June 26, 1962 H. DINSTMAN 3,040,514

WATERPROOF STEM SEAL FOR WATCH CASES

Filed Dec. 31, 1958

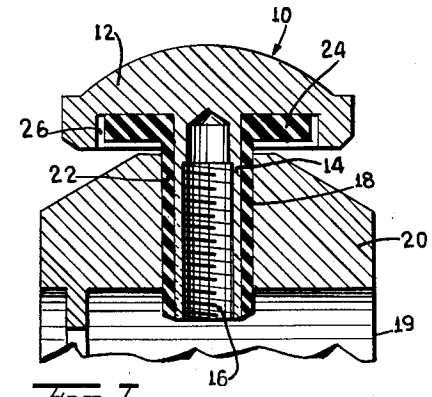


FIG. 1.

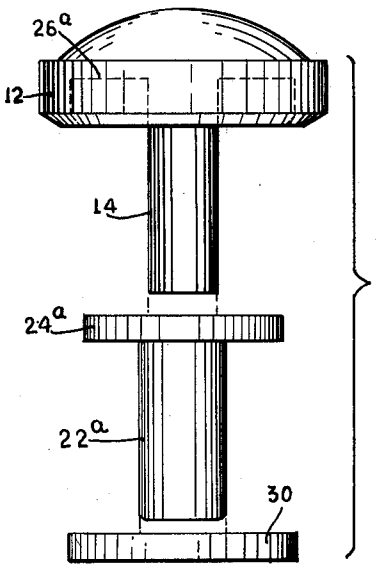


FIG. 3.

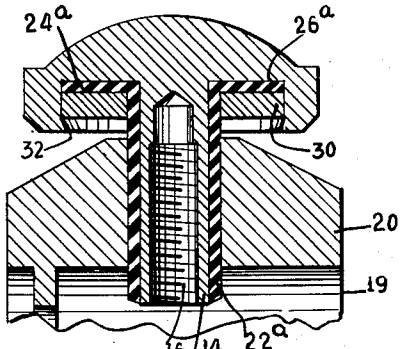


FIG. 2.

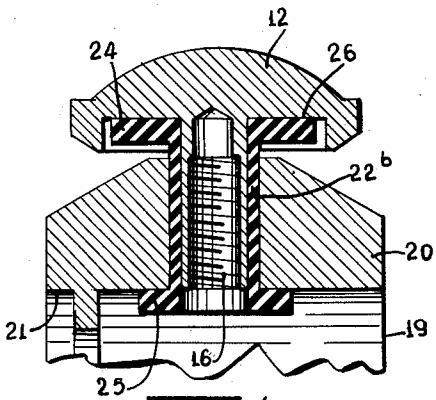


FIG. 4.

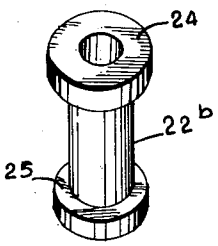


FIG. 5.

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WATERPROOF STEM SEAL FOR WATCH CASES

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This invention relates to the art of watch construction and particularly concerns an improved waterproof and dustproof seal for a watch crown.

Heretofore it has been conventional to rely upon a metal bushing or pendant portion of a crown to provide sealing against dust and moisture. This structure has not proven wholly satisfactory in practice. It is therefore a principal object of the present invention to provide an improved waterproofing treatment for a watch crown in which a sealing means is provided between the neck of a crown and a bore in the bezel or wall of a watchcase.

A further object is to provide a soft, pliable sleeve or gasket around the neck of a watch crown to provide a waterproof seal in the wall of a watchcase.

A still further object is to provide a flanged rubber sleeve for waterproofing a crown of a watch.

Another object is to provide a flanged rubber sleeve secured to the crown of a watch by a metal retainer for providing a waterproof seal of the crown to a watch bezel.

For further comprehension of the invention, and of the objects and advantages thereof, reference will be had to the following description and accompanying drawings, and to the appended claims in which the various novel features of the invention are more particularly set forth.

In the accompanying drawings forming a material part of this disclosure:

FIG. 1 is a sectional view of a crown and a portion of a watchcase.

FIG. 2 is a sectional view of another crown and portion of a watchcase showing another sealing structure for the crown.

FIG. 3 is an exploded elevational view of parts of the structure of FIG. 2.

FIG. 4 is a sectional view similar to FIGS. 1 and 2 of still another crown and portion of a watchcase with another sealing structure.

FIG. 5 is a perspective view of a sealing member employed in the structure of FIG. 4.

The structure shown in FIG. 1 includes a watch crown **10** having a head **12** and a neck **14** which has an internally threaded bore **16** to receive the usual watch stem. The neck is cylindrical in form and is disposed in a cylindrical bore **18** in the wall or bezel **20** of a watch case **19**. The diameter of the bore **18** is greater than the external diameter of neck **14**. Mounted on the neck **14** is a cylindrical sleeve **22** made of a soft pliable material such as rubber, or a suitable synthetic material. The sleeve **22** fits tightly between the neck **14** and the bore **18** to effect a waterproof and dustproof seal between the interior of the watchcase and the crown. The sleeve **22** is provided with an annular flange **24** which fits into a circular recess **26** at the underside of the crown. The sleeve may be attached by cement or otherwise to the wall of bore **18** or to the neck and underside of the head of the crown. The resilient material in either arrangement permits the crown to be turned in setting and winding the watch. If desired, the sleeve need

not be attached to either the watchcase or the crown. The flange **24** will prevent axial movement of the sleeve and prevents the sleeve from falling into the watch case. The sleeve in any case can be easily removed for replacement in the event of excessive wear.

The sleeve provides the desired waterproof and dustproof seal by exerting some pressure between the wall of bore **18** and the neck **14**. This is accomplished by providing a sleeve whose wall thickness in a normal state is slightly larger than the difference in diameters of bore **18** and the neck **14**. By compressing the soft, pliable sleeve, it fits snugly in the space between the neck and bore to provide the desired complete, long lasting waterproof and dustproof seal.

In FIGS. 2 and 3 is shown another form of the invention in which a springy metal washer or retainer ring **30** is inserted in the recess **26ª** at the underside of the flange **24ª** of the sleeve **22ª**. This flange may be made slightly thinner than flange **24ª** to provide space in the recess **26ª** for receiving the ring **30**. A ledge or lip **32** may be formed on the cylindrical wall of recess **26ª** for effectively retaining the ring therein. The ring will be snapped past the lip for secure engagement with the flange **24ª**.

In FIGS. 4 and 5 there is shown provided another form of sealing sleeve **22ᵇ** in which two flanges **24** and **25** are provided at opposite ends of the sleeve. The flange **25** engages the inner wall **21** of the watchcase while the flange **24** seats in recess **26** in the head **12** of the crown. By use of the two flanges as shown, the sleeve is prevented from accidental disengagement from the case when the crown is withdrawn therefrom.

The beneficial sealing effect is obtained with substantially equal effectiveness by use of any of the sleeves described, the variations among the several sleeves depending on their flanged structure which relates to their mode of attachment to the watch and crown.

The present invention provides a simplified structure for obtaining a water proofing and dustproofing of the bezel bore through which extends the neck of a crown. The sealing means is readily replaceable when necessary. It does not interfere in any way with the operation of the watch or with setting and winding functions of the crown.

While I have illustrated and described the preferred embodiments of my invention, it is to be understood that I do not limit myself to the precise constructions herein disclosed and that various changes and modifications may be made within the scope of the invention as defined in the appended claims.

Having thus described my invention, what I claim as new, and desire to secure by United States Letters Patent is:

1. A waterproof and dustproof sealing structure for a watch, comprising a watchcase having a cylindrical bore extending from the interior to the exterior of the case, a crown having a head and an integral cylindrical neck with an external diameter smaller than the diameter of said bore, said crown being mounted on said case with said neck extending through said bore, to a point beyond the inner end of the bore, a soft, pliable cylindrical sleeve disposed between the neck and bore along the length of the neck for effecting a waterproof and dustproof seal between the neck and bore with a flange at one end to pre-

vent undesired axial movement of said sleeve with respect to the crown and watchcase, said head having a lipped recess therein to receive and seat said flange, and an annular ring disposed in abutment with said flange in said recess and retained by the lip of said recess.

2. A seal structure for a watch comprising a watch case having a bore therethrough, a crown formed of a recessed head and a stem extending therefrom and through the bore in the case in spaced relationship, a soft and pliable tubular seal encircling the stem in a sealed relationship and having a flange disposed in the recess in said head, the seal extending beyond the ends of the bore and being of greater unflexed diameter than said bore for forming a seal therebetween exerting a sealing force on

the bore ends, an annular ring disposed in said recess abutting said flange, and a lip disposed about the edge of the recess for retaining said ring.

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