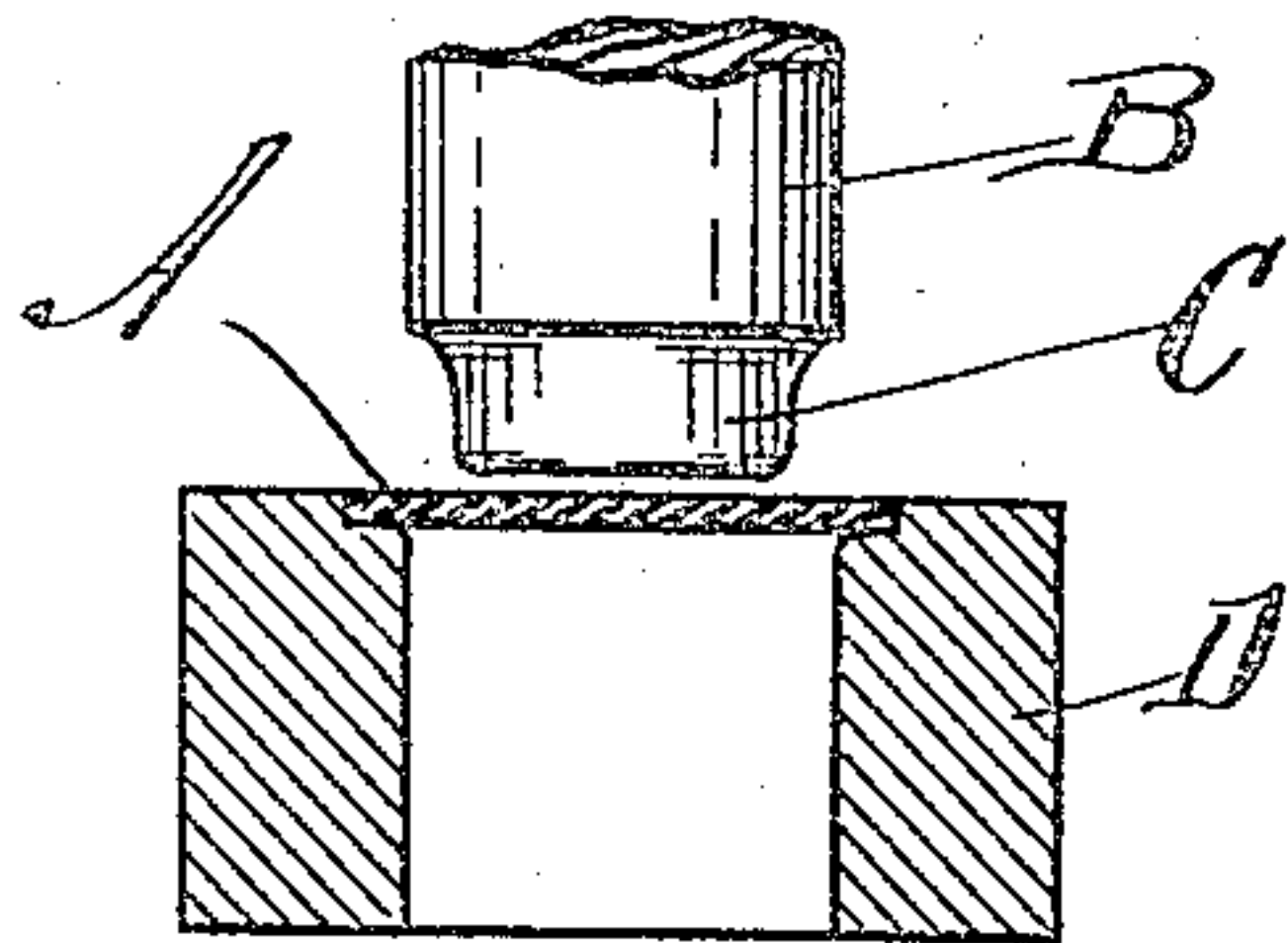


Fig. 2.

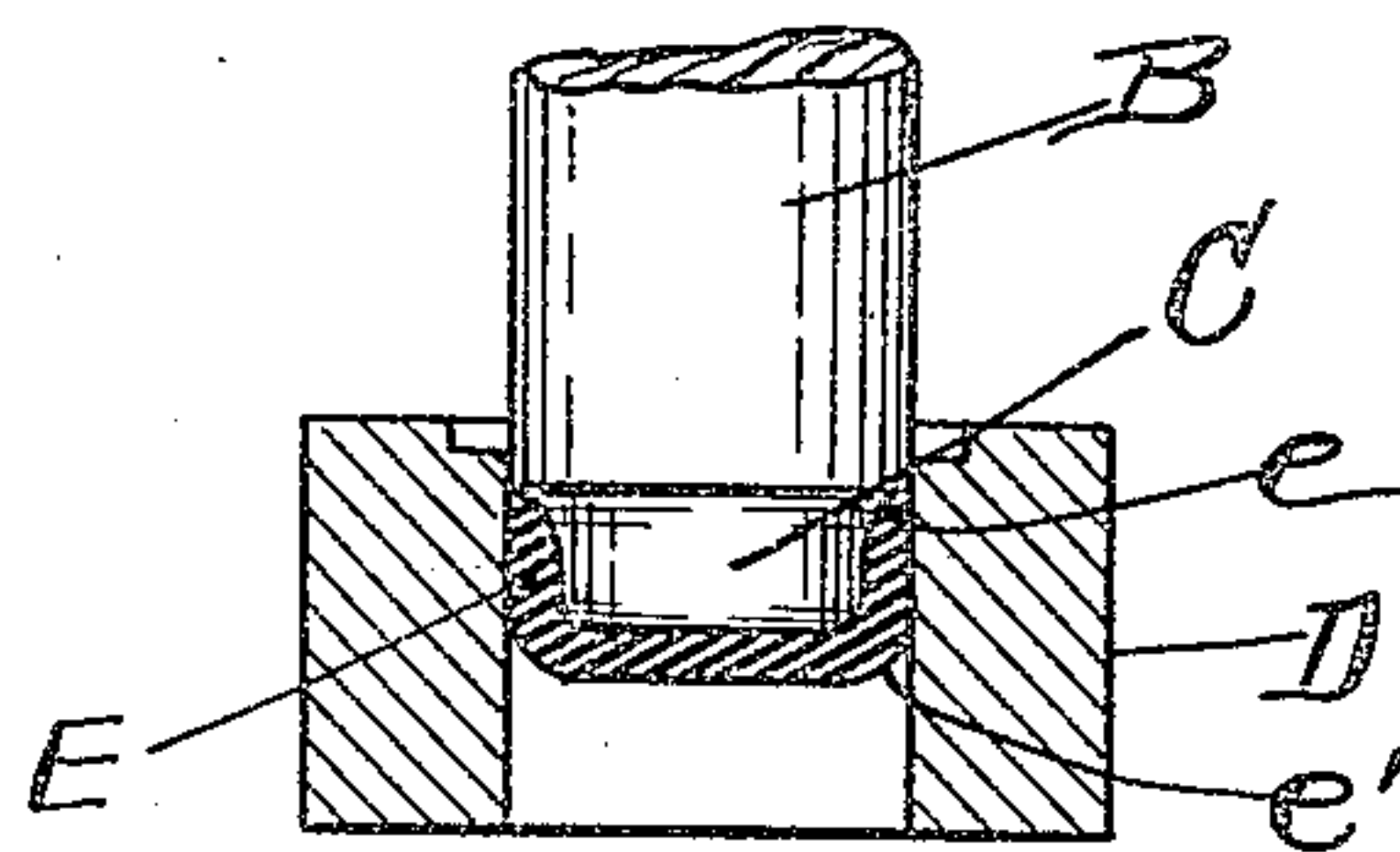


Fig. 3.

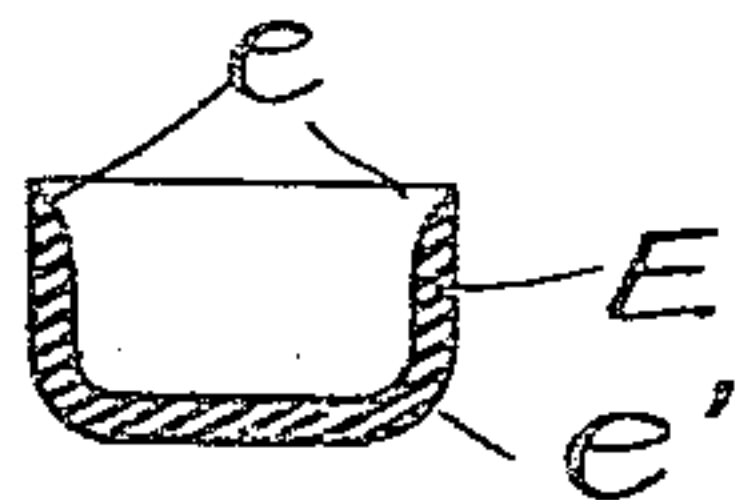


Fig. 4.

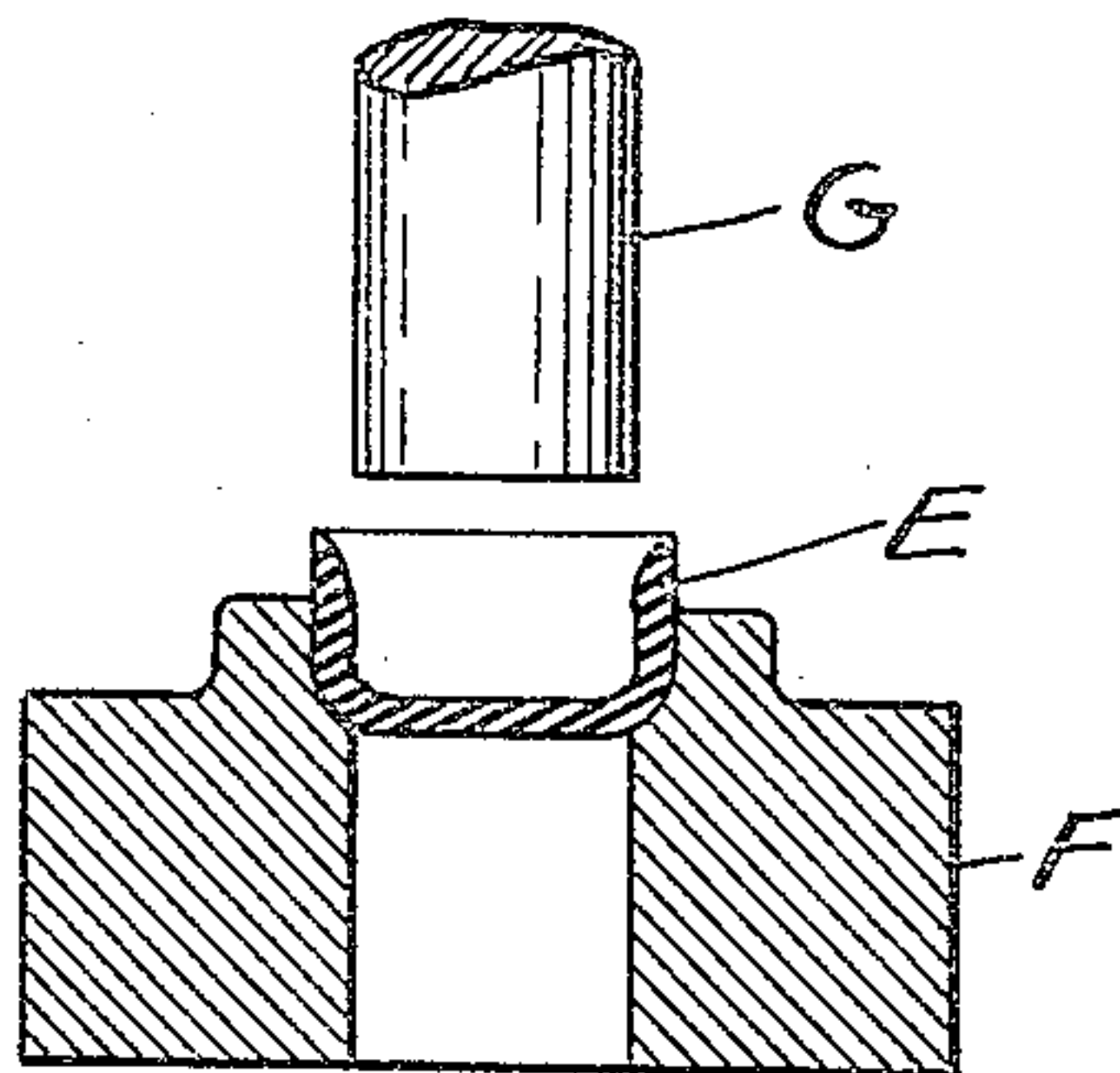


Fig. 5.

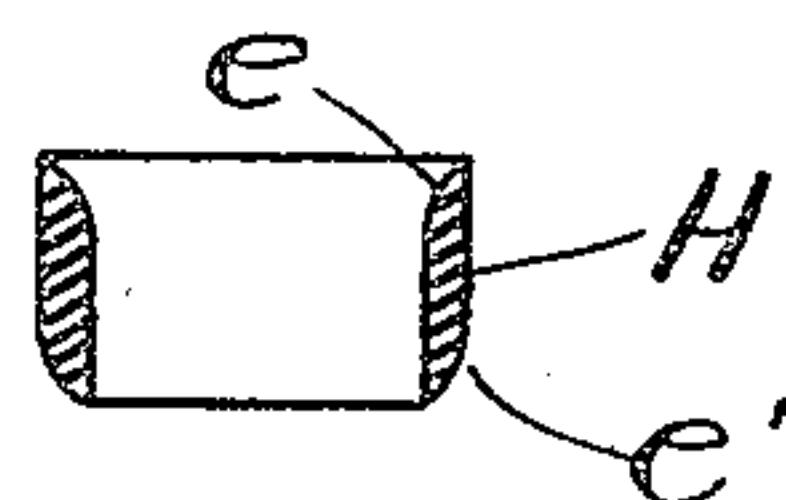


Fig. 6.

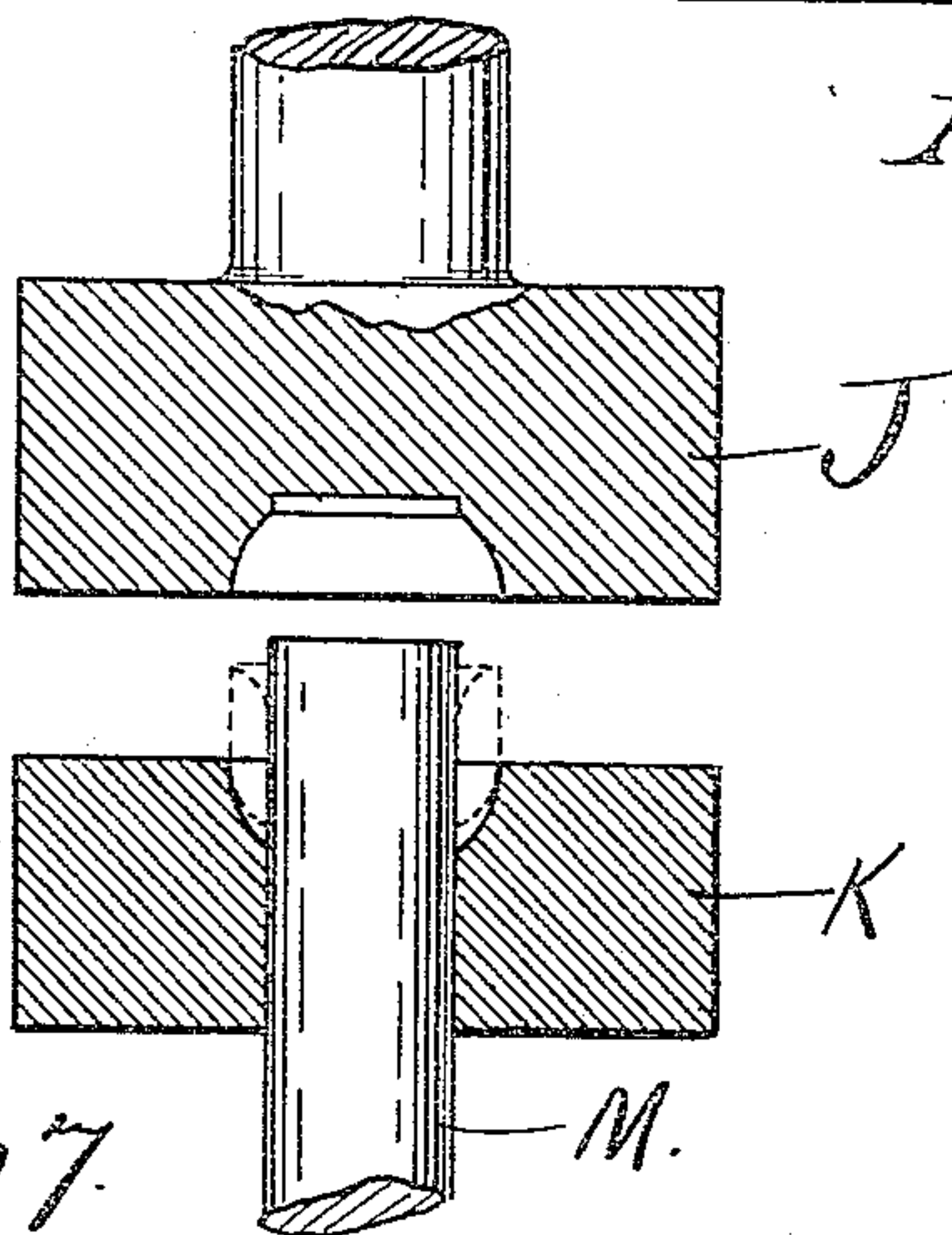


Fig. 7.

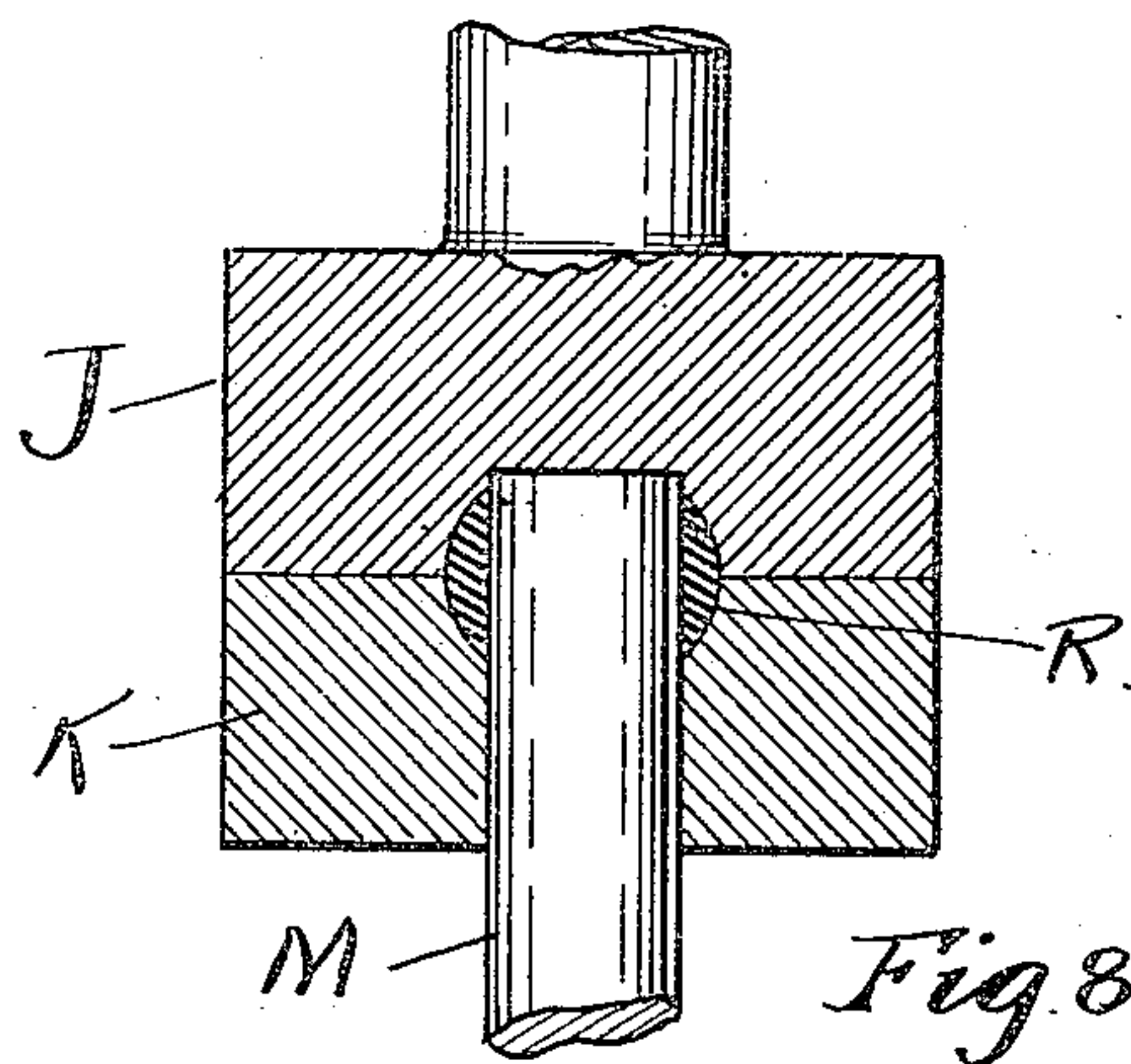


Fig. 8.

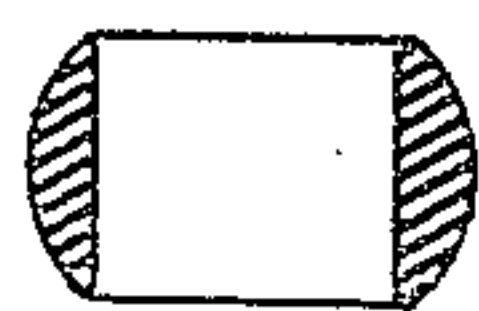


Fig. 9.

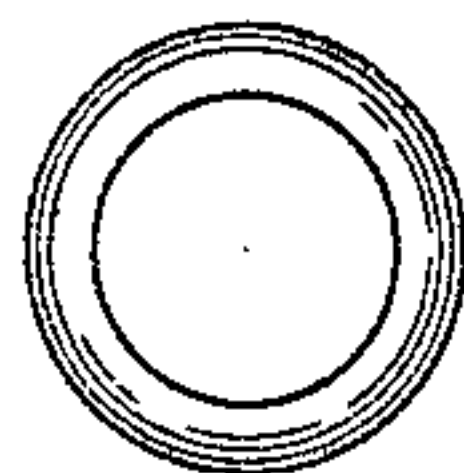


Fig. 10.

Witnesses

Frank A. Foster
E. J. Ogden.

Inventor

Frank Mossberg.

By

Howard C. Barlow

Attorney.

UNITED STATES PATENT OFFICE.

FRANK MOSSBERG, OF ATTLEBORO, MASSACHUSETTS, ASSIGNOR TO
FRANK MOSSBERG COMPANY, OF ATTLEBORO, MASSACHUSETTS,
A CORPORATION OF RHODE ISLAND.

PROCESS OF MAKING METAL RINGS.

SPECIFICATION forming part of Letters Patent No. 764,862, dated July 12, 1904.

Application filed October 12, 1903. Serial No. 176,640. (No specimens.)

To all whom it may concern:

Be it known that I, FRANK MOSSBERG, a resident of the town of Attleboro, in the county of Bristol and State of Massachusetts, have invented certain new and useful Improvements in Processes of Making Metal Rings; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention pertains to a new method or process of making rings, and has for its object the construction of ornamental finger-rings, as well as rings for various other purposes, by drawing or swaging. To produce the rings in this manner, stock is rolled into sheets of the required thickness, from which circular blanks are cut and swaged by a series of operations into a ring of the desired form and size, thus producing a continuous band from one solid piece of material without a joint, with its surface and edges hardened, finished, and polished ready for service without the necessity of turning or grinding, as is now the case in finishing a finger-ring made in the ordinary manner.

The invention consists of novel features and parts and combinations of the same, as will be fully described hereinafter and then pointed out in the claim.

A practical embodiment of the invention is presented in the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 represents the blank as cut from the sheet-stock. Fig. 2 represents the blank in place on the die with the plunger in position above it. Fig. 3 represents the plunger as having descended and forced the stock into the die. Fig. 4 is a sectional view of the cup-shaped piece formed from the blank. Fig. 5 illustrates said cup-shaped piece in its die with the cutter-plunger ready to descend and punch out the bottom. Fig. 6 shows the cup with the bottom punched out. Fig. 7 illustrates the forming-dies as drawn apart with the blank

dotted in position to be struck up in the desired form. Fig. 8 shows said forming-dies closed with the ring in position therein swaged into shape. Fig. 9 shows the finished ring in section swaged into an oval or convex form on its outer periphery. Fig. 10 is a view in elevation of a finished ring.

Referring to the drawings, A is the circular blank or disk, which may be struck from sheet metal previously prepared in any suitable manner and made to the desired gage. The material used may be gold, silver, brass, steel, or any other suitable metal or material which may be cut, drawn, and swaged into the desired form. The material after being cut to the desired size and shape is forced by the plunger B into the die D, the end of said plunger B being reduced in diameter to an amount double the gage or thickness of the material to be worked. When it is desired to make a ring whose periphery is in an oval form like that illustrated in Fig. 9, the shoulder where the reduced portion C joins the larger portion of the plunger is rounded out or filleted on a large radius, which is necessary for turning or forcing out the upper edge *e* of the blank E the desired amount as the material is forced into the die, as best illustrated in Fig. 3. The end of the said plunger C is also rounded about its lower edge on a radius sufficient to draw and round up the material on the outside the desired radius on its lower edge *e'*, as also illustrated in Fig. 4. The effect of this operation is to crowd or condense the metal at the points *e* and *e'*, making the metal at these points of maximum hardness. The next operation is that illustrated in Fig. 5. The work E is placed in the proper die F made to receive it. The plunger G is forced down through the work, punching out the bottom of the cup, which bottom falls in the form of a small disk, leaving the work in the form of a ring H. (See Fig. 6.) This punching operation does not materially alter the condensed or hardened condition of the metal at *e'*. The ring-blank thus provided has its lower end rounded in at *e'* from its periphery to its lower inside edge on the arc of a circle which ex-

tends substantially one-half the width of the ring. The upper edge of this ring is also rounded off at *c*, but on a reverse curve to that of the lower edge, which curve extends from the inside circle to the upper outside edge and extends down into the ring approximately one-half its width. The ring is next placed in the forming-dies, (illustrated in Fig. 7,) said dies being made in two parts J and K, with a removable center post M through the lower die. These dies are both cupped out into the form in which the periphery of the ring is to be swaged, and as the dies are brought together the upper edge of the metal in the ring is turned over or drawn in against the post M into the form illustrated at R in Fig. 8, the condensed or hardened condition of the metal at said edge remaining unaltered as a result of this last step. The dies are then separated, the center post withdrawn, and the ring is turned out with a convex periphery, the form illustrated in Figs. 9 and 10.

It will be noted that the blanks A may be cut from the sheet stock and swaged into the form of cup E in one operation, if desired, without departing from the spirit and scope of my invention.

The advantages of my improved method of making rings will be apparent to those skilled

in the art to which it appertains. It will be particularly noted that by employing forming-dies which act on the edges of the ring-blank in the manner described the metal in said edges is closely condensed, whereby the edges of the finished article are made extremely hard and durable. This is of particular advantage in making rings of very thin stock, in which it is absolutely essential that the edges be of maximum hardness to withstand wear.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

The method of forming rings, consisting in drawing a blank into the form of a cup and simultaneously swaging or forcing the upper inner edge outward, and drawing the lower outer edge into a rounded form, all in the same operation; punching the bottom from said cup, whereby a ring-blank having tapering edges is secured; and finally forcing said upper edge inward, whereby a plano-convex ring is formed.

In testimony whereof I have hereunto set my hand this 7th day of October, A. D. 1903.

FRANK MOSSBERG.

In presence of—

HOWARD E. BARLOW,
FRANK A. FOSTER.