J. C. DUEBER.

Manufacture of Watch-Case Centers.

No. 141,861. Patented August 19, 1873.

Fig. 1.

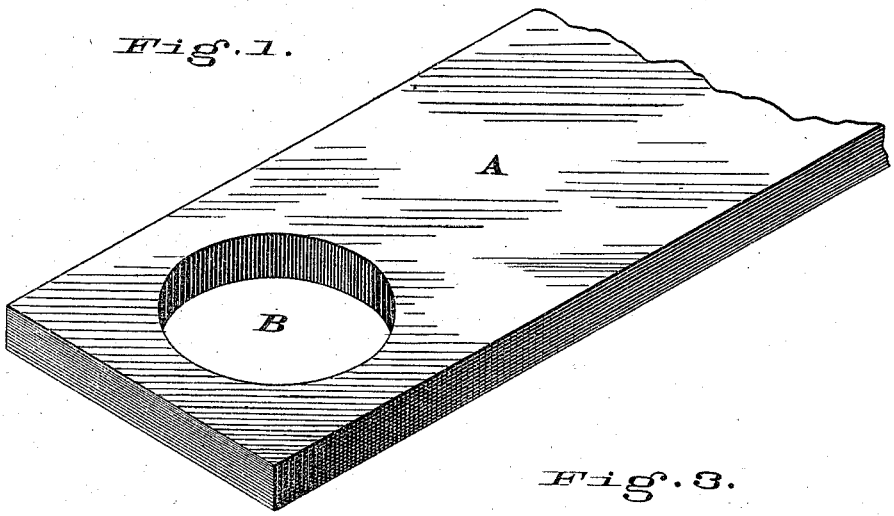


Fig. 3.

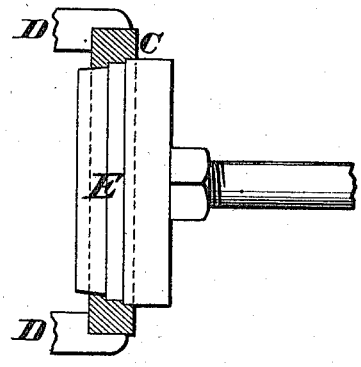


Fig. 2.

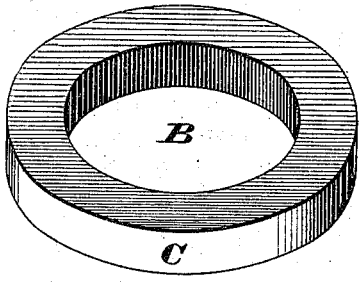


Fig. 5.

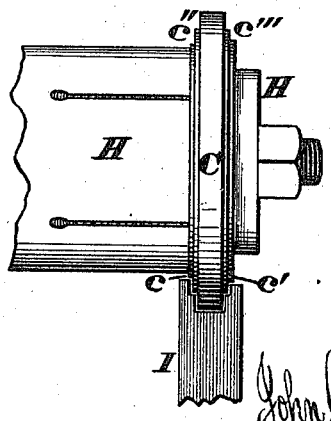
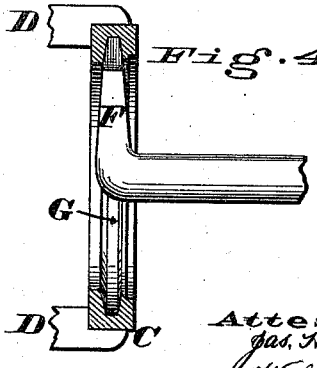


Fig. 4.



Attest.
Jas. H. Layman.
Walter Allen

John C. Dueber
by Knight Bros.
Att'ys.

UNITED STATES PATENT OFFICE.

JOHN C. DUEBER, OF CINCINNATI, OHIO.

IMPROVEMENT IN THE MANUFACTURE OF WATCH-CASE CENTERS.

Specification forming part of Letters Patent No. 141,861, dated August 19, 1873; application filed April 18, 1873.

To all whom it may concern:

Be it known that I, JOHN C. DUEBER, of Cincinnati, Hamilton county, Ohio, have invented a new and useful Manufacture of Watch-Centers, of which the following is a specification:

My invention consists in an improved method of manufacturing the center of a watch-case, whereby I am enabled to dispense with the necessity of casting the centers separately in a mold, and with the tedious, expensive, and unreliable rolling, swaging, soldering, and spinning process, which have heretofore more often been resorted to for the production of the aforesaid member of the case. In order to accomplish this result I proceed as follows: I first cast a long flat bar of metal in an iron mold, so as to insure the utmost homogeneity and closeness of grain, without being compelled to resort to the tedious and expensive operation of rolling for the purpose of reducing said bar to a uniform density. The width and thickness of this bar may be somewhat in excess of the desired diameter and thickness of the center, so as to allow a little surplus metal to be removed by the subsequent punching, turning, and finishing operations. The bar may be of any suitable length to permit it being handled with facility. This cast bar, after being allowed to cool, is placed in a press similar to those in ordinary use for making annular washers, and the entire bar is cut up into rings. Each of these rings is then separately subjected to three distinct turning operations, the first of which consists in reaming out the circular hole in the annulus to a correct and proper size for the reception of the movement of the watch. The second turning operation, which is also an internal one, consists in the production of the groove or recess in the center into which the case-spring is fitted. The third turning operation, which is an external one, is effected by the application to the annulus of a suitable tool that reduces it to a definite diameter, and at the same time forms upon the sides of said annulus four snap-rings, over which the two backs or cap and bezel engage, when the watch-case is complete.

Having thus briefly stated the various processes employed in the manufacture of centers, I will now proceed to give a more detailed description thereof.

Figure 1 is a perspective view of the flat bar of metal from which the centers are produced. Fig. 2 is a perspective view of one of the rings cut from the aforesaid bar. Fig. 3 is an axial section through an annulus, showing the method of turning out the center to the proper size for containing the movement. Fig. 4 is a similar section, representing the manner of turning the inner groove in the center for containing the case-springs. Fig. 5 represents the method of turning the snap-rings and truing up the periphery of the center.

The first step in the manufacture consists in the production of a flat metallic bar or plate, A, which is cast of any convenient length and width, and of thickness so much greater than that of the desired centers as to allow a little surplus material to be removed in the finishing operations. In order that this bar may be constructed, at a single operation, of the proper density and uniformity of grain throughout, I run it into an iron mold, by which means the objectionable blow-holes and other flaws incidental to a casting made in sand are entirely obviated. The bar being thus produced in a perfect condition at a single operation, enables me to dispense with any subsequent rolling of the same, which act would consume time and increase the cost of manufacture accordingly. The bar is now placed in a suitable press, and a circular aperture, B, is punched through it, after which the metal constituting the annulus C is struck from the bar by punching. (See Fig. 2.) This punching operation may be performed with the kind of press usually employed for making metal washers. The annulus C is then grasped by the jaws D of a lathe-chuck and a cutter, E, introduced into the aperture B, which cutter serves to turn out said aperture to the exact size required in order to receive the movements of the watch. This operation is clearly shown in Fig. 3. The aperture B having been thus turned out, another cutter, F, is brought to bear within the annulus in such a manner as to produce the groove G, as seen in Fig. 4, which groove is for the purpose of receiving the case-springs. After the interior of the annulus has been com-

pleted, in the manner above described, it is released from the chuck D and secured upon an expanding mandrel or arbor, H, as seen in Fig. 5. This mandrel being rotated, a cutter, I, is applied to the periphery of the annulus, so as to reduce it to a perfectly true and uniform shape, and at the same time to form upon the sides of said annulus the snap-rings *c c' c'' c'''*. The periphery of the annulus, having been thus reduced to the desired size and shape, may have a knurled or other finish imparted to it before removal from the mandrel.

From the above description it will be readily seen this method of manufacturing watch-case centers is one of the most expeditious that can be devised, and that it insures absolute uniformity in shape, size, and weight of the centers. The center being formed from a solid piece of metal, completely obviates the necessity of soldering at any stage of the manufacture, and consequently the center is much stronger and more durable than those which have a joint or seam liable to spring apart or show a joint after the case is finished; and the costly skilled labor heretofore required for rolling, soldering, truing up, swaging, turning, spinning, &c., being saved, a more durable case can be afforded at a material reduction in price.

Watch-centers produced by the ordinary spinning process are well known to be objectionable, on account of their liability to spring and lose their proper shape, which defect arises from the thinness of the metal that is necessarily employed for this purpose. It will be seen that this objection is entirely overcome by my improved mode of manufacture, as I am enabled to make my centers of any desired thickness of metal, and consequently sufficient material can be introduced in them to insure the utmost permanency of shape, and of any weight that the demands of the market may require.

I claim as my invention—

The process of manufacturing watch-case centers by casting the metal in the form of a homogeneous flat bar, and by the successive punching and turning operations, all as herein specified.

In testimony of which invention I hereunto set my hand.

JOHN C. DUEBER.

Attest:
GEO. H. KNIGHT,
H. SCHOONMAKER.