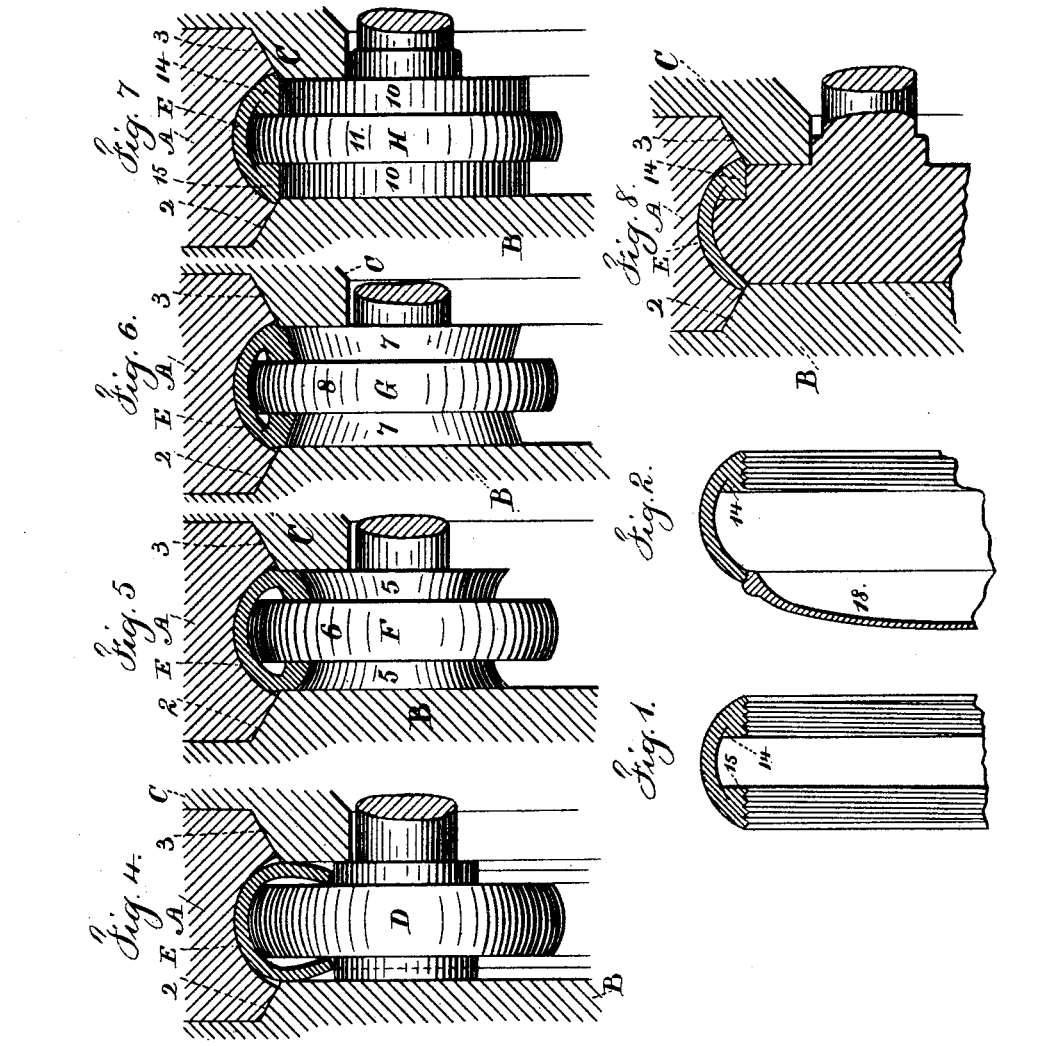
(No Model.)

F. ECAUBERT.

MECHANISM FOR MAKING WATCH CASES.

No. 457,149. Patented Aug. 4, 1891.



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MECHANISM FOR MAKING WATCH-CASES.

SPECIFICATION forming part of Letters Patent No. 457,149, dated August 4, 1891.

Application filed May 8, 1890. Serial No. 350,979. (No model.)

To all whom it may concern:

Be it known that I, FREDERIC ECAUBERT, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented an Improvement in the Manufacture of Watch-Cases, of which the following is a specification.

In the manufacture of watch-cases difficulty has heretofore arisen in bending up the sheet metal into a form adapted to receive a screw-thread cut upon the inner surface of the sheet metal for the reception of the bezel or back as it is screwed into place. To obviate this difficulty I bend up the sheet-metal ring that is made use of for the watch-case center, so that such sheet metal is doubled inwardly upon itself, in order that the exterior of the watch-case center may be rounding in shape, and the double thickness of the metal is within the center, so as to furnish the necessary thickness and strength of metal for a screw-thread to be cut in the same, and in forming this watch-case center I make use of the tools herein described.

In the drawings, Figure 1 represents a portion of a watch-case center sectionally and in larger size and having a screw-thread passing inwardly from each edge of the center. Fig. 2 is a similar view with the screw-thread passing inwardly from one edge of the center and the case adapted to receive a back or bezel. Fig. 3 is a section of the die made use of by me, showing also a section of the sheet-metal ring and of one of the internal rollers. Fig. 4 is a section of a portion of the dies, showing the shape of the sheet-metal ring after being acted upon by the first roller made use of; and Fig. 5, 6, and 7 are similar views of portions of the dies and of the second, third, and fourth rolls employed in forming the watch-case center. Fig. 8 illustrates the die made use in forming the watch-case center shown in Fig. 2.

The sheet metal made use of in manufacturing these watch-case centers may be of any desired character. Usually it is of brass or other inferior metal with a surface of gold or silver upon the same, and this sheet metal is shaped up as a hollow ring E, as represented in Fig. 3. The size and sectional shape of the ring vary according to the character of the watch-case center to be manufactured. This ring or watch-case-center blank is to be introduced within the hollow die A, the interior surface of which corresponds in shape to the exterior of the watch-case center when finished, and it may be ornamented with ribs, knurled or engraved work, or it may be plain. In all instances the interior surface of the die A is to be the counterpart of the exterior surface of the watch-case center. This die A is received into a suitable chuck or holder, together with the dies B and C, which set at opposite sides against the die A, and it is preferable to make the surface of the dies A, B, and C where they come together at 2 and 3 conical, so that such parts can be ground together closely, and the inner edges of the dies B and C may project slightly inwardly of the recessed portion of the die A, as shown in Fig. 3, the object of this being to form a slight shoulder upon the exterior edges of the watch-case center, if so required. The roller D is adapted to pass at its edge into the interior portion of the sheet-metal ring E, and the periphery of this roller D corresponds, or nearly so, to the interior shape required for the middle portion of the watch-case center in order that the sheet metal of the ring E may be pressed outwardly during the spinning operation similar to that described in my patent, No. 270,644, dated January 16, 1883, and in this operation the sheet metal may be caused to entirely fill any groove or ornamentation upon the interior surface of the die A, and this rolling or spinning operation is to be continued until the sheet metal of the ring E is firmly seated within the die A. During this operation the sheet metal of the ring E is spread widthwise toward the dies B and C, and the inner edges of the ring E are by that operation inclined toward each other more or less, and when the roller F, Fig. 5, is applied the conical faces 5 5 act against the inner edges of the ring E to bend them inwardly until such edges come into contact with the central peripheral rib 6 of such roller F, and the outward pressure by this roller F against the interior of the ring E acts to force the sheet metal of the ring into the angle between the face of the die A and the respective dies B and C, and this operation is still further continued by the use of the roller G, Fig. 6,

the surfaces 7 of which are less inclined than the surfaces 5, and the rib 8 is not as deep as the rib 6, and this roller G prepares the sheet-metal center for the last roller H. (Shown in Fig. 7.) This roller H is made with cylindrical and flat surfaces 10, adapted to press the sheet metal and firmly fold the internal flange against the inner surface of the sheet metal forming the rounding exterior. During the successive operations the central ribs 6 8 11, acting between the edges of the sheet-metal ring, cause the sheet metal of such ring to be thrown outwardly to fill up the angles in the die A and press the metal firmly together and thicken the flanges without the risk of forming any cracks at the sharp-folded edge or edges of the sheet metal, and the interior surface of the inwardly-folded flange 14, Fig. 1, being cylindrical, is adapted to receive a screw-thread cut into the same for the periphery of the bezel or back to screw into the center. The number of rolls may be more or less than shown.

The dies and rolls shown in Figs. 3, 4, 5, 6, and 7 are adapted to the production of a watch-case center having two inwardly-folded flanges 14 and 15; but in cases where but one inwardly-folded flange is required, as shown in Fig. 2, the shapes of the rolls require to be varied. One edge of the sheet-metal blank rests against the die B, and the ribs upon the edges of the rolls will be extended as far as the back edges of the rolls, so as to act upon the sheet-metal blank and press the same up into the form represented in Figs. 2 and 8, adapted to receive a screw-thread upon the inwardly-turned flange. A thinner sheet-metal back 18 or bezel may be soldered or otherwise secured to the edge of the watch-case center where there is not an inwardly-folded flange.

It is sometimes advantageous to make the central rib of the roller, Fig. 7, a separate ring around the cylindrical roll, in order that it may be free to move endwise upon the cylindrical part of the roll, as the metal of the blank may be slightly thicker at one side of this central rib than the other and tend to break or injure this rib by the unequal pressure.

I claim as my invention—

1. The combination, with an internal die corresponding to the exterior of a watch-case center, of a series of roller-dies adapted to be applied successively for pressing upon the inner edge of the sheet-metal blank for thickening the metal and turning the same inwardly to form a double thickness or internal fold, substantially as specified.

2. The combination, with an internal die corresponding to the exterior of a watch-case center, of a series of roller-dies adapted to act successively upon the middle and edges of the blank to press the same into the internal die to thicken the edges of the sheet metal and to turn the same inwardly to form double thicknesses or internal folds, substantially as specified.

3. A watch-case center formed of a sheet-metal ring rounded upon the outside and having a double thickness of sheet metal bent inwardly upon itself, substantially as set forth.

4. A watch-case center formed of a sheet-metal ring, one edge of which is folded inwardly upon itself to form a double thickness adapted to receive a screw-thread, substantially as set forth.

5. A watch-case center formed of sheet metal with a rounded exterior surface and the two edges of the sheet metal bent inwardly and folded upon itself to form a double thickness of metal with a cylindrical or nearly cylindrical interior surface, substantially as set forth.

6. A watch-case center formed of a sheet-metal ring having a rounded exterior surface and one edge adapted to receive the back or other portion of the case, and the other edge of the sheet metal folded inwardly to form a double thickness adapted to receive a screw-thread or other means for connecting the bezel or other portion of the watch-case, substantially as set forth.

Signed by me this 5th day of May, 1890.

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Witnesses:
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