

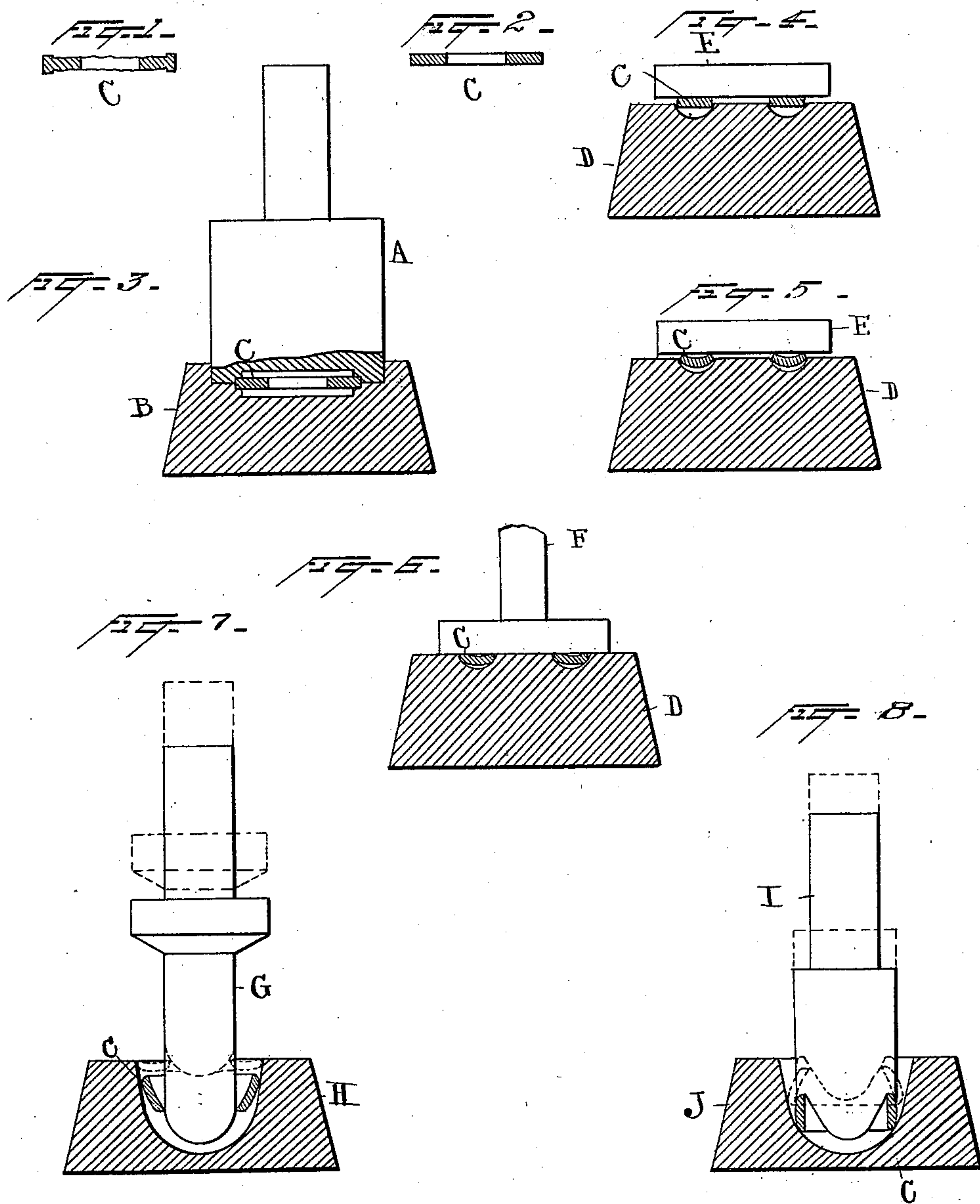
(No Model.)

H. V. BERNHARDT.

METHOD OF MANUFACTURING ORNAMENTED RINGS.

No. 512,676.

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Witnesses
Irons Clark.
George B. Cronk.

Inventor
Herman V. Bernhardt
By his Attorneys
Dyer & Seely

UNITED STATES PATENT OFFICE.

HERMAN V. BERNHARDT, OF BROOKLYN, ASSIGNOR TO J. B. BOWDEN & CO., OF NEW YORK, N. Y.

METHOD OF MANUFACTURING ORNAMENTED RINGS.

SPECIFICATION forming part of Letters Patent No. 512,676, dated January 16, 1894.

Application filed February 18, 1893. Serial No. 462,803. (No specimens.)

To all whom it may concern:

Be it known that I, HERMAN V. BERNHARDT, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented a certain new and useful Improvement in Methods of Manufacturing Ornamented Rings, of which the following is a specification.

My invention is especially designed for the manufacture of seamless rings from ornamented annular blanks, the object being to avoid marring the ornamentation of the blank, so that on the finished ring the same will be preserved without blemish.

In carrying out my invention, I take a blank annular disk or washer, ornamented by engraving, stamping or other suitable method, either on one or both sides, and operate upon the same by suitable tools in such manner that the inner and outer edges only will come into contact with the tools. In carrying out this idea of operating upon the edges of the blank only, I first, to make a ring with the ordinary rounded outer surface introduce the blanks into a tool which preferably slightly rounds its edges, and which brings its lower surface to a slightly rounded form. This operation of rounding the edges of the blank is carried out by the aid of a tool so designed and constructed as to avoid marring the ornamentation adjacent to the edges of the ring. When a ring blank is employed which has a raised edge, such as has a silver quarter of a dollar, I first operate on the outer or raised edge thereof to reduce the said edge to about the same level as the remainder of the piece; but when an ornamented blank without a raised edge is to be operated upon, this reducing operation is unnecessary. A band ring *i. e.* one having a straight outer wall need not be operated on by the tools for rounding the edges of the blank. After the edges are rounded, the blank is then introduced into a tool which operates on the edges only and in such manner as to change the shape from a substantially flat blank to a blank having inclined walls; said blank is then introduced into another tool, which operates only upon the edges thereof and brings the inclined

walls into the perpendicular, and hence transforms the blank into a finished ring. When the ring desired is a band ring *i. e.* one with a straight outer wall, the disk blank is introduced directly into the tool mentioned in the last paragraph for changing the shape of the blank from one substantially flat to one having inclined walls, no previous operations having been performed on the annular blank. After this treatment it is then introduced into the tool mentioned in the last paragraph for bringing its inclined walls into the perpendicular; both the last mentioned operations taking place on the edges of the ring only. For each size of ring desired, a set of different sized tools may be employed, or where a single set of tools is employed, the rings of uniform size produced thereby may be changed into rings of different diameters, by suitable sizing apparatus, preferably, however, such as shown and described in my application, Serial No. 453,247, filed November 25, 1892.

In the accompanying drawings, forming part of this specification, Figure 1 shows an annular ornamented ring blank, having a raised outer edge. Fig. 2 shows a similar blank without a raised outer edge. Fig. 3 is a sectional side elevation of the die and punch for reducing the ornamented blank having raised edges, shown in Fig. 1. Fig. 4 is a sectional elevation of another tool, comprising a matrix and punch, the punch in this instance being of hard wood or similar material, which will not injure the ornamentation. Fig. 5 is a view of the tool shown in Fig. 4 with the blank driven partially into the matrix. Fig. 6 shows said matrix with a punch of metal, the blank being driven completely into the matrix. Fig. 7 shows a die and swage for changing the substantially flat blank into one having an inclined wall; and Fig. 8 shows a somewhat similar tool for converting the blank with inclined wall into a ring having the usual slightly rounded outer surface.

In the drawings I have shown by wave lines the ornamentation upon the blank, Fig. 1, which may be assumed to be a coin, say of the denomination of a quarter of a dollar, with

the center punched out. Fig. 2 may be any suitable ornamented annular blank without raised edges with any character of ornamentation inscribed thereon, either on one or both sides. For the purposes of this specification, it will be assumed that either of the blanks shown in Figs. 1 and 2 are operated upon by the tools shown in Figs. 4, 5, 6, 7, and 8, the blank shown in Fig. 1, however, with raised edges, being first operated upon by the tool shown in Fig. 3.

In Fig. 3, A represents the punch, B the die, and C the ornamented blank after the punch has been forced home, whereby the raised edges of the disk are reduced as shown. It will be observed that the punch and die are recessed in such manner that the blank is operated upon only at its raised edge, the ornamentation of the remainder thereof not being touched by the tools.

Fig. 4 shows the blank of Fig. 2, which is also lettered C, it being understood that the blank of Fig. 1 after being operated on in the tool shown in Fig. 3 is substantially like the blank of Fig. 2 and is to be subjected to the action of similar tools. The matrix D is provided with an annular channel of such a shape and depth that when the ring blank is forced therein the lower surface thereof will be out of contact with the matrix, the inner and outer edges, however, being operated upon by the sides of the annular channel, which slightly rounds the edges and brings the lower or outer wall of the blank into the somewhat rounded condition, usual in rings other than band rings. In order that the ornamentation on the upper side of the ring blank may be preserved intact while subjected to the action of the matrix D, a punch of hard wood E is used to force the said blank partly into its matrix, as shown in full lines Fig. 4, the dotted lines indicating the position of the blank and punch before the punch is forced home. The blank by this operation also has its upper edge slightly hollowed, as plainly shown in the drawings. The punch E of hard wood being removed, a punch F of metal is used as shown in Fig. 6, which drives the blank home in the channel of the matrix D, as shown in said figure. The blank thus treated is then subjected to the action of the tool shown in Fig. 7, where the blank is shown in dotted lines with the punch G of the tool in position to begin operation. The die H of this tool is so shaped relatively to the punch that the tool will act only upon the edges of the blank, it being required to operate the punch delicately, and not with the force used with rings having no ornamentation. It will be seen that by the operation of the tools shown in Fig. 7, the blank is brought from a substantially flat disk into a ring having an inclined wall.

In Fig. 8, the blank, after treatment of the tools of Fig. 7, is reversed, so that its nar-

rowest diameter is in contact with the punch I, which is so shaped as to bear upon only the edge thereof, while its greatest diameter rests upon the walls of the die J. By forcing the punch I into the die J the blank will be operated upon only at its edges. When a band ring is desired the tools shown in Figs. 3, 4, 5 and 6 need not be used, the blank annular disk being introduced directly into the tool 7, then reversed and treated in the tool 8.

It will be seen from the foregoing description that the method is carried out by operating on the edges of the ornamented blank only.

What I claim is—

1. The method of making a seamless ornamented ring which consists in subjecting a blank annular ornamented disk to the action of a punch and die, operating on the inner and outer edges only of the blank, whereby the same is brought with its walls into an inclined position, then reversing the same and subjecting it to the action of a second punch operating on the smallest diameter thereof in conjunction with a die contacting with its largest diameter, substantially as set forth.

2. The method of producing a ring from an annular ornamented blank, which consists in somewhat rounding the inner and outer edges thereof, then converting this flat blank into a blank having an inclined wall by forcing a punch against its inner edge in a die which contacts only with its outer edge, then reversing the said inclined blank so that it is engaged at its narrowest diameter by a punch while a die contacts with its largest diameter, which latter punch and die straighten the inclined wall and convert the blank into a ring having substantially vertical walls, all substantially as described.

3. The method of forming a ring from an ornamented annular blank, which consists first in subjecting the blank to the operation of a matrix and die, whereby the upper face of the blank is somewhat hollowed, and the lower face correspondingly convexed, second, introducing said blank into a die which engages with its outer edge only and operating upon the same with a swage which engages with its inner edge only, and then reversing the blank thus formed and introducing it into a die which engages with its wider edge only, and operating upon it by a swage which engages with its narrow edge only, whereby the ornamentation is preserved intact, substantially as described.

4. The method of forming a ring, which consists in first reducing its outer rim, second, in subjecting the blank thus treated to the operation of a matrix and die, whereby the inner and outer edges of the blank are slightly rounded, third, introducing said blank into a die which engages with its outer edge only and operating upon the same with

a swage which engages with its inner edge only, then reversing the blank thus formed and introducing it into a die which engages with its wider edge only and operating upon
5 it by a swage which engages with its narrow edge only, whereby the ornamentation is preserved intact, substantially as described.

This specification signed and witnessed this
27th day of January, 1893.

HERMAN V. BERNHARDT.

Witnesses:

EUGENE CONRAN,
W. PELZER.