

[54] **WATERTIGHT WATCH CASE AND WATCH**

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[22] Filed: May 30, 1972

[21] Appl. No.: 257,556

[30] **Foreign application priority data**

June 2, 1971 Japan.....46/45343

[52] U.S. Cl.....58/90 R, 58/91

[51] Int. Cl.....G04b 37/08

[58] Field of Search.....58/90 R, 91, 94

[56] **References Cited**

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[57] **ABSTRACT**

A watertight watch and watch case construction in which a watch case body has an integral back cover and a cavity housing the watch movement. A seal gasket of elastic, deformable material is disposed circumferentially of the watch dial and a crystal support ring overlies the gasket with a watch crystal bonded thereto. A bezel has a flange or rim overlying a marginal circumferential part of the ring and is tightened by screws spaced around the watch case body deforming the seal so that a positive watertight seal is formed to protect the interior of the watch.

4 Claims, 2 Drawing Figures

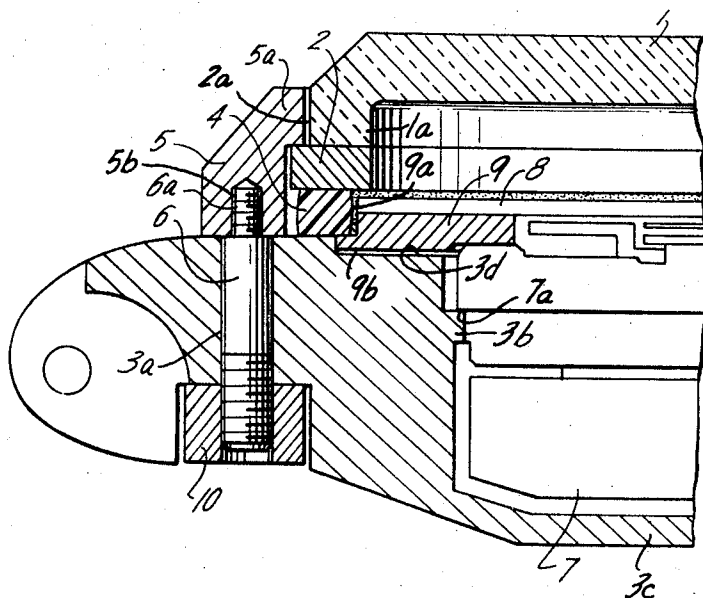


FIG. 1

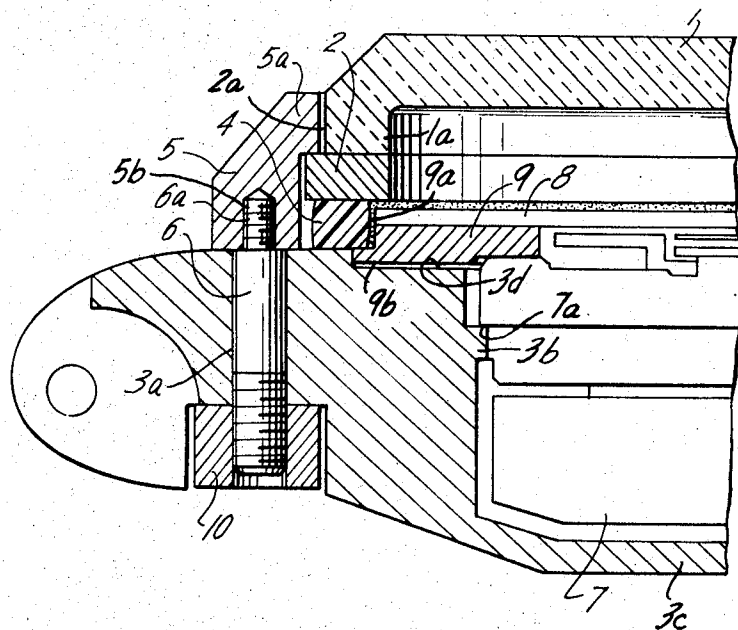
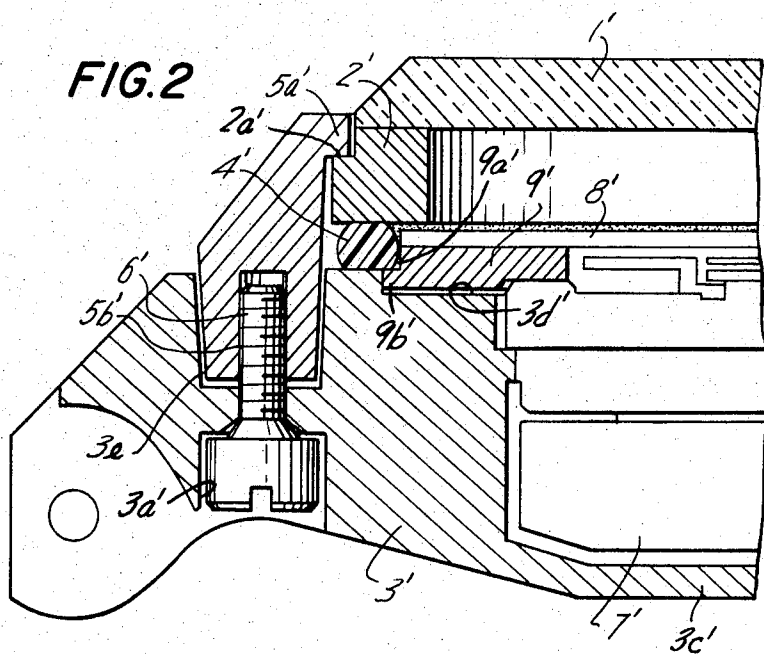


FIG. 2



WATERTIGHT WATCH CASE AND WATCH BACKGROUND OF THE INVENTION

This invention relates generally to watches and more particularly to watertight watches and a watch case construction therefor.

In the usual watertight watch construction the back cover is not made integrally with the watch case and is mounted thereon by a tight fit or by complementary threads on the watch case and it. In this type of construction frequent removal of the back cover will reduce the possibility of watertightness being maintained.

Recently watertight watches have been constructed in which the watch case has a back cover integral therewith. However, watertightness in these watches is lost in the bezel construction thereof. The bezel in these known watches has the crystal bonded or adhered thereon. Since the bezel is generally subjected to strong forces in mounting on the watch case and in use, the crystal bonded thereon loses its tightness and may even come loose. The practice has changed in these watches to bonding or adhering the crystal on a crystal ring or support ring therefor and then to hold the support ring with a bezel. These constructions have a bulkiness and large-sized exterior that ruins their appearance and their bezel seal is not adequate.

SUMMARY OF THE INVENTION

It is a principal object of the present invention to provide a watertight watch and watch case construction in which the back cover is integral with a watch case body and a positive seal is assured at the bezel of the watch.

Another object is to provide a watch case construction that is watertight and yet is thin and has a smart exterior.

Still another object is to provide a watch and watertight watch case construction that can be easily assembled and disassembled and which permits the watch case to be of any desired shape such as oval, square or rectangular.

The watch and watch case of the invention have an integral back cover jointly with the watch case body defining an inner cavity within which watch works in conjunction with a watch dial are housed. A crystal has a support ring attached thereto by bonding and this ring overlies a gasket circumferentially of the dial plate. A bezel clamps the ring along a marginal circumferential portion and deforms the seal forming a seal internally of the bezel.

BRIEF DESCRIPTION OF THE DRAWINGS

Other objects and advantages will appear from the following description of an example of the invention, and the novel features will be particularly pointed out in the appended claims and drawings in which:

FIG. 1 is a fragmentary cross section view of a watertight watch and watch case construction according to the invention; and

FIG. 2 is a fragmentary cross section view of the watch case in FIG. 1.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

In FIGS. 1 and 2 watches embodying the invention are illustrated fragmentarily. A watch crystal 1 has a rim 1a adhered by a suitable adhesive on a ring 2. The ring 2 has its outer diameter greater than that of the crystal's rim 1a so that it extends past the outer periphery of the rim 1a. A watch case body 3 supports a deformable gasket 4 of resilient material on which the crystal support ring 2 is disposed.

A bezel 5 disposed circumferentially of the support ring 2 and the gasket 4 has a flange or rim 5a extending inwardly overlying a marginal portion of the surface of the support ring 2 on which the crystal is supported. The bezel rim 5a has an annular inner surface that is disposed circumferentially of the rim 1a of the crystal so that the crystal is held radially. The watch case body has angularly spaced through openings, only one of which is shown at 3a, through which screws 6 extend and have a threaded part 6a threaded into complementary threaded recesses in the body of the bezel.

Within the watch case body is disposed the watch works or movement 7 on which is mounted a dial plate 8 and the hands, not shown. The watch works 7 are received in a cavity in the watch case body 3 and are supported by an annular projection 3b extending inwardly of the cavity within the watch case body. The watch case body has a back 3c integral therewith and defining the cavity jointly therewith.

A holding ring 9 underlies the watch plate 8 and has an annular surface overlying the watch movement and is disposed circumferentially about the watch works holding it fixed in position. A threaded nut 10 on each screw 6 securing the bezel is received in a corresponding cavity and tightening thereof applies axial pull to its screw and compresses the gasket 4 so that it deforms as shown and a watertight seal is formed so that the watch case and watch according to the invention are watertight.

The watch according to the invention is assembled by first inserting the watch movement with the dial plate 8 and hands, not shown, already mounted thereon in the cavity of the watch case body. The holding ring is in position around the watch movement and it is placed in position in an annular recess 3d on the watch case body circumferentially of the cavity so that the holding ring fits thereinto and is located or positioned in place and is held radially. As the watch works are inserted, a shoulder or annular surface 7a thereon engages the support projection 3b extending into the cavity of the watch case body.

The gasket 4 is then disposed around the holding ring 9. It will be noticed that the supporting ring has a circumferential notch 9a so that its lower part forms a flange 9b thereon received in the locating recess 3a. Thus the gasket 4 overlies the flange 9b of the holding ring 9 and is disposed circumferentially of the dial plate 8 and the holding ring which are of equal diameter in the part of the supporting ring 9 enclosed circumferentially by the gasket.

The crystal with the crystal support ring 2 bonded or adhered thereon is seated on the gasket 4 and the bezel 5 is located in position holding the crystal support ring 2 down as before described. The mounting screws 6 of the bezel are threaded into threaded mounting holes 5b

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and positioned on the bezel before it is located on the watch case body 3. They may be additionally secured by soldering or welding. The mounting screws 6 are received in their respective holes 3a when the bezel is located in position and the threaded nuts 10 are then threaded on to the mounting screws. As the nuts 10 are tightened, the flange 5a on the bezel engages with surfaces defining an annular notch 2a, on the crystal rim and the support ring 2 in which it is received and seats. The continued tightening compresses the gasket 4 and the holding ring is forced against the watch works so that it is fixed and held in position and the inside of the watch case is sealed in a watertight condition.

In the embodiment shown in FIG. 2 the watch parts corresponding to or similar to the parts of the embodiment heretofore described are similarly numbered except that the reference numerals and letters are primed. In this embodiment the crystal 1' has no rim and the support ring 2' has a circumferential notch 2a' in which a flange 5a' of a bezel 5' seats.

The watch case body has an annular recess or groove 3e circumferentially of the inner cavity in which is received the bezel 5 and a plurality of holes 3a' extend into this annular groove for receiving therein screws 6' screwed into respective threaded holes 5b' on the bezel spaced thereon. These screws are inserted into position through the holes 3a' on the watch case body. As the screws are tightened, a gasket 4' is deformed as before and everything is assembled and fixed as before described and fluidtight or watertight seal is formed.

Those skilled in the art will recognize that the watch case construction according to the invention may be made oval, oblong, circular or rectangular. There are many possibilities as to the watch case configuration.

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Moreover, the watch case body with an integral back cover may be made of plastic by injection molding.

What is claimed is:

1. A watertight watch case comprising, a watch case body having an integral back corresponding to a back cover defining a cavity for receiving a watch movement therein, a resilient, deformable gasket circumferentially of said cavity, a ring overlying said gasket and having a watch crystal bonded thereto spanning a space in registry with said cavity, a bezel disposed circumferentially of said gasket, said ring and of said watch crystal, said bezel having a flange overlying a marginal, annular portion of said ring, and means to fix said bezel on said watch case body comprising means to draw said bezel toward said watch case body thereby to apply pressure to said ring to deform said gasket effecting a watertight seal circumferentially of said cavity.

2. A watertight watch case according to claim 1, in which said watch case body has an annular groove disposed circumferentially of said cavity and in which said bezel is disposed.

3. A watertight watch case according to claim 1, including a holding ring disposed circumferentially of said cavity and interiorly of said gasket for holding said watch movement in said cavity, said holding ring having a marginal edge part thereof underlying said gasket, and said watch case body having an annular recess in which said holding ring is disposed.

4. A watertight watch case according to claim 1, in which said means to draw the bezel toward the watch case body comprises a plurality of screws disposed spaced from each other in a circumferential direction on said watch case body extending through said watch case body and extending into said bezel.

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