

[54] **SEALING STRUCTURE IN A WATERPROOF WATCH**
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[58] Field of Search58/90 R, 94, 88 C

[56] **References Cited**
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[57] **ABSTRACT**
A water-tight seal in a watch results from radial compression of a synthetic resin gasket between a portion of the case-back and the interior of the case-body. The gasket may also serve to mount the watch mechanism within the case-body.

1 Claim, 4 Drawing Figures

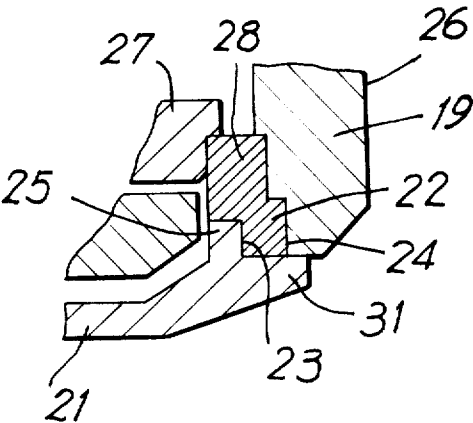


FIG. 1
PRIOR ART

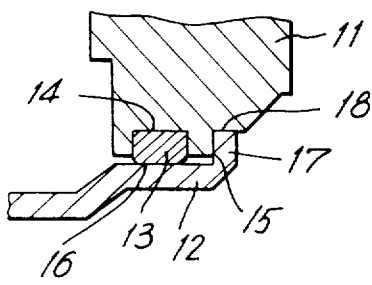


FIG. 2

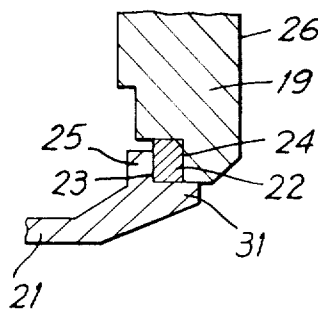


FIG. 3
PRIOR ART

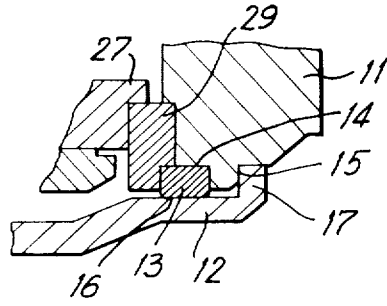
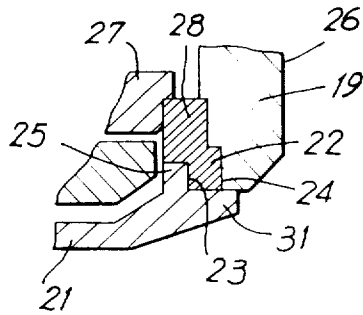


FIG. 4



SEALING STRUCTURE IN A WATERPROOF WATCH

BACKGROUND OF THE INVENTION

Conventionally, a case-back is sealed to a case-body by compressive forces in an axial direction. Snap-action is necessary to hold the case-body and the case-back together. For this type of structure, tolerances must be very close, resulting in a relatively high reject rate in manufacture and consequently, increased cost. Moreover, it is conventional to include an annulus which seats upon the gasket and which serves to mount the watch mechanism within the case-body.

SUMMARY OF THE INVENTION

An improved method of sealing a case-back to a case-body in a waterproof watch utilizes a synthetic resin gasket or packing between an exterior cylindrical surface of the case-back and an interior cylindrical surface of the case-body, the dimensions being such that the gasket is compressed radially, thus ensuring water tightness between the case-back and the case-body. Moreover, the gasket may be so shaped that it mounts the watch mechanism securely within the case-body. Using a gasket of the type described, the aforementioned annular ring for support of the watch mechanism is rendered unnecessary, thus decreasing the number of parts involved in the sealing structure and mounting structure and the size of the watch may accordingly be decreased with enhanced appearance of the watch.

Accordingly, an object of the present invention is to provide a sealing structure for a waterproof watch in which the necessary seal is achieved by means of radial rather than axial compression.

Another object of the present invention is to provide a reduction in the number of parts necessary for effecting the sealing structure and for mounting the watch mechanism within the case-body.

A further object of the invention is to provide a sealing structure which makes possible a reduction in the overall size of the watch and which enhances the appearance of the watch.

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 an article of manufacture possessing the features, properties, and the relation of elements which will be exemplified in the article hereinafter described, 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 sectional view of a conventional watch which depends on compression in an axial direction for sealing the case-back to the case-body;

FIG. 2 is a sectional view of a watch in accordance with the present invention wherein sealing between the case-body and the case-back is achieved by means of radial compression of a gasket;

FIG. 3 is a sectional view of a conventional watch in which sealing is achieved by means of axial compression

and in which the gasket is used to position a member which holds the watch mechanism within the case-body; and

FIG. 4 is a sectional view of a watch in accordance with the present invention in which sealing is achieved by means of radial compression and in which the gasket also serves to mount the watch mechanism within the case-body.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Where sealing between a case-body and a case-back is achieved by means of axial compression of a gasket, a preferred method of holding the case-body and the case-back together is by means of snap-action. A conventional watch of this type is illustrated in a sectional view in FIG. 1. Here, case-body 11 is held to case-back 12 by means of snap-action and is sealed to case-back 12 by means of gasket 13 within groove 14. The snap-action referred to takes place at contact surface 15 between case-back 12 and case-body 11. Seal of gasket 13 to case-back 12 is effected at surface 16. As aforementioned, tolerances must be held very closely to ensure that the various members involved in the sealing structure will hold together and will effect a suitable seal. It will further be noted that case-back 12 extends outward beyond gasket 13 and has a skirt 17 which seats against case-body 11 at the surface 18. The case-back 12, consequently, must extend well beyond gasket 13.

In contrast, the case-back of the present invention is sealed to the case-body by radial compression. This is illustrated in FIG. 2 where case-body 19 is sealed to case-back 21 by radial force exerted against gasket 22. The sealing surfaces are 23 and 24. Sealing surface 23 is the exterior surface of rim 25 and sealing surface 24 is an interior surface of case-body 19. As can be seen, the diameter of exterior surface 26 of case-body 19 is small relative to the diameter of case-body 11 of the conventional watch. Moreover, tolerances are no longer critical since snap-action is not involved, and the diameter of the case-back is substantially decreased over what it is in a conventional watch.

The conventional watch shown in FIG. 3 differs from that in FIG. 1 in that an annular ring 29 seats on gasket 13 and serves as a mount for watch mechanism 27 within case-body 11.

In the embodiment of the present invention shown in FIG. 4, seal between the case-body 19 and the case-back 21 is effected by radial compression of gasket 22. In this embodiment, gasket 22 extends axially into a portion 28 which serves the same function as annulus 29 in a conventional watch. In this way, gasket 22 having portion 28, and made of compressible, deformable, synthetic resin serves the double function of sealing a case-back to a case-body and mounting a watch mechanism within a case-body. Moreover, tolerances of manufacture are not so critical. The number of parts necessary is smaller, both the case-back and the case-body may be smaller in diameter and protection of watch mechanism 27 is provided by the fact that gasket 28 is deformable. The fact that the case-body and case-back are smaller enhances the appearance of the watch. Also brim 31 extends beyond rim 25 and gasket 22 and serves to locate case-body 19 in the axial direction.

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 sealing structure of a water-proof watch comprising a case-back, a rim integral with said case-back and having an exterior surface, a case-body having an interior surface and a gasket compressed radially between said exterior surface of said rim and said interior surface of said case-body wherein said case-back has a brim extending radially beyond said rim, said case-body being seated directly on said brim thereby precisely locating said case-back axially with respect to said case-body and the watch movement, said watch movement being insertable into and removable from said case-body through the rear of said watch, said gasket serving as a mount for said watch movement.

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