B. C. AMES.

WATCH BEZEL WITH UNBREAKABLE CONCAVO-CONVEX TENSIONAL CRYSTAL.

APPLICATION FILED FEB. 16, 1915.

1,133,780. Patented Mar. 30, 1915.

Fig. 1.



Fig. 2.

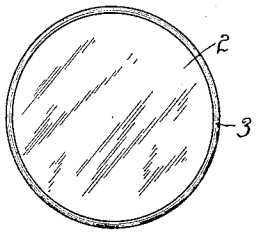
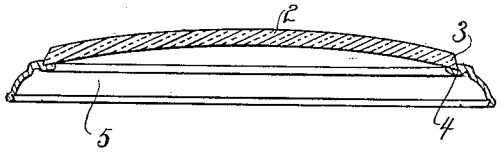


Fig. 3.



Witnesses
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UNITED STATES PATENT OFFICE.

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REISSUED

WATCH-BEZEL WITH UNBREAKABLE CONCAVO-CONVEX TENSIONAL CRYSTAL.

1,133,780. Specification of Letters Patent. Patented Mar. 30, 1915.

Application filed February 16, 1915. Serial No. 8,603.

To all whom it may concern:

Be it known that I, BLISS C. AMES, a citizen of the United States, residing at Waltham, in the county of Middlesex and State of Massachusetts, have invented a new and useful Improvement in Watch-Bezels with Unbreakable Concavo-Convex Tensional Crystals; and I do hereby declare the following, when taken in connection with the accompanying drawings and the characters of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawings constitute part of this application, and represent, in—

Figure 1 a front view of an unbreakable crystal constructed in accordance with my invention and shown prior to being placed under tension. Fig. 2 a plan view thereof. Fig. 3 a view on an enlarged scale in vertical section of a watch bezel and unbreakable crystal constructed and applied in accordance with my invention.

The watch crystals in common use throughout the world are made of glass and are concavo-convex in form for the clearance of the hour and minute hands. Such crystals are not only expensive in themselves, but to their initial cost a large percentage must be added by the watch-manufacturer to cover the breakage of crystals in fitting them into watch-bezels in the first instance. Moreover, glass crystals as supplied by foreign makers to the American trade, vary so much in diameter that they are commonly graded in from 15 to 20 sizes to all of which watch-bezels must be conformed which is a source of considerable expense both as to construction and handling. Furthermore, in fitting a glass crystal into the groove formed to receive it in the benzel, the thin edge of the crystal is extremely liable to break off in particles and work into the movement. From the frequency with which watches are found to be stopped by such particles of glass, the same have acquired the name of "stoppers."

The object of my invention is to avoid all of the above and other objections and to produce at a low cost an unbreakable or elastic watch crystal requiring no grading and not splintering so as to produce "stoppers."

With these ends in view, my invention consists in a watch bezel provided with an unbreakable elastic concavo-convex crystal maintained in tension by the bezel.

In carrying out my invention as herein shown, I employ a beveled disk 2 of celluloid or other equivalent elastic transparent unbreakable material, the edge of the disk being beveled as at 3 to adapt it to be sprung into an undercut groove or rabbet 4 in the outer edge of an ordinary watch bezel 5. The normal diameter of the disk 2 is a trifle larger when the disk is in its passive or flat non-tensional state, than the diameter of the undercut groove 4 so that the crystal 2 cannot be introduced into the groove of the bezel until it has been nominally reduced in diameter by springing it into concavo-convex form. When so sprung and still under tension, its beveled edge is introduced into the groove 4 after which the means applied to the disk to spring it into concavo-convex form are released. The disk then immediately recovers itself sufficiently to have its beveled edge firmly seated in the bottom of the groove 4, being thereafter maintained in concavo-convex form in the bezel under sufficient tension to hold it in place and to at all times compensate for contractions and expansions in the disk due to variations in temperature caused by the heat of the body or otherwise, as well as the shrinkage due to the seasoning of the celluloid. The crystal is always kept under tension by the bezel and so held in place and in concavo-convex form. The disk being unbreakable in its intrinsic character, cannot be broken at the time of introduction into the bezel, nor after the watch has gone into the hands of the user. No cost of breakage is to be added by by the manufacturer to the initial cost of the disk and the user of the watch will have no occasion to have the crystal replaced. Moreover, the edge of the disk being very tough will not crack off at the time of insertion into the groove in the bezel so that no baffling "stoppers" will be produced.

My improved unbreakable tensional crystal reduces the initial cost of the watch to the manufacturer and avoids the cost of broken glass crystals to the user. Inasmuch as the disk is always under tension, its edges will always be crowded into the groove of the bezel and therefore so tightly fitted there-

into as to prevent the entrance of any dust or other foreign particles into the watch around the edge of the disk.

I am aware that the use of celluloid in the place of glass for watch crystals has been proposed and I do not broadly claim the idea, but only my specific crystal made larger in diameter than the groove in the bezel and thrown into concavo-convex form for its introduction into and retention in the bezel.

I claim:—

The combination with a watch-bezel formed with an annular groove, of a celluloid watch-crystal larger in diameter than the diameter of the said groove into which its edge is inserted after it has been forced into concavo-convex form and thus reduced in virtual diameter to the diameter of said groove, whereby the crystal is maintained under tension in concavo-convex form and so firmly held in place.

In testimony whereof, I have signed this specification in the presence of two subscribing witnesses.

BLISS C. AMES.

Witnesses:
JOHN J. FLYNN,
MARY D. AMES.