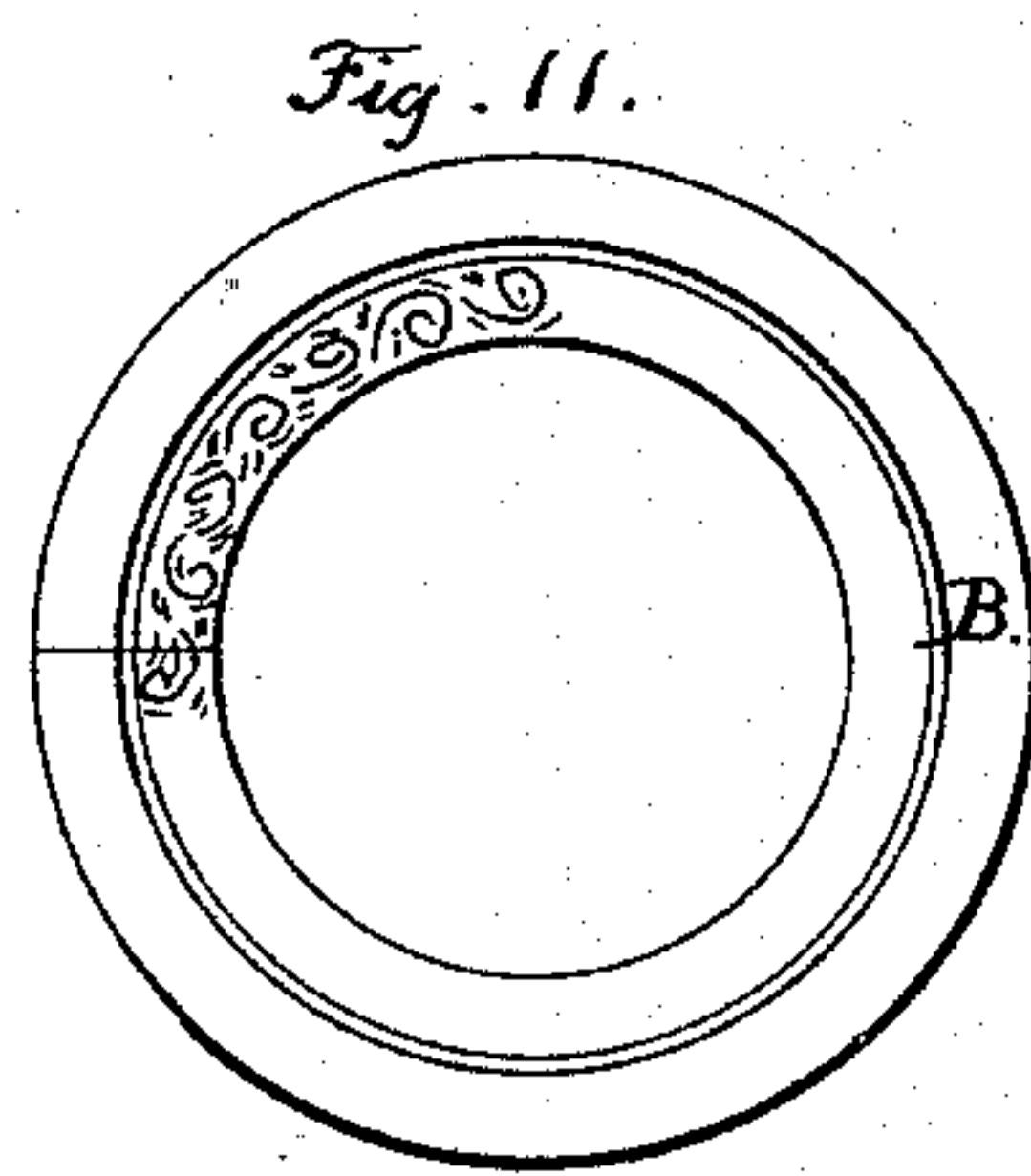
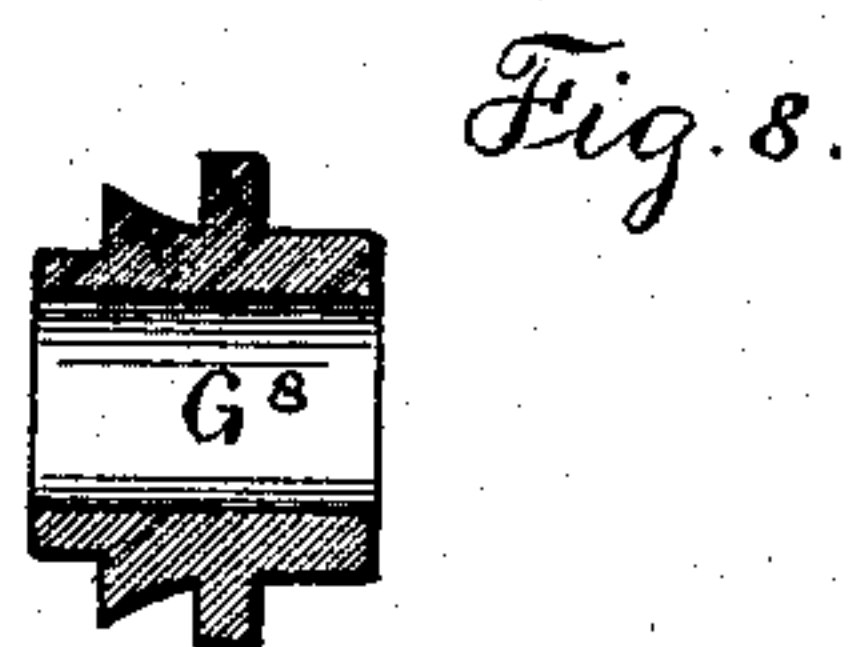
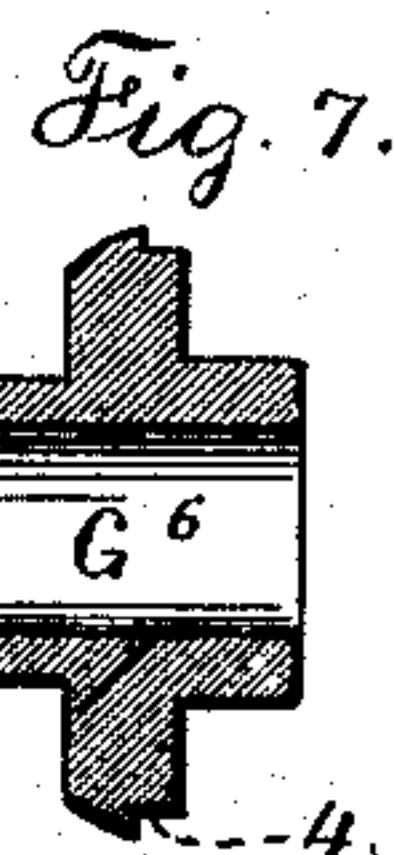
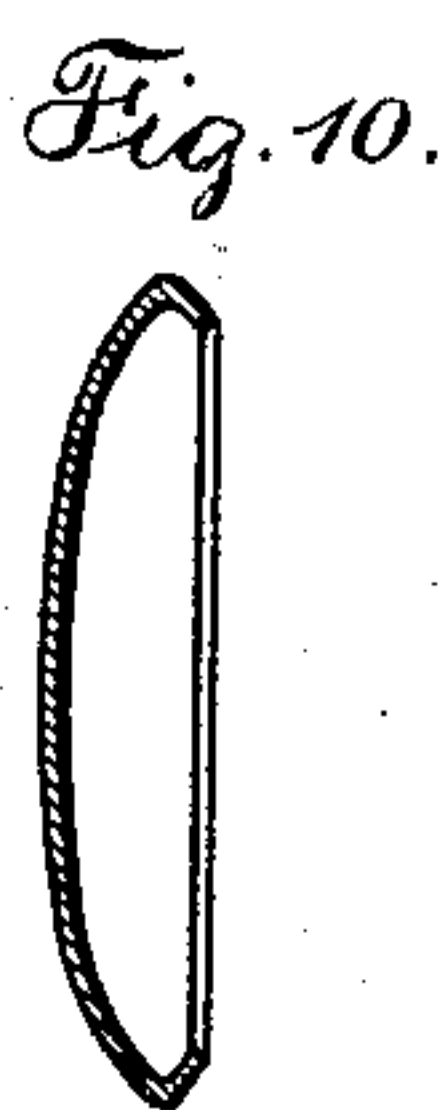
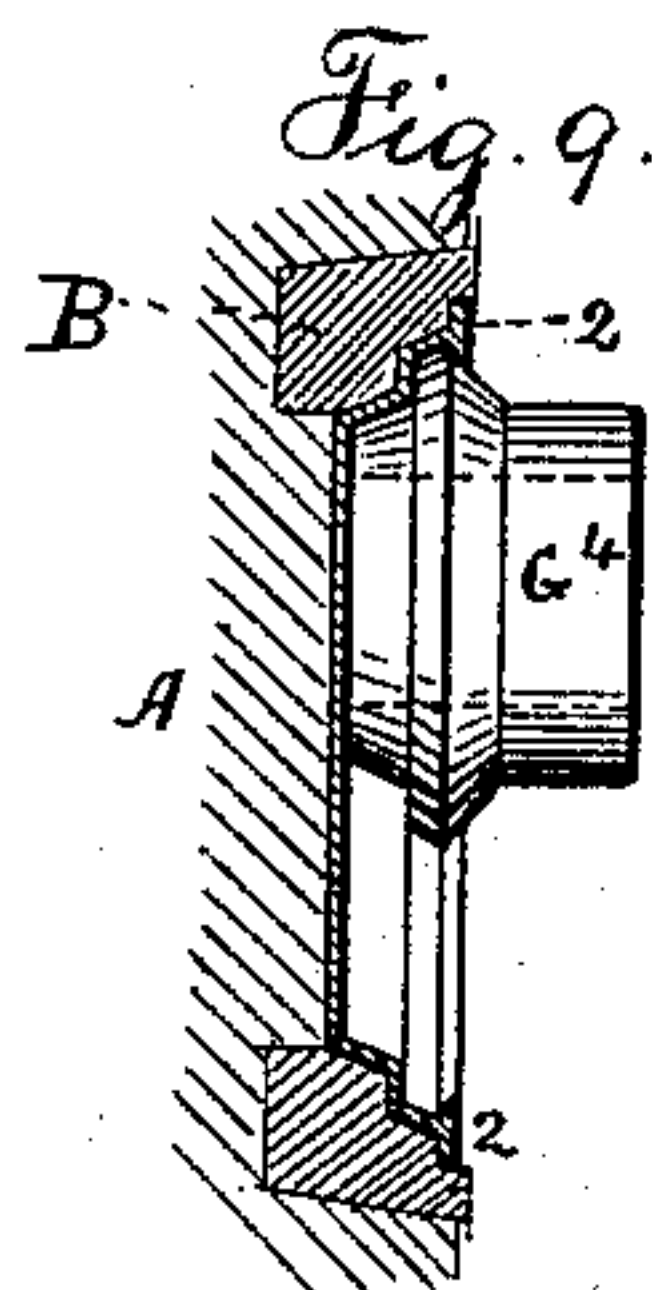
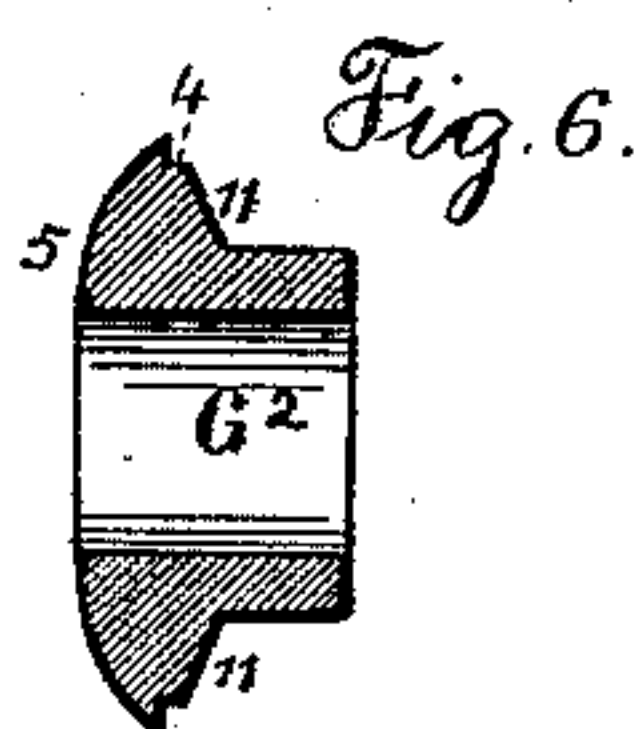
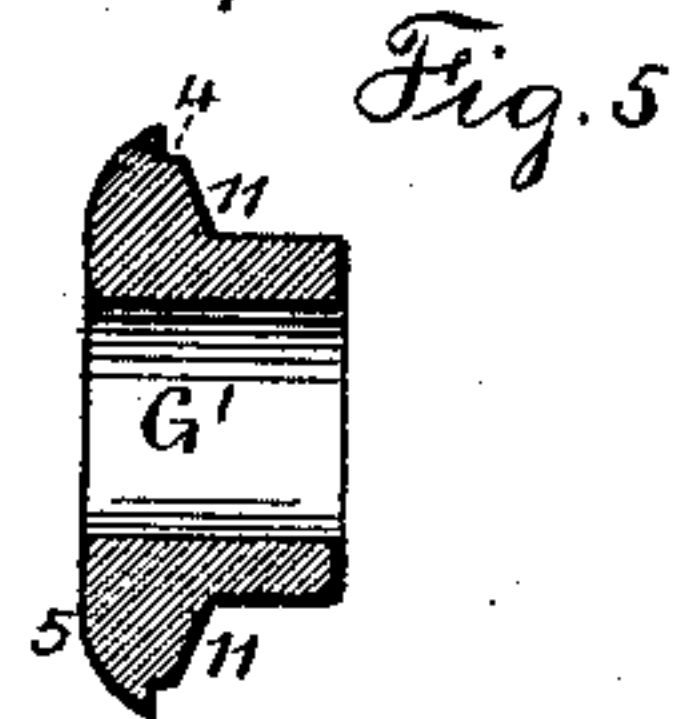
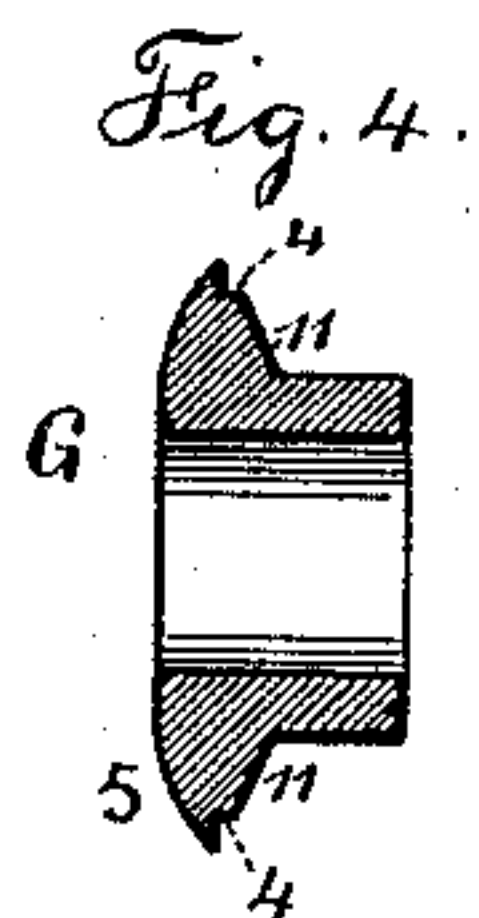
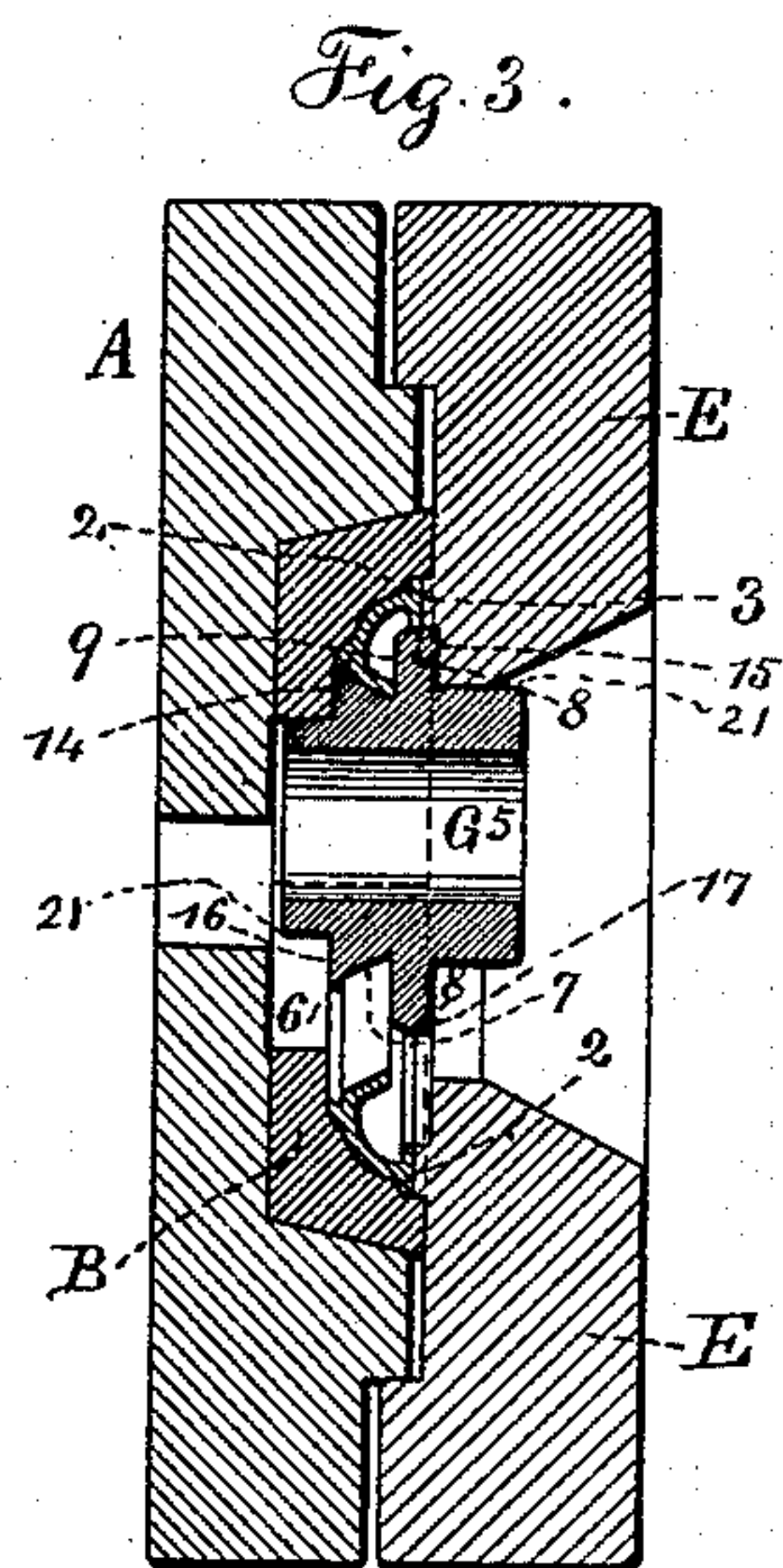
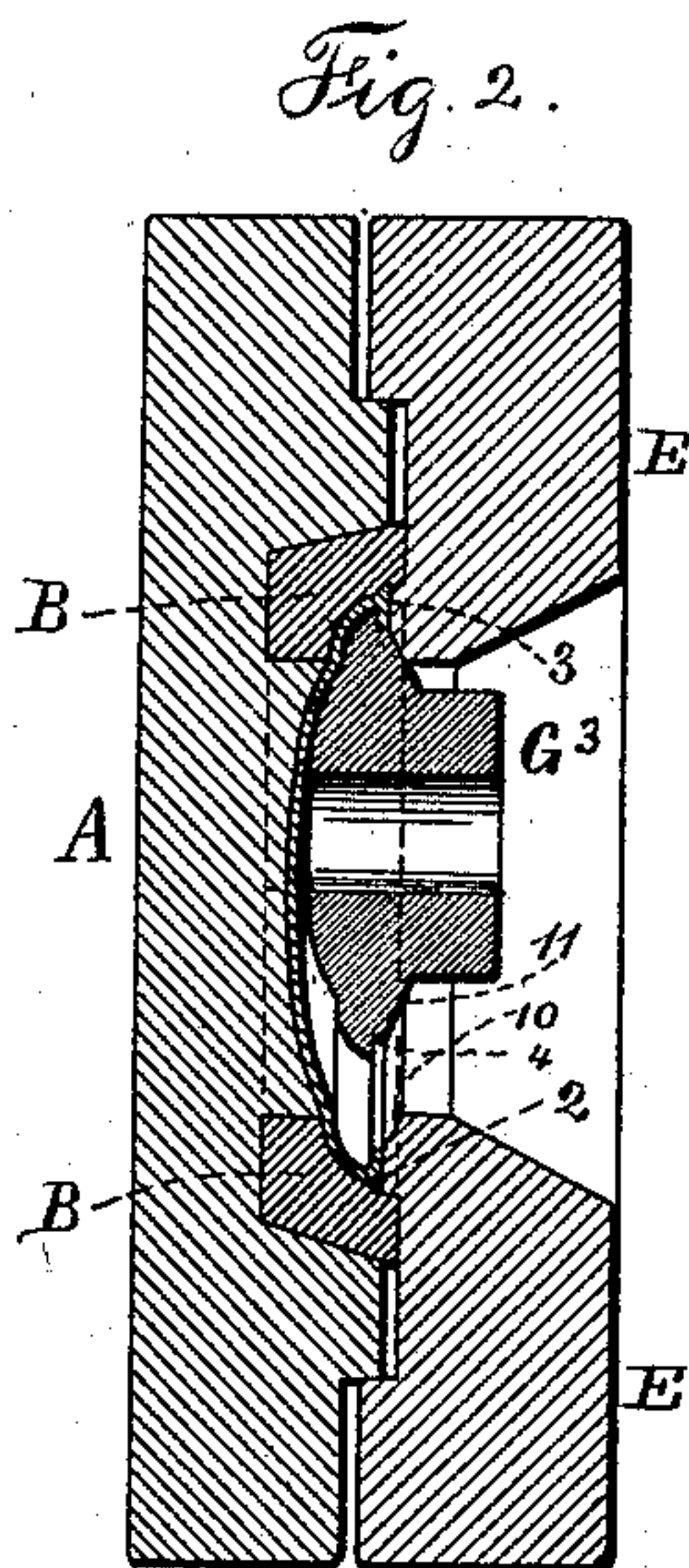
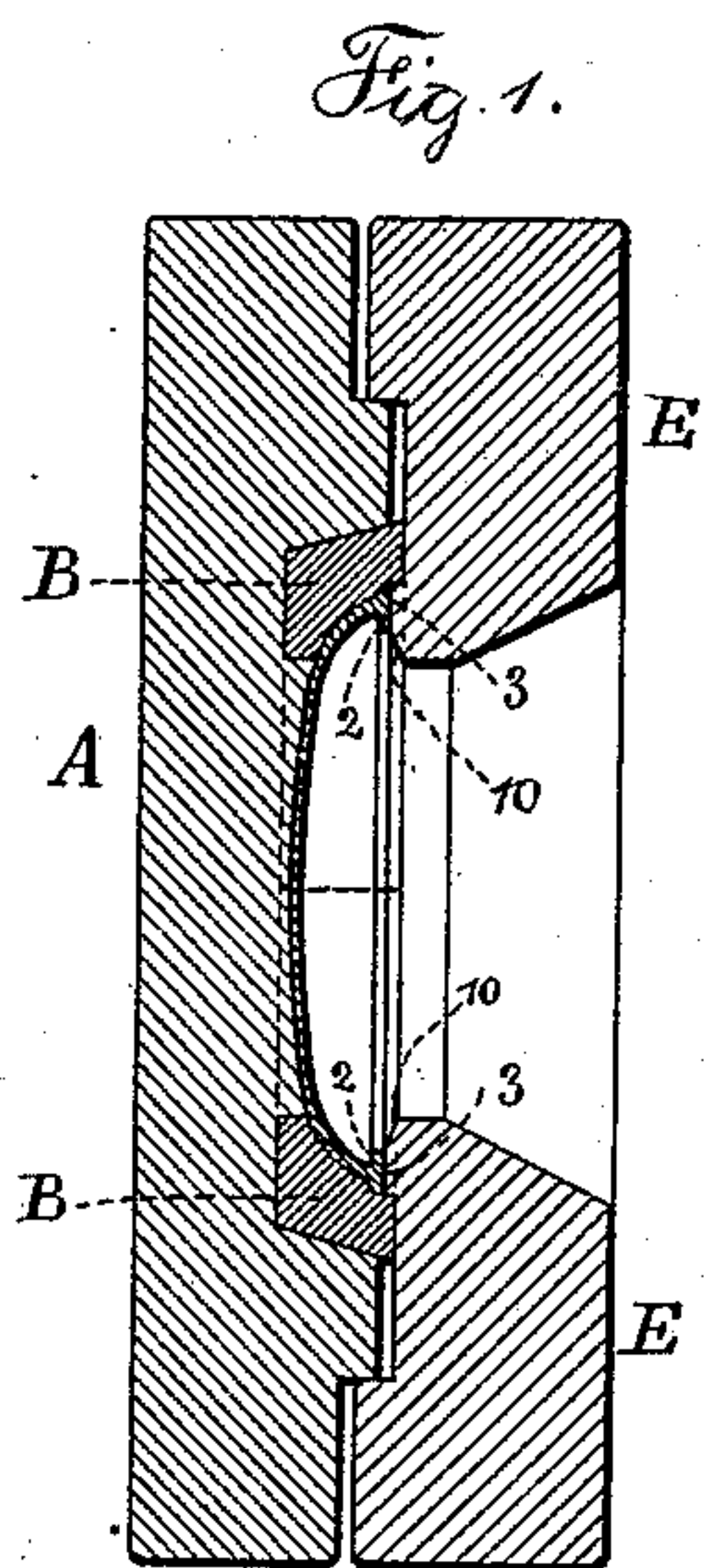


(No Model.)

F. ECAUBERT.

MECHANISM FOR THE MANUFACTURE OF WATCH LIDS, &c.
No. 416,831. Patented Dec. 10, 1889.



Witnesses:
J. Stair
Charles Smith

Inventor:
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UNITED STATES PATENT OFFICE.

FREDERIC ECAUBERT, OF BROOKLYN, NEW YORK.

MECHANISM FOR THE MANUFACTURE OF WATCH-LIDS, &c.

SPECIFICATION forming part of Letters Patent No. 416,831, dated December 10, 1889.

Application filed May 8, 1889. Serial No. 310,008. (No model.)

To all whom it may concern:

Be it known that I, FREDERIC ECAUBERT, of Brooklyn, in the county of Kings and State of New York, have invented an Improvement in the Manufacture of Watch-Case Lids or Bezels, of which the following is a specification.

In Letters Patent No. 382,517, granted to me May 8, 1888, tools are represented for making watch-cases or other articles. My present invention is for improving the mode of operation and the tools employed, so that the article is more perfect and accurate both in external finish and measurements.

In the drawings, Figure 1 is a section of the dies employed in making a convex watch-case lid. Fig. 2 is a similar view of the dies and the roll for a convex lid with an annular cove. Fig. 3 shows the die and roll for a watch-case bezel. Figs. 4, 5, and 6 are sections of the rolls used with the die, Fig. 1. Figs. 7 and 8 are sections of the rolls used with the die, Fig. 3. Fig. 9 is a section of a nearly-flat watch-case lid that can be made by my dies when properly shaped. The roll and part of the dies also are shown. Fig. 10 is a section of a blank ready for insertion in the dies, Fig. 1; and Fig. 11 is an elevation of the ring-die.

The die A, Figs. 1 and 2, is recessed for the reception of a ring-die B, which die and ring are of an internal shape corresponding to the external shape of the watch-case lid to be made, and the ring-die B can be ornamented with recessed ornaments corresponding to the ornaments that are to be formed upon the surface of the lid or bezel, and this ring-die B is preferably broken at one or more places, so as to spring apart or be easily taken off the completed article. The object and peculiarities of this broken internal die are set forth in my application Serial No. 289,972, filed November 5, 1888. The exterior of this ring-die B is preferably tapering, so as to be easily introduced into the annular recess in the die A, and the face-die E is recessed to receive the edge of the annular die B; hence the pressure applied to press the face-die E toward the die A firmly holds the annular die B in place, and if it is broken or separated at one or more places the parts are firmly held together.

The rim 2 of the watch-case lid or bezel is formed against the flat face 3 of the die E, instead of being pressed into a recess, as in my patent, No. 382,517. This allows for the use of rollers, each with an annular shoulder 4, to act directly against the inner edge of the rim 2 and bed the metal firmly out into the angle between the inner surface of the annular die B and the face 3 of the die E. This I find of great importance, because it allows for making the rim 2 much more full and perfect, and the metal is consolidated and there is no possibility of the extreme edge of the lid or ring being imperfect when the blank is of a proper character and the rolls applied successively.

The blank made use of is approximately similar to that represented in Fig. 10. It is introduced into the die A B, and then the face-die E is applied and firmly clamped in a suitable chuck—such, for instance, as that in my patent, No. 253,355. The roller G, Fig. 4, is then applied, as set forth in said Patents Nos. 253,355 and 382,517, and it acts to roll out and extend the blank lid and cause its folded rim to press against the surfaces of the dies B and E and the roller G', Fig. 5, when applied still further, presses the metal into the die B, and if the interior surface of the annular die B is ornamented the rolling action is to be continued until the rim 2 and the ornaments adjacent thereto are properly formed. The annular shoulder 4 of each roller aids in properly forming the inner edge of the rim 2 and pressing the metal toward the extreme outer edge of the lid, so as to make the metal full and perfect at this point, and in so doing the thumb-piece usually provided at the edge of the lid will be formed, if the annular die is recessed at that place, and the lid can also be made with the flat section adjacent to the hinge, the exterior configuration and ornamentation in all instances depending upon the internal shape of the surrounding die.

In my aforesaid patent I represented a shield within the lid, and between the same and the flat back of the roller I find it advantageous to make the backs 5 of the rollers G G' G² convex and highly polished, so that they act as burnishers within the lid to

render the inside of the lid concave, and by the pressure of such roll against the metal the ornaments in the die are perfectly filled and the interior of the case properly bur-
 5 nished and the metal consolidated and hardened. It is preferable to shape the roller G', Fig. 5, so as to apply the greatest pressure inside the case to the rim 2 and the parts adjacent thereto and to shape the roller G²,
 10 Fig. 6, so as to apply the greatest pressure to the concave portion of the case nearer toward the middle thereof.

The shape of the case or lid and the character of the ornaments will vary, and the
 15 rolls to act within the lid are to be adapted to the dies used for the outside of the lid.

In Fig. 2 I have illustrated a case having a concentric cove near the inner edge of the annular die B, and the roll G³, used inside the
 20 case and preferably as the last roll employed, has an annular cove to correspond, so as to finish the central concave interior of the case and at the same time maintain the proper shape of the rim portion of the lid, which is
 25 to be rolled by rolls similar to those shown in Figs. 4 and 5.

The section Fig. 9 illustrates a flat-back lid that can be made in my dies, the internal shape of the dies and the external shapes of
 30 the roll G⁴ being adapted to such lid or case.

In Fig. 3 the internal dies for a bezel or ring are shown, together with the finishing-roll G⁵. It is to be understood that a properly-shaped blank ring is inserted within the
 35 dies. Then the rim 2 of the bezel and its internal flange are formed by the rolls G similar to that in Fig. 7, applied in the same manner as the rolls shown in Figs. 4 and 5 for making such rim and internal flange, and
 40 then a roll—such as shown in Fig. 8—is used to bend the inner edge of the sheet-metal ring back toward the internal flange 2, after which the roll G⁵ (shown in Fig. 3) is applied, the annular projection 6 forming the recess for
 45 the edge of the glass, the conical portion 7 completing the surface of the reflecting-bezel, and the cylindrical portion 8 holding the edge of the inward flange 2, and the flat surface 9 forming a perfect edge to the reflect-
 50 ing-bezel.

When the ring-die B is of the shape shown in Fig. 3 and adapted to form the bezel, the circular block A' will usually serve only as a holder that does not contain any portion of
 55 the die-surface.

I find it advantageous to make a conical surface 10 to the face-die E around the central opening therein, (see Figs. 1 and 2,) so that the inclined surfaces 11 of the rolls, Figs.
 60 4, 5, and 6, may be supported thereby as the convex back surfaces of the rolls press against the interior of the lid.

In finishing the bezel I find it advantageous to provide flat or nearly flat annular faces 14
 65 and 15 on the dies B and E, respectively, so that the last roll G⁵, Fig. 3, having the flat or nearly flat faces 16 and 17, may be confined

between such faces 14 and 15, to insure uniformity in the depth of the seat for the glass.

In dies for making watch-case centers I
 70 have heretofore used ring dies made of two or more pieces, and in some instances the dies have been engraved while soft, then tempered, and afterward broken into two or more pieces, as set forth in my application,
 75 Serial No. 289,972, filed November 5, 1888. I find that the die B is preferably broken at only one place 20, Fig. 11, after being hardened, so as to be sprung open sufficiently to
 80 allow the die to separate from the article made within it as such article is removed. The cylindrical portion 21 of the roll G⁵, Fig. 3, at either or both sides of the ribs coming into contact with the interior of the die E or the
 85 die B, or both, forms a stop and insures uniformity in the size of the annular recess for the watch-glass.

Lids or covers for lockets can be made in my dies, and are similar to watch-case lids.

I claim as my invention—

1. The herein-described improvement in
 90 rollers for use in the manufacture of watch-case lids and similar articles by a rolling operation within a die corresponding to the exterior of such article, the same consisting
 95 in a convex side to the roller to act within the concavity of the lid to press the metal into the concave portion of the die, substantially as specified.

2. The herein-described improvement in
 100 tools for making lids for watch-cases and similar articles, the same consisting in a die having a flat face 3 against the flat face of the flange 2 of the lid, and a roll having a peripheral offset at 4 to act upon the edge
 105 and inner side of the flange, substantially as specified.

3. The roller having an offset or shoulder for forming the inward flange of the lid or similar article, a convex back to act within
 110 the article to press the same into the exterior die, and a conical surface 11, in combination with the die corresponding to the exterior of the lid and the die having a flat face for the exterior of the flange, and a conical
 115 surface 10, with which the conical surface of the roll is in contact, substantially as specified.

4. The combination, with the dies for forming the exterior surface of the ring or bezel
 120 and having the flat or nearly flat faces 14 and 15, of the finishing-roll having a periphery corresponding to the interior of the article to be produced, and the two flat or nearly flat faces 16 17, to pass between the
 125 faces 14 and 15, substantially as specified.

5. The annular die having an internal surface corresponding to the exterior of the article to be formed within it, and cracked
 130 apart at one place to form a circular spring capable of sufficient expansion for the liberation of the article formed within it, substantially as specified.

6. In the manufacture of watch-glass bez-

els, the combination, with annular dies corresponding in their interior configuration to the exterior surface of the bezel, of a roller corresponding at its periphery to the recess
5 for the glass and the reflector-surface of the bezel for forming the annular recess for the glass and shaping the bezel, and a stop to limit the movement of the roller and insure

uniformity in the diameter of the recess for the glass, substantially as specified.

Signed by me this 3d day of May, 1889.

F. ECAUBERT.

Witnesses:

GEO. T. PINCKNEY,
WILLIAM G. MOTT.