(No Model.) 5 Sheets—Sheet 1.

W. H. FITZ GERALD.

METHOD OF MAKING WATCH CASE STEMS.

No. 338,500. Patented Mar. 23, 1886.

Fig. 1.

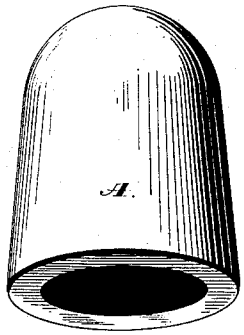


Fig. 2.

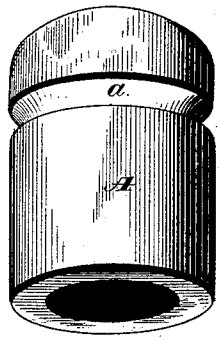


Fig. 3.

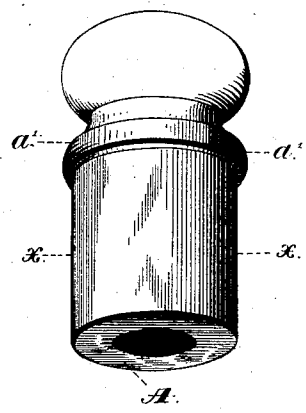


Fig. 4.

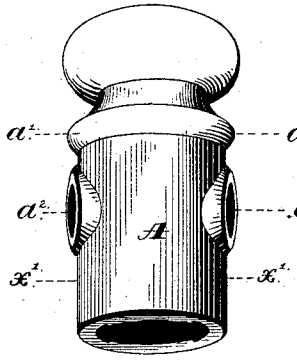


Fig. 5.

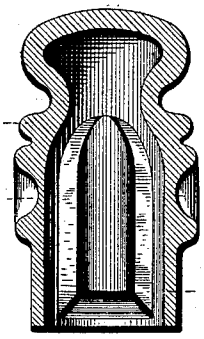
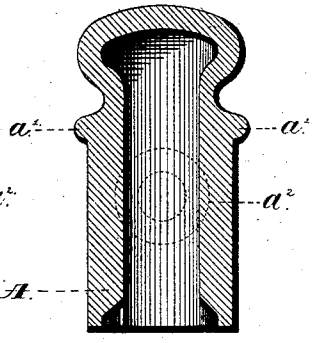


Fig. 6.



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Fig. 7.

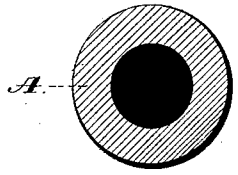


Fig. 8.

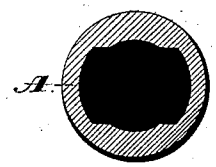
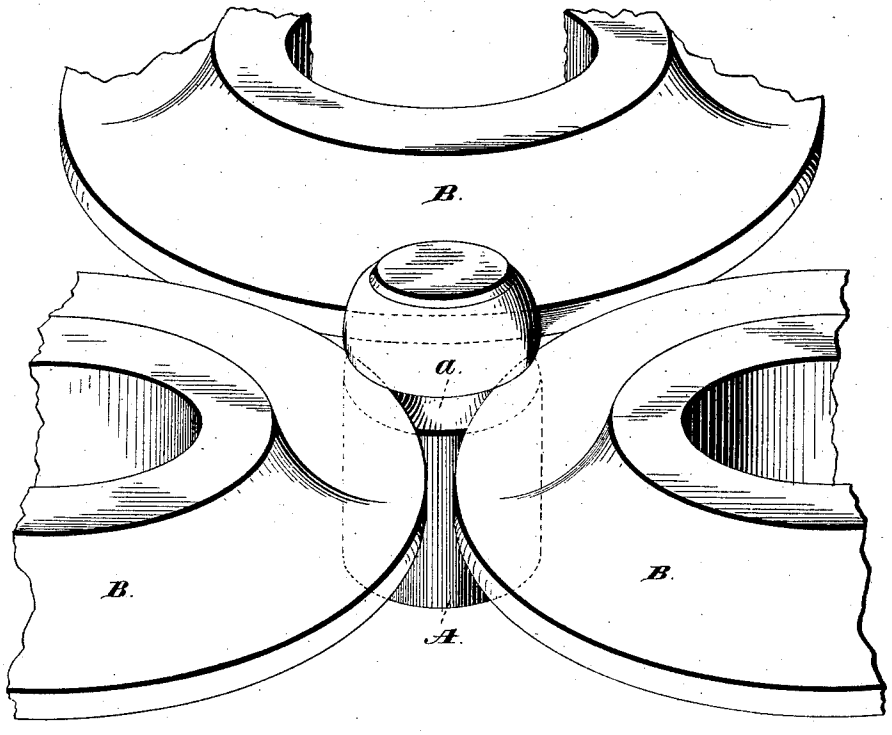


Fig. 9.



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Fig. 10.

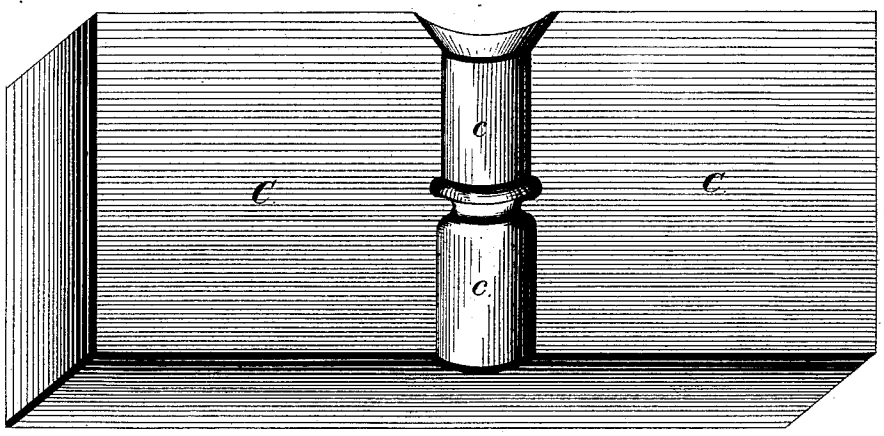


Fig. 11.

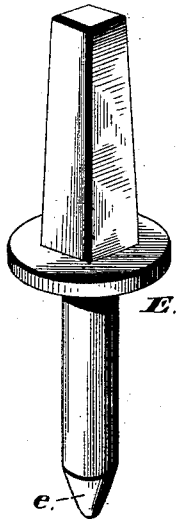
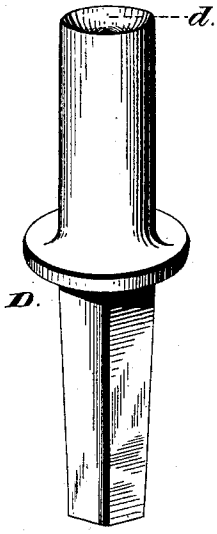


Fig. 12.



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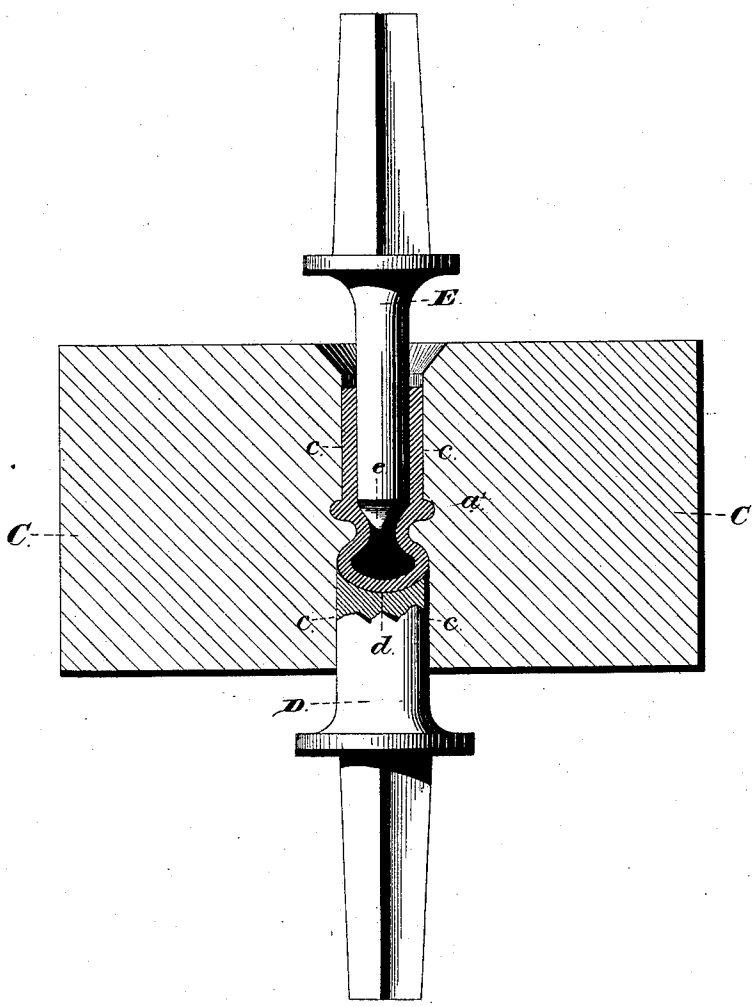
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Fig. 13.



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Fig. 14.

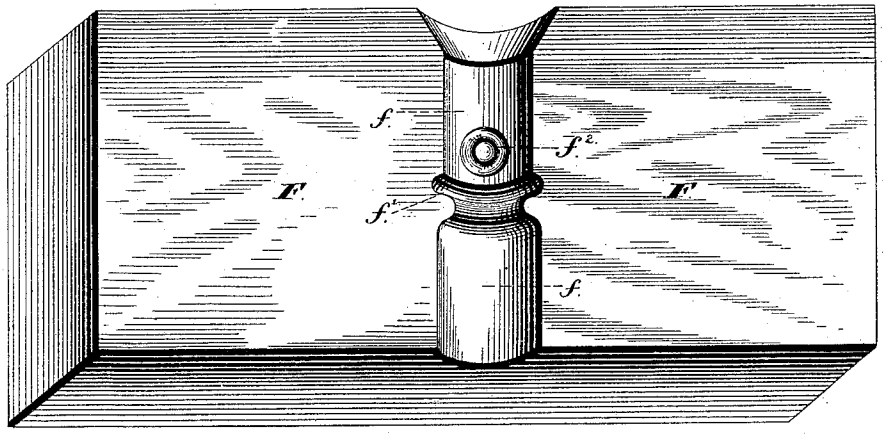


Fig. 15.

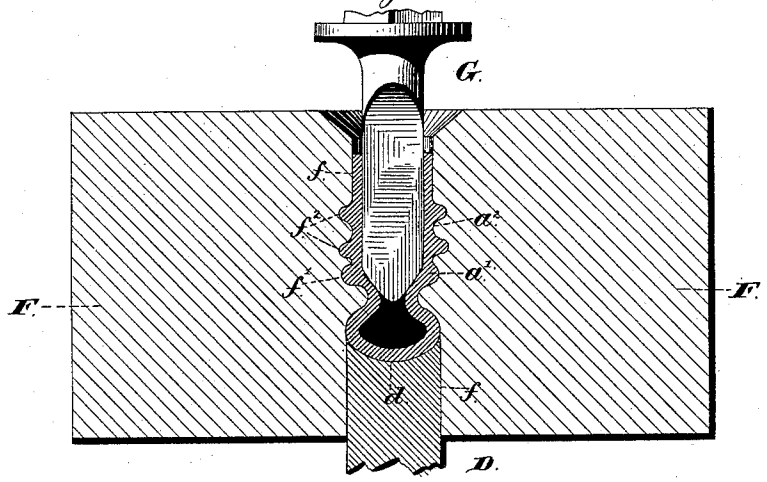
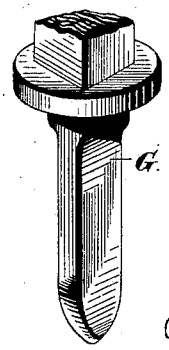


Fig. 16.



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UNITED STATES PATENT OFFICE.

WALTER H. FITZ GERALD, OF BROOKLYN, NEW YORK.

METHOD OF MAKING WATCH-CASE STEMS.

SPECIFICATION forming part of Letters Patent No. 338,500, dated March 23, 1886.

Application filed October 3, 1885. Serial No. 178,930. (No specimens.)

To all whom it may concern:

Be it known that I, WALTER H. FITZ GERALD, of Brooklyn, in the county of Kings, and in the State of New York, have invented certain Improvements in the Manufacture of Watch-Case Stems; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, in which—

Figure 1 is a perspective view of my case-stem after having been operated upon by the drawing-dies. Fig. 2 is a like view of the same after having been acted upon by the necking-rollers. Fig. 3 is a perspective view of said stem after the operation of the beading-dies. Fig. 4 is a like view of the same after having been subjected to the action of the dies for forming the ring-sockets. Figs. 5 and 6 are respectively central longitudinal sections of said stem, as shown in Fig. 4, upon a line passing through the axis of the ring-sockets and a line having a right angle thereto. Figs. 7 and 8 are respectively cross-sections upon lines *x x* of Fig. 3 and *x' x'* of Fig. 4. Fig. 9 is a perspective view of the necking-rollers in use upon the stem. Fig. 10 is a like view of one of the dies employed for giving to said stem the form shown in Fig. 3. Figs. 11 and 12 are perspective views of the plungers used in connection with said dies. Fig. 13 is a section of said dies and plungers as combined for operation upon the stem, said section being taken upon a line passing axially through said stem. Fig. 14 is a perspective view of one of the dies employed for forming the ring-sockets. Fig. 15 is a section of said dies and their plungers when combined and operating upon a stem, the same being upon a line passing axially through the stem; and Fig. 16 is a perspective view of a special plunger used in connection with said dies.

Letters of like name and kind refer to like parts in each of the figures.

The object of my invention is to lessen the cost and to increase the strength and durability of the stems or pendants of watch-cases; and to this end said invention consists, principally, in the method employed for forming a case-stem from sheet metal by means of dies, substantially as and for the purpose hereinafter specified.

It consists, further, in the method used for forming case-stems with the ring-sockets thereon by means of dies, substantially as and for the purpose hereinafter shown.

In the carrying of my invention into practice a disk is cut from a sheet of metal, and by means of suitable dies is given the cup shape shown in Fig. 1, when it becomes a blank case-stem, A. The blank A is next subjected to the action of three rollers, B, that have V-shaped peripheries and revolve in the same plane, as seen in Fig. 9, by means of which a groove or neck, *a*, is formed within the periphery of said blank near its closed end, as shown in Fig. 2. After having been operated upon by the necking-rollers B, the stem-blank A is placed between two dies, C, that are provided within and across their contiguous faces with half-round coinciding recesses *c*, which together have the general form of the periphery of the completed stem, after which the closed end of said blank is impinged by a round plunger, D, that loosely fills the recess at such point, and has a cup-shaped inner end, *d*, while at the same instant a second plunger having a round body and pointed inner end, *e*, passes into the open end of and closely fills the interior of said blank, as shown in Fig. 13.

The dies C operate to compress the body of the stem-blank A laterally to give to it the desired size, while the plungers D and E, moving toward each other, operate to spread the closed end of said blank laterally and to form a bead, *a'*, at the side of the neck *a* opposite to said closed end, the result being shown in Fig. 3.

The stem A is now placed between two dies, F, which are provided with recesses *f*, that are precisely like the recesses *c* of the dies C, except that within each recess adjacent to the circumferential groove *f'*, for receiving the bead *a'*, is cut an annular recess, f^2, as shown in Fig. 14. The dies F being closed together, the plunger D is forced inward upon the closed end of the blank A, and a plunger, G, having a flattened pointed body, as seen in Fig. 15, is forced into the open end of said blank, the longest transverse dimensions of said plunger G being in a line with the centers of the annular grooves f^2, by which means the metal of said stem-blank upon or within the sides adjacent to said grooves f^2 will be forced outward into and caused to closely fill the latter,

as shown in Fig. 16, the result being the completion of said stem by forming upon opposite sides of the same ring-sockets a^2, as seen in Figs. 4 and 8.

The stem thus formed is ready for attachment to a case-center when its closed end has been opened and its outer end dressed off. In consequence of the compression of the metal by the operation of the dies, said stem is much stronger and better able to resist wear and use than would be possible if cut from a solid piece of metal in the usual way, while the ring-sockets possess far greater efficiency and durability than could be obtained by cutting the same from a metal rod and then securing them by solder within openings formed in the sides of the stem, as has heretofore been done.

Having thus fully set forth the nature and merits of my invention, what I claim is—

1. The method employed for forming watch-case stems, consisting, first, in drawing a disk of sheet metal into the form of an elongated cup, next in grooving or necking the blank stem between V-shaped rollers, and, finally, in beading the stem and spreading its base by clamping the stem-blank between dies and compressing it longitudinally by plungers operating within its interior and against said base, substantially as and for the purpose specified.

2. The method of forming watch-case stems with the ring-sockets thereon, which consists in first forming a hollow stem-blank, then clamping said blank between dies which conform to the exterior of the finished stem and have socket-cavities, and then forcing into the stem-blank a flattened plunger with its greatest transverse diameter or dimensions in line with the socket-cavities in the dies, so as to force the metal of the stem-blank outward into such cavities, substantially as and for the purpose shown.

In testimony that I claim the foregoing I have hereunto set my hand this 18th day of September, 1885.

WALTER H. FITZ GERALD.

Witnesses:
STEDMAN H. HALE,
A. M. CROMMELIN.