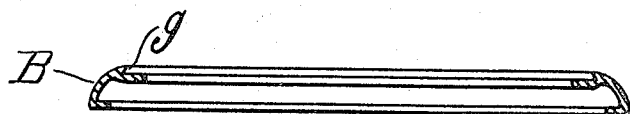
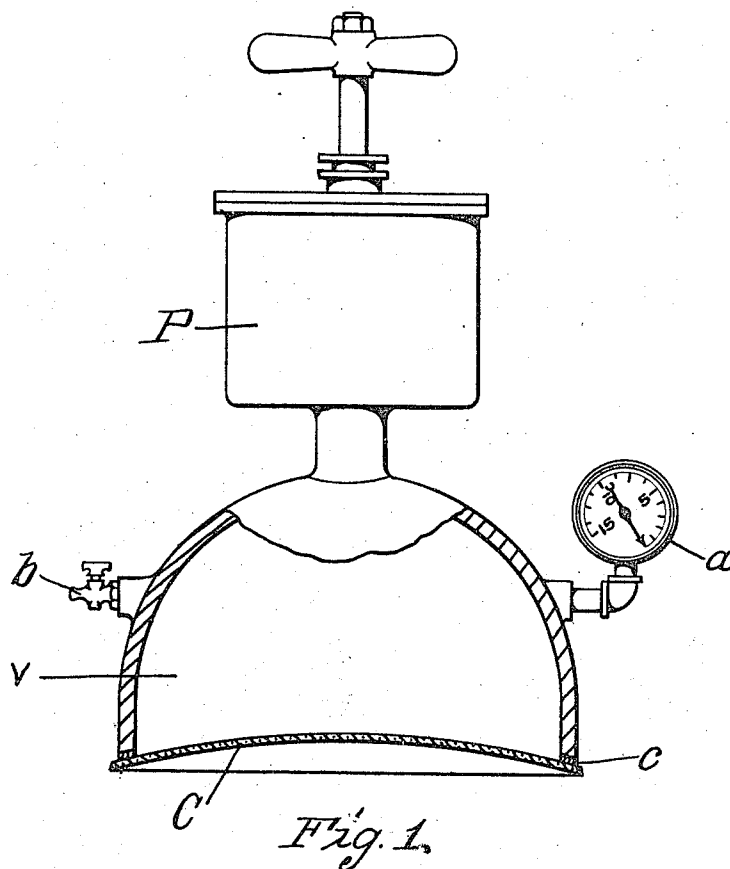


G. W. DOVER.
METHOD OF MOUNTING WATCH CRYSTALS IN WATCH BEZELS.
APPLICATION FILED MAR. 18, 1915.

1,176,353.

Patented Mar. 21, 1916.



Witnesses.

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UNITED STATES PATENT OFFICE.

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METHOD OF MOUNTING WATCH-CRYSTALS IN WATCH-BEZELS.

1,176,353.

Specification of Letters Patent.

Patented Mar. 21, 1916.

Application filed March 18, 1915. Serial No. 15,402.

To all whom it may concern:

Be it known that I, GEORGE W. DOVER, a citizen of the United States, residing at Providence, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Methods of Mounting Watch-Crystals in Watch-Bezels, of which the following is a specification.

My invention relates to an improved process of mounting glass crystals in the bezels of watches.

The method of mounting crystals in the bezels of watches, as usually practiced, is to hold the crystal between the thumb and fingers at an angle and nearly concentric with the axis of the bezel, so that a portion of the edge of the crystal will first enter the groove formed in the bezel for it, at the same time pressing upon the crystal and moving it circumferentially until it snaps bodily into the groove. A serious objection to former methods of mounting the crystals in the bezels is that a large percentage of them become broken, nicked or otherwise rendered useless before successfully seating one intact in the bezel, thereby materially increasing the cost, the latter also including the time and services of an expert employee.

It may be stated here that watch-crystals usually employed are comparatively thin, slightly resilient, and have a concavo-convex form cross-sectionally; the normal diameter of the crystal being, say, about two one-thousands of an inch larger than the inner diameter of the slightly undercut annular groove or seat formed in the bezel for it.

In hunting-case watches the crystals ordinarily used are relatively thin, being only some twenty one-thousands of an inch thick. In watches of the open-face type, the crystals employed are, however, somewhat thicker. I have demonstrated that by the employment of my improved process the crystals of both the said classes of watches are capable of being temporarily increased in convexity a comparatively small extent which correspondingly reduces them in diameter and permits of their introduction into the bezel members. In flat crystals having a materially greater thickness, I employ mechanism arranged to expand the bezel itself sufficiently so as to allow the normal crystal to be placed therein, and having said mechanism adapted to contract the

bezel back again to its normal size, thereby securing the crystal in place.

My improved method of mounting a thin resilient concavo-convex normal watch crystal in a grooved bezel comprises the application of the crystal to a suitable chambered member connected with an exhaust; withdrawing therefrom the air, thereby increasing the normal concavo-convexity and decreasing the diameter of said crystal, to permit its insertion in the bezel, and releasing the crystal from pressure and permitting it to recover its normality.

In the accompanying sheet of drawings illustrating means for carrying out my improved process or method of mounting glass crystals in the bezel members of watches, Figure 1 represents, partly in central section, a watch-crystal removably affixed airtight to a suitable holder or chamber and being subjected to suction exerted by a suction apparatus; Fig. 2 is a sectional view of the watch-bezel.

In the practice of my improved method, forming the subject of this application for patent, I may employ a suction bell or chamber *v*, connected to suitable suction or air-exhaust mechanism, as for example, a vacuum pump *P*, for producing a degree of vacuum within the chamber. The lower peripheral edge of the chamber (which may be considered a retaining member) is hermetically sealed to the convex face of the outer peripheral part of the crystal *C*, thereby inclosing and permitting practically the entire area of the said face to be uniformly acted upon by the suction force. The suction action tends to slightly increase the convexity of the crystal, limited only by its ability to withstand fracture. Obviously, rubber or other suitable packing or air-excluding material *c* should be placed between the juxtaposed surfaces of the crystal and the annular edge of the vacuum or suction chamber. The degree of suction produced within the vacuum chamber determines the net effective pressure or force acting on the crystal. Such suction may be ascertained in any suitable way, as for example, by the readings of a vacuum gage *a* connected with the suction-chamber of a suitable air-exhaust or vacuum-producing means. The annular metal bezel *B* is positioned so as to register with and receive the thus contracted crystal therein; it being understood that the bezel is usually provided with a slightly un-

dercut annular groove *g* arranged to securely hold the crystal in position therein. The crystal, still attached to the exhaust or vacuum bell, is next positioned in the bezel's groove, at the same time detaching the crystal from the bell or suction action by simply filling the vacuum, as by opening the vent-cock *b*, and permitting the disk to expand by its resiliency back to its normal size in position in said metal bezel or frame.

The entire operation of positioning, and connecting or mounting the crystal and bezel members and detaching them from the temporary holder or suction-chamber may be effected in a fraction of a minute. In carrying out my improved process of mounting watch crystals in watch-bezel members the suction-chamber may be connected with continuous suction or vacuum-producing means provided with manually controlled branches capable of being opened and closed at will.

While I have described my improved process as more especially adapted to be employed in mounting glass-crystals in watch-bezels, I do not desire to limit the invention to watches, since other resilient disk-like members may be mounted in metal frames or holders in a similar manner.

The position of the bell or vacuum cham-

ber having the convex surface of the concavo-convex crystal detachably secured to it may be reversed bodily 180° in a vertical plane, if desired. In any event, however, the pressure available is that of the atmosphere against the exposed concavo surface of the disk-like crystal from which latter air has been exhausted from the chamber or vessel in air-tight contact with the opposite or convex surface of the crystal.

I claim:—

The herein described method of emplacing a thin resilient concavo-convex normal watch-crystal, or the like, in an annular internally grooved or undercut bezel or frame, which comprises applying the crystal to a suitable bell connected with an exhaust; withdrawing therefrom the air, thereby increasing the concavo-convexity, and decreasing the cross measure of said crystal, to permit its insertion in the frame, and lastly, releasing the crystal from pressure and permitting it to recover its normality.

In testimony whereof I have affixed my signature in presence of two witnesses.

GEORGE WILLIAM DOVER.

Witnesses:

CHARLES C. REMINGTON,
GEO. H. REMINGTON.