

[54] **RECTANGULAR WATERTIGHT WATCH CASE**

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[22] Filed: **Sept. 24, 1971**

[21] Appl. No.: **183,384**

[30] **Foreign Application Priority Data**

Sept. 26, 1970 Japan..... 45/94853

[52] U.S. Cl..... **58/90 R**

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

[58] Field of Search..... **58/88 R, 90 R**

[56] **References Cited**

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[57] **ABSTRACT**

A watertight watch case for rectangular watches having a circular threaded aperture in one side thereof dimensioned to receive a circular case back. Gaskets are provided between the watch crystal and said watch case and between portions of the case back and watch case. The watch crystal is engaged against its respective gasket through intermediate members formed of rigid material positioned between the case back and said watch crystal.

5 Claims, 6 Drawing Figures

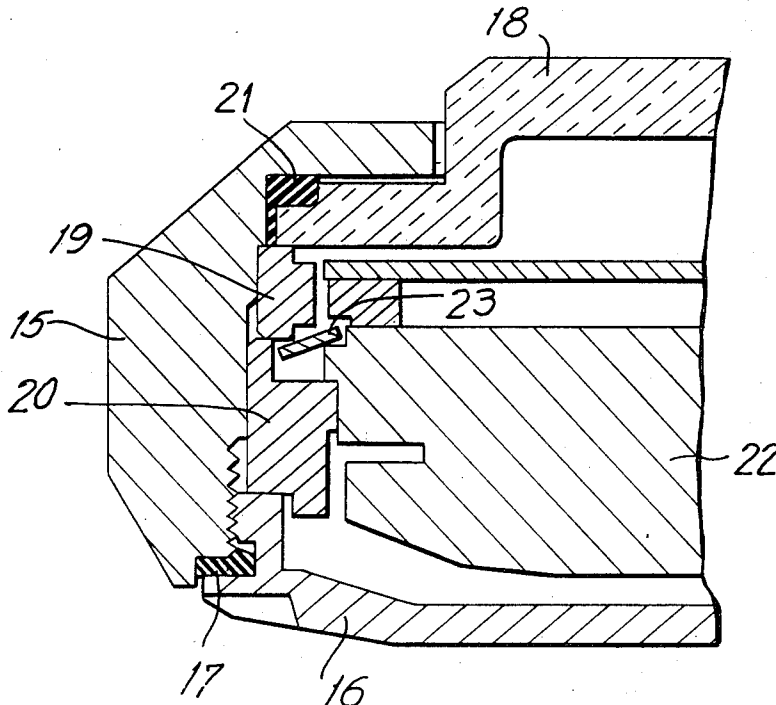


FIG. 1
PRIOR ART

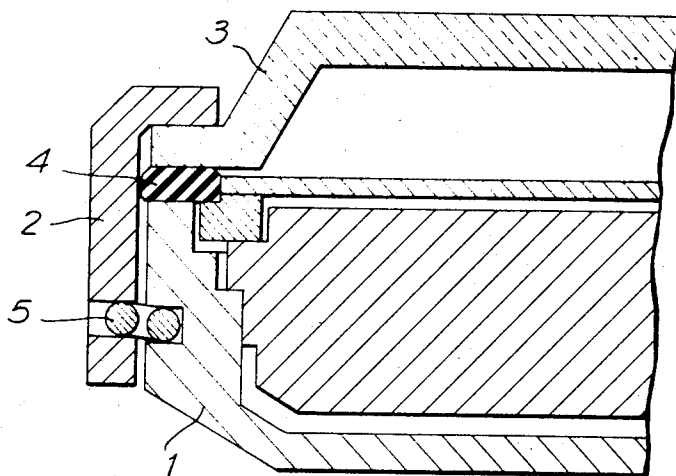


FIG. 2
PRIOR ART

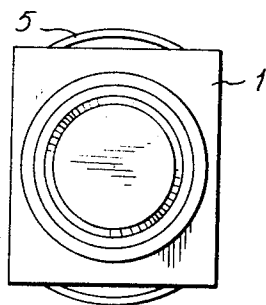


FIG. 3
PRIOR ART

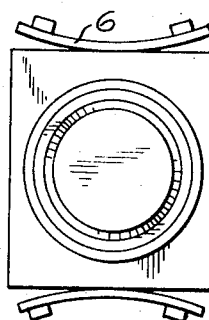


FIG. 4

PRIOR ART

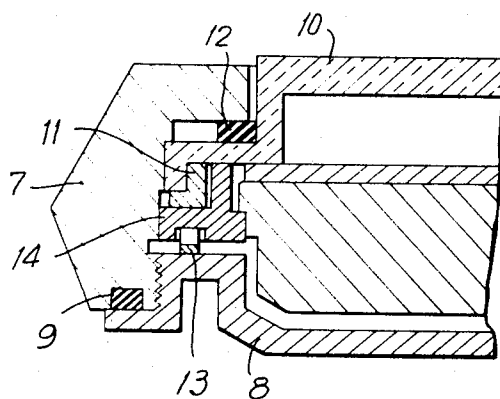


FIG. 5

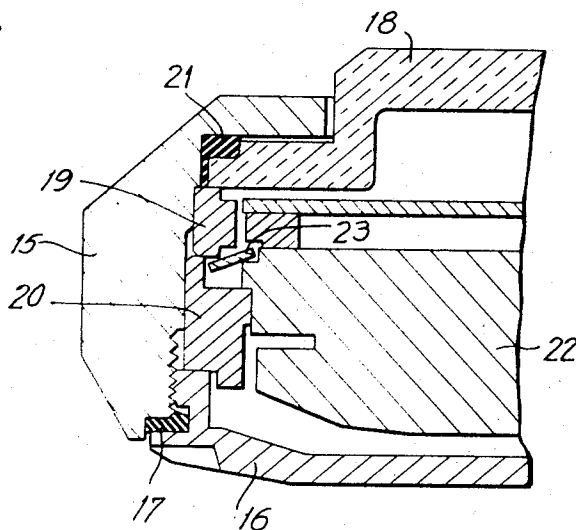
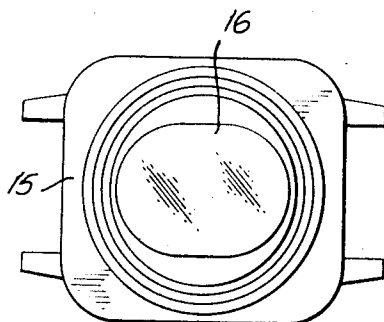


FIG. 6



RECTANGULAR WATERTIGHT WATCH CASE

BACKGROUND OF THE INVENTION

This invention relates to watertight watch cases wherein the watch case is rectangular. Watch cases are usually provided with means for providing a watertight seal between the crystal and watch case and between the watch back and watch case. However, in the case of rectangular watches, the structures available for this purpose have proved difficult to maintain, and expensive to manufacture. By providing a rectangular watch case with a circular aperture therethrough for receiving a circular watch back which engages the watch crystal against the watch case and associated gaskets to rigid intermediate members, the foregoing deficiencies are avoided.

SUMMARY OF THE INVENTION

Generally speaking, in accordance with the invention, a rectangular watertight watch is provided comprising a substantially rectangular watch case formed with a substantially circular threaded aperture in one side thereof; a threaded substantially circular case back dimensioned for receipt within said threaded aperture; a watch crystal received within an aperture in the opposed side of said watch case; a gasket intermediate portions of said watch case and each of said case back and watch crystal for providing a watertight seal therebetween; and at least one intermediate member formed of a rigid material intermediate said case back and watch crystal for engaging said watch crystal against its gasket in response to the displacement of the case back into said threaded aperture.

Accordingly, it is an object of this invention to provide a watertight watch of rectangular form which is relatively inexpensive to produce, and which provides a watertight seal adapted to survive for a substantial period of time.

Still other objects and advantages of the invention will in part be obvious and will in part be apparent from the specification.

The invention accordingly comprises the features of construction, combination of elements, and arrangement of parts which will be exemplified in the construction hereinafter set forth, and the scope of the invention will be indicated in the claims.

BRIEF DESCRIPTION OF THE DRAWINGS

For a fuller understanding of the invention, reference is had to the following description taken in connection with the accompanying drawings, in which:

FIG. 1 is a partial cross sectional view showing one embodiment of a prior art watertight rectangular watch case;

FIG. 2 is a plan view of the inner case body of the embodiment of FIG. 1;

FIG. 3 is a plan view of another embodiment of the prior art rectangular watertight watch cases;

FIG. 4 is a partial sectional view of still another embodiment of the prior art watertight watch cases;

FIG. 5 is a partial sectional view of one embodiment of the watertight watch case according to the invention; and

FIG. 6 is a plane view from the back showing the watch case of FIG. 5.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring now to FIGS. 1 and 2, the prior art rectangular watertight watch case depicted is provided with a gasket 4 interposed between the inner case body 1 and outer case body 2 through the watch crystal 3. The arrangement is tightened by means of a spring 5. This type of watch case has several drawbacks. The machining of the rectangular inner case body 1 and the outer case body 2 is extremely delicate, and it is difficult to obtain the precise size relationship required. Furthermore, the tightening structure between the inner case body and the outer case body causes some difficulties. Usually, the spring 5 depicted in FIGS. 1 and 2, or the spring 6 depicted in the alternate embodiment of FIG. 3, is fixed to the inner case body by means of welding or caulking, to engage with the outer case body 2, to tighten the gasket. Due to difficulties in manufacture, and the lack of stability of this structure, portions of the springs readily deform, so that the pressure on the gaskets lessens with the passage of time. Accordingly, it is difficult to maintain perfect watertightness for a long period of time. In addition, it is necessary to manufacture new components such as inner case body 1 or gasket 4 each time a new design is introduced, due to the fact that the outer case body 2 and the inner case body 1 are both in rectangular form. This results in restrictions on variation in design.

Referring now to FIG. 4, still another prior art structure is depicted. In this embodiment, water tightness is maintained by O-ring gasket 9 inserted between case back 8 and case body 7, said case body being of rectangular exterior configuration and substantially circular interior configuration. The front of the watch case is provided with a crystal 10 having a substantially rectangular shape on its upper side and a circular form on its inner side which engages the case body by means of a tension ring 11. A subsidiary gasket 12 is provided between the upper flange of the watch case and the watch crystal. A spring 13 is provided for fixing the movement in the watch case, said spring engaging against a case ring 14. In this construction, the tension ring 11 tends to shift downwards when the glass is pressed from its upper surface, thereby necessitating the provision of the subsidiary gasket 12. Further, the presence of the tension ring 11 makes the structure of the glass 10 relatively complicated, and requires great precision in the dimensions of the peripheral portions of the crystal.

Referring now to FIGS. 5 and 6, wherein the watch case construction according to the invention is depicted, an O-ring gasket 17 is inserted between the rectangular case body 15 and a usual circular case back 16. The case back is threaded and received within a threaded circular aperture within the rectangular case body. The case back is tightened in the axial direction by threading within the aperture to insure watertightness on the rear side. The front side of the watch case is provided with a O-ring gasket 21 inserted between the case body 15 and the watch crystal 18. Said watch crystal is of rectangular form on its top surface, and is provided with a circular portion which extends below a flange in the top surface of the case body. A glass fitting ring 19 and a case ring 20 formed of rigid material are positioned between the watch crystal and the case back so that the tightening force caused by the threading of the case back into its threaded aperture applies

pressure through said glass fitting ring and case ring to said watch crystal for engaging said watch crystal against gasket 21 to insure a watertight seal. A movement 22 is provided fixed within the case by means of case ring 20 and movement fitting ring 23.

The foregoing construction offers several advantages over the prior art. First, the components are readily manufactured without resort to highly sophisticated manufacturing techniques such as are required in the embodiments wherein the inner watch case and the central aperture in the outer watch case are of rectangular cross section. In fact, the techniques required for manufacturing the components of the rectangular watertight watch according to the invention are similar to the techniques utilized in connection with the manufacture of circular type wrist watches.

The provision of a screw-type case back and an O-ring gasket between the watch crystal and the watch case permits the application of uniform tightening force, thus insuring perfect watertightness. Since the gasket is formed with a groove for receiving a section of the watch crystal, as more particularly shown in FIG. 5, it is tightly fixed in position, and provides a particularly advantageous watertight seal, when compared with the structure of FIG. 4. Further, by eliminating the tension ring which requires great precision in size, both the glass structure as well as the total structure of the watch case is greatly simplified. Further, the subsidiary gasket and the movement fitting spring of the embodiment of FIG. 4 are not required.

While the embodiment depicted above is a rectangular watch, a similar construction could be applied to any watch without regard to its outer cross sectional shape.

It will thus be seen that the objects set forth above, among those made apparent from the preceding description, are efficiently attained and, since certain changes may be made in the above construction without departing from the spirit and scope of the invention, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

It is also to be understood that the following claims are intended to cover all of the generic and specific features of the invention herein described, and all statements of the scope of the invention which, as a matter of language, might be said to fall therebetween.

What is claimed is:

1. A watertight watch comprising a watch case 50 formed with a first circular threaded aperture in one

side thereof and a second aperture in an opposed side thereof, said case being formed with a central recess providing communication between said first and second apertures and defining a flange in said case about the periphery of said second aperture; a stepped lip on said watch case defining the periphery of said first aperture; a threaded circular case back dimensioned for receipt within said first threaded aperture; a flange at the exterior face of said case back, said flange extending beyond the threaded surface of said case back; a watch crystal dimensioned to project into said second aperture and formed with a peripheral flange dimensioned to overlap said case flange within said recess first gasket means intermediate said watch case flange and said watch crystal flange for providing a watertight seal therebetween; second gasket means between said stepped lip on said watch case and said flange on said case back for providing a watertight seal therebetween, said flange on said case back being dimensioned to overlie said stepped lip; and at least one intermediate member formed of a rigid material positioned within said recess intermediate said case back and watch crystal for engagement by said case back to engage said watch crystal against its associated first gasket means and said case back against its associated second gasket means in response to the displacement of said case back into said threaded aperture, the total number of gasket means being two, and said displacement causing sealing engagement only at faces perpendicular to the axis of said watch case.

2. A watertight watch as recited in claim 1, wherein said gasket means intermediate said watch crystal and case is formed from a peripheral gasket member having a substantially L-shaped cross section, one arm of said L-shaped cross section being dimensioned for receipt between the respective flanges of said case and watch crystal, the other leg of said L-shaped cross section being dimensioned for receipt between the peripheral edge of said watch crystal and the peripheral wall of said recess.

3. A watertight watch as recited in claim 1, wherein at least two of said intermediate members are provided in engagement with each other and respectively in engagement with said case back and watch crystal.

4. A watertight watch as recited in claim 1, wherein the external periphery of said watch case is other than circular.

5. A watertight watch as recited in claim 4, wherein the external periphery of said watch is rectangular.

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