

No. 612,768.

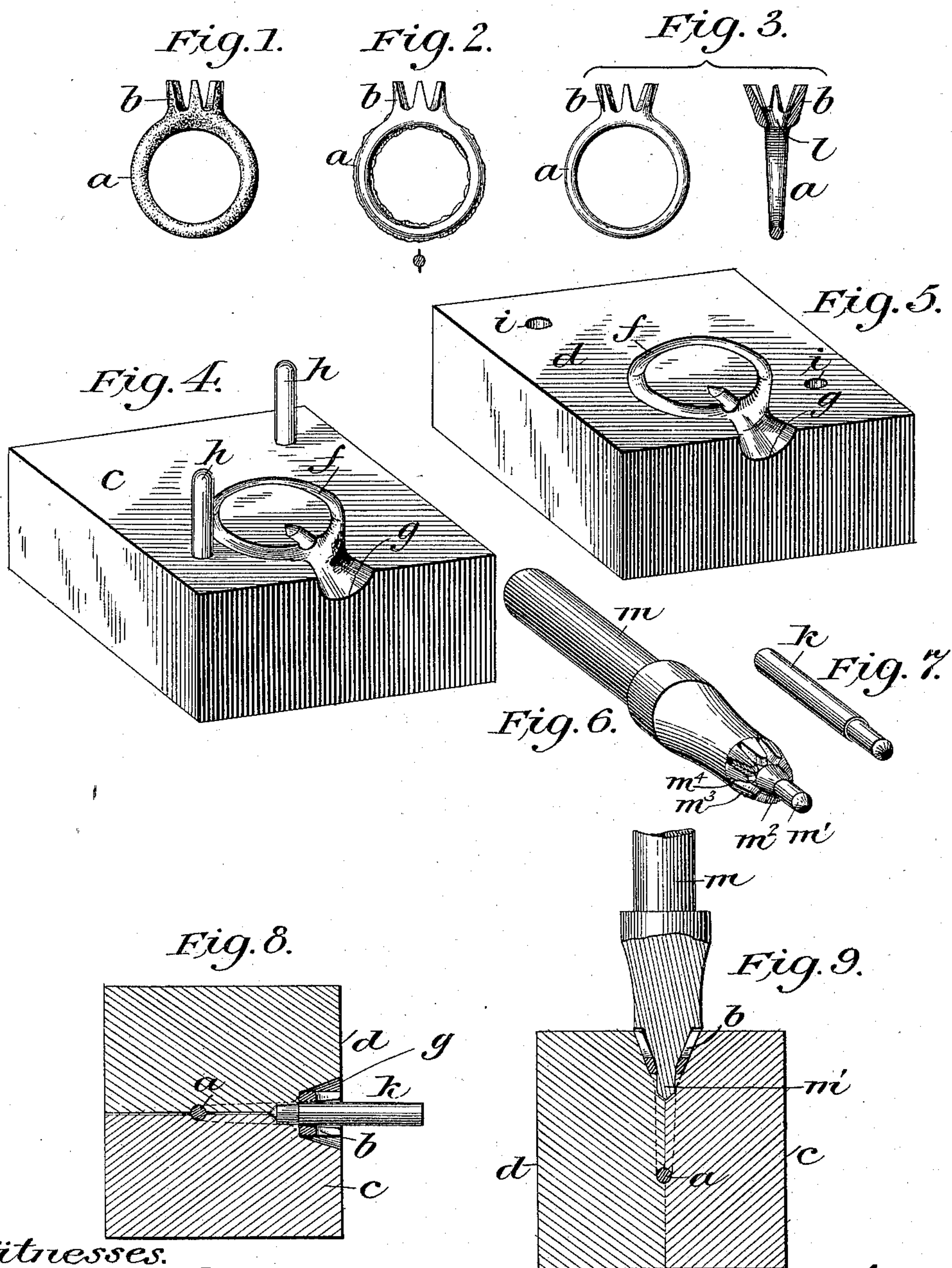
Patented Oct. 18, 1898.

A. H. FETTING.

DIE FOR MANUFACTURING FINGER RINGS.

(Application filed Nov. 24, 1897.)

(No Model.)



Witnesses.

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UNITED STATES PATENT OFFICE.

ANTON H. FETTING, OF BALTIMORE, MARYLAND.

DIE FOR MANUFACTURING FINGER-RINGS.

SPECIFICATION forming part of Letters Patent No. 612,768, dated October 18, 1898.

Application filed November 24, 1897. Serial No. 659,684. (No model.)

To all whom it may concern:

Be it known that I, ANTON H. FETTING, a citizen of the United States, residing at the city of Baltimore, State of Maryland, have invented a certain new and useful Improvement in the Manufacture of Finger-Rings, of which the following is a full, clear, and exact description.

The object of this invention is to make a finger-ring from a cast blank which shall be free from the porosity, and hence brittleness, incident to castings.

In carrying out my invention I first cast the blank in any suitable way and then swage it, and thereby condense and consolidate its material. Afterward the swaged ring is submitted to usual finishing operations, such as filing, burnishing, or polishing and the like.

As my invention was designed, primarily, with reference to rings to which gems or other objects are applied, I have illustrated and will describe a ring having cramps or clamps for the reception of the gem, but do not mean to be understood as thereby limiting my invention to a set-ring having any particular kind of setting.

In the accompanying drawings, illustrating my invention, in the several figures of which like parts are similarly designated, Figure 1 is a plan view of the rough casting or blank. Fig. 2 is a similar view of the blank after the first swaging operation and also showing a section thereof developed below. Fig. 3 shows in plan and cross-section the finished ring ready for the gem-setting. Fig. 4 is a perspective view of the male, and Fig. 5 a similar view of the complementary female, die for effecting the first swaging operation. Fig. 6 is a perspective view of the second operation swage or tool. Fig. 7 is a perspective view of a mandrel used in the first operation. Fig. 8 is a vertical section of the dies in the first operation, and Fig. 9 is a vertical section of the dies and swage in the second operation.

As shown in Fig. 1, a ring *a*, having the cramps or clamps *b*, is first produced in the rough by casting. These cramps or clamps may have their external walls parallel, as in Figs. 1 and 2, or they may be cast flaring, as in Fig. 3. Heretofore such cast rings have been finished by filing and similar operations; but rings so made are inherently weak and

brittle, owing to the porosity of the casting. Of course a cast ring may be more economically produced or manufactured than a wrought ring, but its durability is not so great. My invention seeks to render a cast ring substantially equal in strength and durability to a wrought ring, and to this end I take the rough casting or blank and submit it to one or more swaging operations, whereby the metal is condensed or consolidated and its porosity so far eliminated as to overcome the inherent defects of casting.

The swaging dies *c* and *d* are counterparts, each being made with a matrix *f*, which opens out at one end, as at *g*, for the reception of the crown or head socket cramps or clamps, the walls of the cavities *g* being of the external shape of the finished cramps or clamps. These dies are provided with the usual guide-pins *h* and holes *i*.

A blank having been placed in the matrix of one die and the other die having been superposed and a mandrel *k* inserted in the hole of the blank in order to preserve its contour, pressure is applied in any suitable manner to the dies, and thereby the blank swaged. The ring is then taken from the dies and any fins formed thereon, as in Fig. 2, are ground or filed away or otherwise removed. After this first operation the mandrel is removed, and the dies being suitably held together with the ring in place therein, the swage, die, or tool *m*, Figs. 6 and 9, is forced in between the cramps or clamps similarly to act upon them. After this operation the ring is further finished for the reception of the gem or setting of whatever character used.

The swage, die, or tool *m* has a point *m'*, which enters the hole *l* of the ring, and this point is cylindrical. The point runs out into a frusto-conical portion *m²*, and this frusto-conical portion is surrounded by integral fingers *m³*, which are separated by grooves *m⁴*, of complementary shape, the fingers and grooves corresponding to the number and final shape of the cramps or clamps which receive the gem or setting; but it will be understood that I do not limit my invention to any kind or character of cramps, clamps, or sockets for the setting. In some cases the frusto-conical portion *m²* will be omitted and the fingers *m³* and grooves *m⁴* will radiate from the root of

the point m' . Other modifications may be made also within the scope and purpose of my invention.

There are two usual forms of cramps, one of which has its external walls parallel, as in Figs. 1 and 2, and the other of which has its external walls flaring, as in Fig. 3, and the swage, die, or tool m will conform to the final shape of these cramps or clamps and to others that are or may be used.

The functions of the swage m are, as already indicated, to condense or consolidate the metal of the casting and to finish out the roots and tips of the individual cramps, so as to avoid as much as possible the waste of metal incurred in filing or grinding and also to avoid as far as possible such manipulation of the ring.

By the term "socket" as herein used I mean to include "cramps" or "clamps," technically so known, as well as bezels or bands, crowns or heads, and other cavities or mediums within which a gem or other setting is fixed.

The advantages of my invention have been already sufficiently indicated; but it is to be observed that by it the cheap cast blank may be taken, its porosity removed, or, in other words, its density increased and its strength augmented, and the ring finished very expeditiously and at a greatly reduced, if not wholly removed, loss of metal by filing.

What I claim is—

1. Dies, for the manufacture of finger-rings, having complementary matrices to receive the ring body or circle and externally-opening matrices for the socket, whereby the blank may be shaped and at the same time condensed, and means to enter the socket within the externally-opening matrices for similarly shaping and condensing such socket, substantially as described.

2. Dies, for the manufacture of finger-rings from cast blanks, having complementary matrices to receive the body or circle, and matrices of the external shape of the socket and leading from such body-matrices and open-

ing out from the dies, to receive the socket, and a swage constructed to conform to the desired internal form of the socket and adapted to enter such socket through such externally-opening matrices, the said dies and swage serving to shape and condense the ring, substantially as described.

3. Dies, having complementary matrices to receive the ring body or circle, and externally-opening matrices for the socket, whereby the blank may be shaped and at the same time condensed and a swage constructed to enter the external matrices and similarly condense and shape the socket, substantially as described.

4. A swage for condensing the cramps or clamps of a cast-metal ring, comprising a leading-point, and alternating fingers and grooves arranged circumferentially around the base of said leading-point, substantially as and for the purpose described.

5. A swage for condensing the cramps or clamps of a cast-metal ring, comprising a leading-point, a frusto-conical portion, and alternating fingers and grooves arranged circumferentially around the said frusto-conical portion, substantially as and for the purpose described.

6. Dies, for the manufacture of finger-rings from cast blanks, having complementary matrices to receive, shape and condense the circle or body of the ring, and matrices opening out externally from said circle-matrices to receive the socket of the ring and shape it externally, a mandrel to support the socket temporarily, and a swage to enter the socket through the externally-opening matrices, after the withdrawal of the mandrel, and shape it externally and condense it, substantially as described.

In testimony whereof I have hereunto set my hand this 23d day of November, A. D. 1897.

ANTON H. FETTING.

Witnesses:

MURRAY HANSON,
WILLIAM H. BERRY.