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2,332,458

WATERPROOF WATCHCASE

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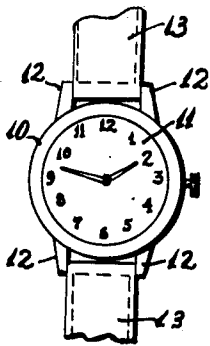


Fig. 1.

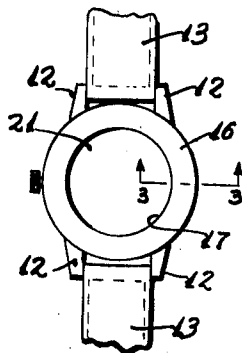


Fig. 2.

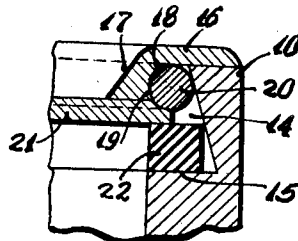


Fig. 3.

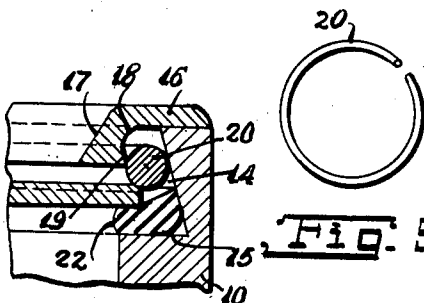
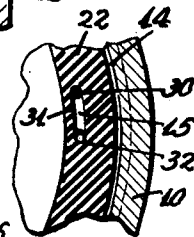


Fig. 4.

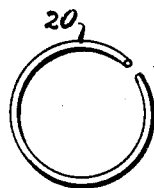


Fig. 5.

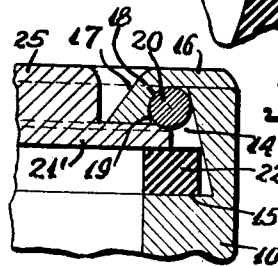


Fig. 6.

Fig. 11.

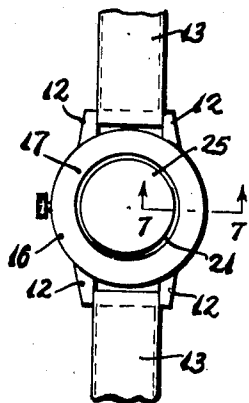


Fig. 7.

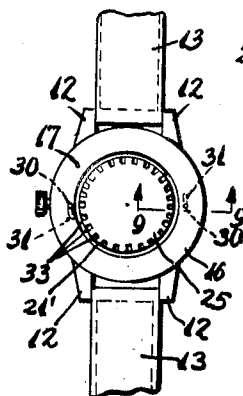


Fig. 8.

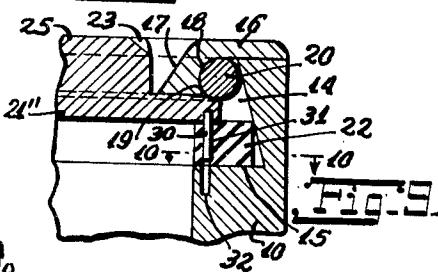


Fig. 9.

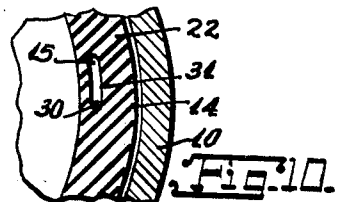


Fig. 10.

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WATERPROOF WATCHCASE

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Application December 2, 1942, Serial No. 467,582

7 Claims. (Cl. 58—90)

This invention relates to new and useful improvements in a waterproof watch case.

More specifically, the invention proposes the construction of a watch case having a removable cover and provided with a new and novel means for waterproofly holding the cover in position upon the watch case in a manner to protect the delicate watch mechanism within the case from the ravages of water in the event the watch be accidentally submerged.

Still further it is proposed to characterize the watch case by a cylindrical body having a frusto-conical end opening continuing into a reduced shoulder upon which a disc is adapted to be rested with a resilient compressible gasket between the adjacent faces of the disc and shoulder to waterproof these contacting surfaces in a manner to prevent the entrance of water.

Another object of the invention proposes an annular rim which is adapted to be rested on the end of the cylindrical body and which has a portion engaging the top face of the disc to prevent the disc from dropping out of the end opening of the cylindrical body.

A further object of the invention provides a wire ring arranged to extend along an external groove formed in the annular rim and engage the adjacent face of the frusto-conical opening in the cylindrical body in a manner to securely lock the annular rim in position upon the cylindrical body.

A still further object of the invention proposes to so arrange the parts of the watch case that pressure upon the outer face of the disc will cause it to move inwards compressing the gasket and freeing the annular rim to be lifted off the back of the watch case in a manner to free the disc to be lifted out of the watch case and open the back thereof.

It is another object of a modification of this invention to provide means for holding the disc against being pressed inwards in a manner to prevent the disc from being accidentally freed.

It is still another object of this invention to construct a waterproof watch case which is simple and durable and which may be manufactured and sold at a reasonable cost.

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

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

Fig. 1 is a front elevation of a watch having a waterproof watch case constructed in accordance with this invention.

Fig. 2 is a rear elevational view of Fig. 1.

Fig. 3 is an enlarged partial vertical sectional view taken on the line 3—3 of Fig. 2.

Fig. 4 is a view similar to Fig. 3, but illustrating the position of the parts when the disc has been depressed to release the annular rim.

Fig. 5 is a perspective view of the lock wire per se.

Fig. 6 is a view similar to Fig. 2, but illustrating a modification of the invention.

Fig. 7 is an enlarged partial vertical sectional view taken on the line 7—7 of Fig. 6.

Fig. 8 is another view similar to Fig. 2, but illustrating another modification of the invention.

Fig. 9 is an enlarged partial vertical sectional view taken on the line 9—9 of Fig. 8.

Fig. 10 is a horizontal sectional view taken on the line 10—10 of Fig. 9.

Fig. 11 is a view similar to Fig. 10, but illustrating a different position of the parts.

The waterproof watch case, according to this invention, includes a cylindrical body 10 having one side closed by a watch crystal and enclosing a watch mechanism 11 arranged to have its face viewable through the crystal. Spaced lugs 12 project from opposite sides of the body 10 and have the ends of a wrist band 13 attached thereto. Although the novel features of this invention have been shown applied to a wrist watch, this merely is by way of illustration, and the features of this invention could be applied equally as well to a pocket watch, clock, compass, barometer or any similar device having a cylindrical body.

The cylindrical body is formed with a frusto-conical end opening with its large end disposed inwards of the body and continuing into a reduced shoulder 15.

An annular rim 16 is rested on the open end of the body 10 and has a portion 17 extended into the outer end of the frusto-conical opening 14. The rim 16 is formed with an external groove 18 which is circular in cross-section and which has a bottom portion continuing into a ledge 19. The ledge 19 is extended parallel to the side wall of the frusto-conical opening 14.

A wire 20 is extended along the external groove 18. This wire is of a diameter equal to the distance between the ledge 19 and the face of the upwardly extending side wall of the frusto-conical opening 14. This wire is circular in shape (see Fig. 5) and is formed of resilient material

so that it normally tends to expand to bear against the face of the upwardly extended side wall of the frusto-conical opening 14.

A metallic disc 21 is extended across the inner end of the rim 16 and more specifically across the inner end of the inwardly directed portion 17 of the annular rim 16. The disc 21 has the outer portions of its top face resting against the bottom portion of the wire 20.

A resilient compressible gasket 22 rests upon the reduced shoulder 15 and engages the edge portions of the bottom face of the disc 21. This gasket 22, which is preferably constructed of rubber or other similar material, seals the adjacent faces of the shoulder 15 and the disc 21 to prevent water from entering the body 10 and also urges the disc 21 upwards forcing the wire 20 into the groove 18 to lock the annular rim against being removed from the body 10 holding the case in its closed position.

The operation of the invention is as follows:

Normally the cylindrical body 10 is closed as shown in Fig. 3. To open the back of the watch, pressure is applied to the outer face of the disc 21 to urge the disc inwards or downwards to compress the resilient gasket 22 as shown in Fig. 4. The disc 21 then moves away from the inner end of the inwardly extending portion 17 of the annular rim 16. The expanding resilient character of the wire 20 will cause the wire to move downwards with the disc 21 along the inner face of the upwardly extending wall of the frusto-conical opening 14. Downward movement of the wire 20 is to continue until the horizontal center of the wire passes the bottom edge of the ledge 19 of the annular rim 16, as clearly shown in Fig. 4. In this position the rim 16 will be free to be lifted out of the opening 14 releasing the other parts to also be lifted out one after the other. To reclose the back of the cylindrical body 10 the parts are returned to their normal position and the annular rim 16 is then snapped into position to again lock the back closed.

In the modification of the invention shown in Figs. 6 and 7, the construction of the waterproof watch case is similar to that previously described except that the outer face of the disc 21' is formed with an outwardly extending projection 25 which has its face flush with the outer face of the annular rim 16 making it easier to press the disc inwards when opening the watch case.

Like reference numerals identify like parts in each of the two previous forms of the invention.

In Figs. 8 to 11 means is provided for releasably retaining the disc 21' against being accidentally moved downwards or inwards preventing the watch case from being accidentally opened. This latch is characterized by a pair of downwardly extending pins which project from diametrically opposite sides of the disc 21'. These pins extend through arcuate slots formed in diametrically opposite sides of the gasket 22. The pins are of a length substantially equal to the thickness of the gasket 22 so as to bear against the top face of the shoulder 15 to prevent the disc 21' from being moved downwards.

At one end of the arcuate slots 31 the cylindrical body 10 is formed with downwardly extending openings 32 which project from the shoulder 15. The openings 32 are of a diameter slightly greater than the diameter of the pins 30 and when the free ends of the pins 31 are aligned with the top ends of the openings 32, will enter the openings 32 permitting the disc 21' to be depressed.

The outer corners of the outwardly projecting portion 25 of the disc 21' is formed with cuts 33 arranged to assist the disc in being manually turned relative to the cylindrical body 10 to align and disalign the pins 30 and the openings 32.

In other respects this form of the invention is also similar to the previous forms and like reference numerals identify like parts in all the views.

It is to be understood that the watchcase and the ring 20 may be circular or of any other geometrical figures. The ring 20 may be circular or rectangular in cross section and may be changed when it becomes worn.

The annular rim 16 may also be threaded to screw on the cylindrical body 10 either at the outside diameter or on the inside diameter of the same to prevent the wire 20 from snapping out of position.

When it is desired to open the device, the threaded annular rim 16 is removed and then the wire ring 20 as well as the disc 21 may be taken out of the cylindrical body.

While we have illustrated and described the preferred embodiments of our invention, it is to be understood that we do not limit ourselves to the precise constructions herein disclosed and the right is reserved to all changes and modifications coming within the scope of the invention as defined in the appended claims.

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

1. A waterproof watch case, comprising a cylindrical body having a frusto-conical end opening with its large end disposed inwards of said body and continuing into a reduced shoulder, an annular rim rested on the end of said body and having a portion extending into the outer end of said frusto-conical opening and being formed with an external groove which is circular in cross-section and which has its bottom portion continuing into a ledge which is parallel to said frusto-conical opening, a wire extending along said external groove and being of a diameter equal to the distance between said ledge and the face of said frusto-conical opening, a disc extending across the inner end of said annular rim and engaging against the bottom portion of said wire, and a resilient compressible gasket resting on said shoulder and engaging the edge portion of said disc for holding said case in its closed position.

2. A waterproof watch case, comprising a cylindrical body having a frusto-conical end opening with its large end disposed inwards of said body and continuing into a reduced shoulder, an annular rim rested on the end of said body and having a portion extending into the outer end of said frusto-conical opening and being formed with an external groove which is circular in cross-section and which has its bottom portion continuing into a ledge which is parallel to said frusto-conical opening, a wire extending along said external groove and being of a diameter equal to the distance between said ledge and the face of said frusto-conical opening, a disc extending across the inner end of said annular rim and engaging against the bottom portion of said wire, and a resilient compressible gasket resting on said shoulder and engaging the edge portion of said disc for holding said case in its closed position, and also sealing the adjacent faces of said shoulder and disc.

3. A waterproof watch case, comprising a cylindrical body having a frusto-conical end opening with its large end disposed inwards of said body and continuing into a reduced shoulder, an annular rim rested on the end of said body and having a portion extending into the outer end of said frusto-conical opening and being formed with an external groove which is circular in cross-section and which has its bottom portion continuing into a ledge which is parallel to said frusto-conical opening, a wire extending along said external groove and being of a diameter equal to the distance between said ledge and the face of said frusto-conical opening, a disc extending across the inner end of said annular rim and engaging against the bottom portion of said wire, and a resilient compressible gasket resting on said shoulder and engaging the edge portion of said disc for holding said case in its closed position, said wire being circular in form and of resilient stock tending to increase in diameter to bear against the face of the wall of said frusto-conical opening.

4. A waterproof watch case, comprising a cylindrical body having a frusto-conical end opening with its large end disposed inwards of said body and continuing into a reduced shoulder, an annular rim rested on the end of said body and having a portion extending into the outer end of said frusto-conical opening and being formed with an external groove which is circular in cross-section and which has its bottom portion continuing into a ledge which is parallel to said frusto-conical opening, a wire extending along said external groove and being of a diameter equal to the distance between said ledge and the face of said frusto-conical opening, a disc extending across the inner end of said annular rim and engaging against the bottom portion of said wire, and a resilient compressible gasket resting on said shoulder and engaging the edge portion of said disc for holding said case in its closed position, said gasket being formed of rubber or other similar material.

5. A waterproof watch case, comprising a cylindrical body having a frusto-conical end opening with its large end disposed inwards of said body and continuing into a reduced shoulder, an annular rim rested on the end of said body and having a portion extending into the outer end of said frusto-conical opening and being formed with an external groove which is circular in cross-section and which has its bottom portion continuing into a ledge which is parallel to said frusto-conical opening, a wire extending along said external groove and being of a diameter equal to the distance between said ledge and the face of said frusto-conical opening, a disc ex-

tending across the inner end of said annular rim and engaging against the bottom portion of said wire, and a resilient compressible gasket resting on said shoulder and engaging the edge portion of said disc for holding said case in its closed position, said disc being formed with an outwardly extending projection which extends through said rim and has its face flush with the face of said rim.

6. A waterproof watch case, comprising a cylindrical body having a frusto-conical end opening with its large end disposed inwards of said body and continuing into a reduced shoulder, an annular rim rested on the end of said body and having a portion extending into the outer end of said frusto-conical opening and being formed with an external groove which is circular in cross-section and which has its bottom portion continuing into a ledge which is parallel to said frusto-conical opening, a wire extending along said external groove and being of a diameter equal to the distance between said ledge and the face of said frusto-conical opening, a disc extending across the inner end of said annular rim and engaging against the bottom portion of said wire, and a resilient compressible gasket resting on said shoulder and engaging the edge portion of said disc for holding said case in its closed position, and latch means for releasably restraining said disc from being moved downwards.

7. A waterproof watch case, comprising a cylindrical body having a frusto-conical end opening with its large end disposed inwards of said body and continuing into a reduced shoulder, an annular rim rested on the end of said body and having a portion extending into the outer end of said frusto-conical opening and being formed with an external groove which is circular in cross-section and which has its bottom portion continuing into a ledge which is parallel to said frusto-conical opening, a wire extending along said external groove and being of a diameter equal to the distance between said ledge and the face of said frusto-conical opening, a disc extending across the inner end of said annular rim and engaging against the bottom portion of said wire, and a resilient compressible gasket resting on said shoulder and engaging the edge portion of said disc for holding said case in its closed position, latch means for releasably restraining said disc from being moved downwards comprising pins extending from said disc and engaging the face of said shoulder and in a turned position of said disc being alignable with openings formed in said circular body and extended from said shoulder.

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