

[54] **BEZEL, CRYSTAL AND CASE
ASSEMBLY IN A WATER-PROOF
WATCH**

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[58] Field of Search58/90 R, 91, 88 R

[56] **References Cited**

FOREIGN PATENTS OR APPLICATIONS

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[57] **ABSTRACT**

A watch case is so designed that its outer surface can be ground without the risk of damage to that surface of the case which engages the bezel. Corresponding modification of the bezel results in a decrease in its width, and in a decrease in the overall diameter of the watch.

5 Claims, 2 Drawing Figures

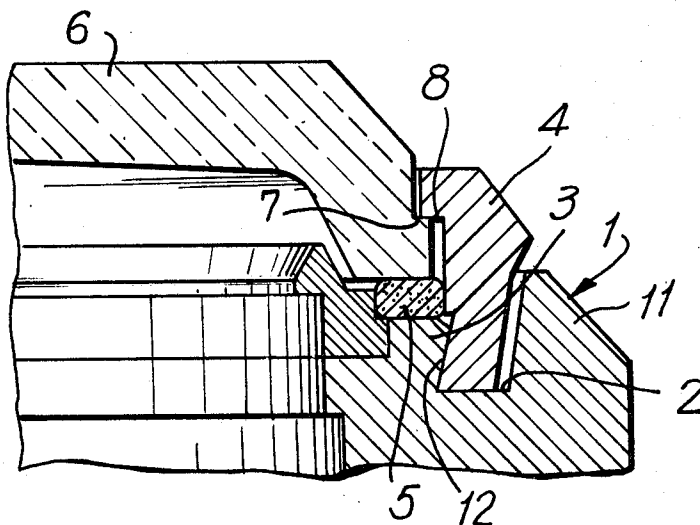


FIG. 1

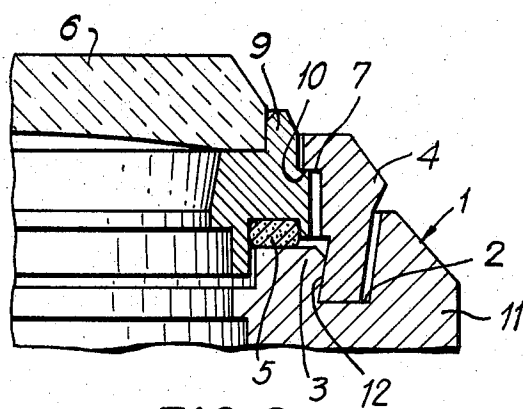
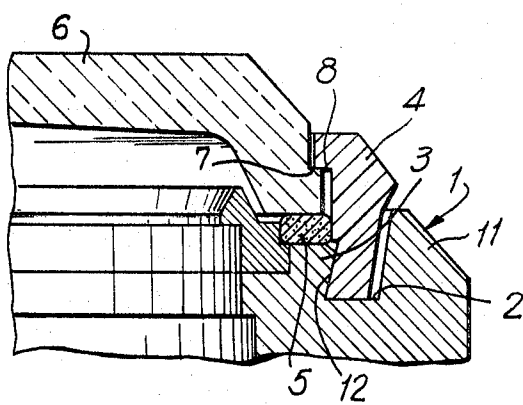


FIG. 2

BEZEL, CRYSTAL AND CASE ASSEMBLY IN A WATER-PROOF WATCH

BACKGROUND OF THE INVENTION

In a water-proof watch case of conventional design the case body generally has an outer surface which is frustoconical in shape. It is also has a surface which engages the bezel which holds the watch crystal to the case body. The length of the engaging surface is such that it lies close to or intersects the continuation of the frustoconical surface. As a result, when the frustoconical surface is ground to shape the grinder may make contact with and damage the surface which is to engage the bezel. Furthermore in the conventional design, the width of the bezel is sufficiently great as to constitute a substantial fraction of the overall diameter of the watch. The width of the bezel constitutes a disadvantage when it is desired to restrict the size of a watch, which is particularly the case when it is designed for use by women.

SUMMARY OF THE INVENTION

The present invention relates to a new shape for the bezel, the portion of the case body which engages the bezel and the watch glass which is sealed to the case body by means of a packing and which is held to the packing by the bezel. The change comprises a deepening of the groove in which the bezel is secured by means of the engaging surface, and a shortening of the lip which engages the bezel. In addition, a shoulder is provided either on the crystal itself or on a mating annulus by means of which the bezel holds the glass firmly against the case body. The shortening of the lip, which requires modification of the shapes of the bezel and the glass, ensures that the engaging surface will not be damaged during the grinding of the frustoconical outer surface of the case body.

Accordingly, an object of the present invention is to prevent accidental damage to the engaging surface which holds the bezel during the operation of grinding the case body to shape.

Another object of the invention is to provide for decreasing the width of the bezel in the interest of decreasing the overall diameter of the watch.

Still another object of the invention is to improve the economics of producing watch case bodies in mass production.

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 in an axial plane showing a case body, bezel and watch glass constructed in accordance with the invention; and

FIG. 2 is a partial cross sectional view in an axial plane showing a watch case of the present invention in

which an annulus cemented to the watch glass serves as the sealing member.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

In designing a watch case, consideration must be given not only to the construction of the finished case but also to the steps by which the case is manufactured. In the interests of economy in manufacture in mass production and the structural strength of the finished assembly, the lip which holds the bezel must not protrude into the extension of the frustoconical surface of the outer portion of the case body. FIG. 1 shows one method of meeting these requirements. The case body 11 has an outer surface 1 which must be ground as a finishing operation. The case body 11 further has a groove 2 therein, one wall 12 of which constitutes an engaging surface. The lip 3 having the engaging wall 12 is short enough so that it does not protrude into the extension of the frustoconical surface 1. As a result, during the grinding of the surface 1 the danger of the grinding wheel making contact with the lip 3 and damaging the engaging surface 12 is obviated. To achieve this end, the groove 2 must be deeper than in conventional watch cases, and the lip 3 must be shorter. To match the modified shape of the groove 2 and the lip 3, the bezel 4 must be longer in the axial direction and can be made narrower in the radial direction. The shoulder 7 in the watch crystal 6 is engaged by the shoulder 8 in the bezel 4 and the watch crystal 6 is thereby held firmly and sealingly against the packing 5.

FIG. 2 shows a modification of the above design in which the watch crystal has a two part construction. As before, 6 is the transparent portion of the watch crystal, but the portion 6 is cemented to the annulus 9 which is urged by the bezel 4 against the packing 5. The transparent face 6 and the annulus 9 may consist either of glass or plastic, but in general it is preferable that both portions of the watch crystal be made of the same material since a difference in the coefficients of expansion might cause impairment of the seal therebetween as a result of temperature cycling.

The packing 5 not only provides the water-proof seal between the watch crystal and the case body but in addition serves as a shock absorber, thereby decreasing the likelihood of breakage of the crystal. The location of the packing 5 at the top surface of the lip 3 decreases the height required for the lip, and ensures that the lip will lie well within the extension of the frustoconical surface 1 and that the lip will not be damaged or marred during the grinding of the surface 1.

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 carrying out the above method without departing from the spirit and scope of the invention, it is intended that all matter contained in the above description 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:

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1. A waterproof watch case, comprising a case body having a frustoconical surface with an annular groove therein, an annular lip forming one wall of said groove, said lip lying entirely within the extension of said frustoconical surface and said wall being an engaging surface, a bezel held in a snap fit by said lip at said engaging surface, a watch crystal held by said bezel and an annulus of flexible packing material effecting a waterproof seal between said case body and said watch crystal whereby said frustoconical surface may be ground without danger of grinding said lip and damaging said engaging surface of said lip in the grinding operation.

2. A watch case as defined in claim 1 in which said watch crystal has an annular shoulder in the region of its periphery and said bezel has a corresponding

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shoulder, said bezel shoulder engaging said watch crystal shoulder, thereby holding said watch crystal sealingly against said packing.

3. A watch case as defined in claim 1, wherein said watch comprises a transparent face and a peripheral annulus cemented to said transparent face and said seal between said watch crystal and said case body is effected at said peripheral annulus.

4. A watch case as defined in claim 3, wherein said transparent face and said peripheral annulus are composed of a material selected from the group consisting of glass and plastics.

5. A watch case as defined in claim 3, wherein said transparent face and said peripheral annulus are alike in composition.

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