

DESCRIPTION

The present invention relates to watch-cases. More particularly, it concerns a watch-case comprising a middle with two concentric rings, an inner ring and an outer ring, as well as a back, a glass and means for assembling the middle, the back and the glass. In this watch, the inner ring is made of a material that is machinable with cutting tools and provides a support for the movement, while the outer ring is made solid with the case by engaging with a radial abutment and a pair of axial abutments, these abutments defining an annular groove.

A solution of this kind is set forth in document FR-A-1 040 844.

In this document, the middle comprises an outer ring bearing the horns and an inner ring bearing the glass, the movement and the back.

The outer ring is maintained in a groove defined by the back of the case, the inner ring and a shoulder integrally made with the inner ring and extending radially.

This solution allows the simplification of the shape of the manufactured parts, while exhibiting an interesting aesthetic appearance. It needs however an important attention for the manufacture of both rings, said rings being visible.

The object of the present invention is the realization of a case as defined above, but in which the inner ring performs the mechanical functions while the outer ring performs aesthetic and protective functions. This object is reached thanks to the particular characteristics presented by the watch-case as defined by claim 1.

The invention will be better understood by reading the following description made in reference to the drawings in which :

- Figures 1 and 2 are a plan view and a cross-sectional view of a watch fitted with a case according to the invention; and

- Figures 3 to 5 are cross-sectional views of other embodiments of cases according to the invention, the same references having been used to designate the same corresponding parts.

The watch shown in Figures 1 and 2 comprises a case 10, a movement schematically shown at 11, display means borne by the movement and including a dial 13 and hands 14, a wristlet 16 and a hand-setting crown 18.

More precisely, case 10 comprises a front plate 22, a middle 24 and a back 26. Front plate 22 includes a ring 28 preferably made of hard material such as tungsten carbide or nitride, titanium or any other material having a Mohs hardness of 7 or more, and a glass 30 made of sapphire or mineral glass closing off the central opening of ring 28 in which it is secured by a bead of adhesive 32.

Middle 24 consists of a pair of concentric rings 34 and 36 having substantially the same thickness which are sandwiched between front plate 22 and back 26.

The function of inner ring 36, preferably made of brass, of plastics or of any other material readily machined by cutting tools, is to position movement 11 and dial 13 and to play a part in the assembly of the case and in keeping the case water-resistant. The movement 11 and the dial 13 are positioned by a shoulder 36a cooperating with the edge portion of dial 13 and by a groove 36b into which projects a lug 11a solid with movement 11. Front plate 22 is assembled on inner ring 36 by a film of adhesive 38 and back 26 is held against ring 36 by screws 46 (only one being shown in Figure 2) which extend through the back and engage in tapped holes 36c in said ring. A groove 36d in the base of ring 36 accommodates a sealing ring 48 to provide fluidtightness between the back and the middle.

Outer ring 34, which acts as a protective and decorative element, is best made of sapphire or any other hard material, as defined above. As will be apparent from Figure 2, front plate 22 only partly covers outer ring 34. No component is specifically provided for holding it in place. It is simply pressed between front plate 22 and back 26.

The two rings are spaced apart by a gasket 50 of flexible material, its function being to dampen shocks on the middle.

Outer ring 34 has a slot 34a, visible in Figure 1, which houses crown 18. This slot provides the ring with a degree of resilience which reduces its sensitivity to shocks.

Back 26 has a pair of lugs 40 for securing thereto wristlet 16 with screws 42.

The embodiment shown in Figure 3 differs from that of Figure 2 in that screws 46 cooperate with tapped pegs 52 (only one being shown in Figure 3) extending through inner ring 36 and rigidly secured as by welding to front plate 28. Inner ring 36 then has a groove 36e accommodating a sealing ring 54 to provide fluidtightness between front plate 22 and ring 36.

As shown in Figure 4, front plate 22 may also be made in one piece, e.g. of sapphire. In this case, the peripheral portion of its inner surface is best provided with a metal layer 56 which masks ring 36. Plate 22 may be secured in the same way as above or with nails 60 (only one being shown in the Figure) engaging in holes provided in front plate 22 and ring 36. The heads of nails 60 bear on plate 22 and are blocked by screws 62 extending through tapped holes in ring 36.

As shown in Figure 5, hand-setting crown 18 may be hidden from view. To this end, inner ring 36 is formed with a recess 64 for accommodating crown 18, the radially outer end of recess 64 being closed off by ring 34.

Many modifications may be made to the above described and illustrated watch cases. For instance outer ring 34 may be made of a material other than sapphire, which may or may not have the same

appearance as ring 28 of the front plate. In so doing, a variety of colours and shapes may be obtained by combining various designs of front plates 22 and of outer rings 34.

The external shapes of outer ring 34 and of front plate 22 may be freely varied whilst still retaining the same basic structure. Thus, many designs may be achieved at minimal expense.

In using sapphire for outer ring 34, an interesting aesthetic effect can be achieved, with the watch seemingly being suspended in "mid-air", the connection between the wristlet and the central part not being visible.

Besides this aesthetic effect, the manufacture of the case is simplified since all parts made of hard material are of simple shape, i.e. are easy to machine. Thus, in addition to its remarkable aesthetic appearance, the watch case can be produced relatively cheaply.

It must be understood however that the inner ring could also be made integral with the plate of the movement without departing from the scope of the invention. The problems involved in the manufacture of such an integral piece can easily be resolved by those having ordinary skill in the art.



CLAIMS

1. Watch case comprising a middle having a pair of concentric rings, i.e. an inner ring (36) and an outer ring (34), a back (26), a glass (30) and means for assembling the middle, the back and the glass, wherein the inner ring (36) which is made of a material that is machinable with cutting tools provides a support for the movement (11) and wherein the outer ring (34) is made solid with the remainder of the case by engaging with a pair of axial abutments that define along with the inner ring (36) an annular groove, characterized in that the glass is integral with a front plate (22) that entirely covers the inner ring (36) and in that the axial abutments are defined by the plate (22) and the back (26).

2. Watch case according to claim 1, characterized in that said rings (34, 36) have substantially the same thickness.

3. Watch case according to anyone of claims 1 and 2, characterized in that at least the front plate (22) and the outer ring (34) are made of a material having a Mohs hardness of 7 or more.

4. Watch case according to claim 3, characterized in that the outer ring (34) is made of sapphire.

5. Watch case according to anyone of claims 3 and 4, characterized in that said front plate (22) is made of a single piece of sapphire.

6. Watch case according to anyone of claims 1 to 5, characterized in that the inner ring (36) and the front plate (22) are stuck to one another, whereas the inner ring (36) and the back (26) are assembled with screws (46).

7. Watch case according to anyone of claims 1 to 6, characterized in that the front plate (22) is solid with tapped pegs (52) extending through the inner ring (36) and into each of which engages a screw (46) bearing on the back (26).

8. Watch case according to anyone of claims 1 to 5, characterized in that the inner ring (36) and the front plate (22) are assembled with nails (60) having a head bearing on said plate (22) and which are blocked by screws (62) in the inner ring (36).



9. Watch case according to anyone of claims 1 to 8, characterized in that the two rings (34, 36) are spaced apart by a gasket (50) made of resilient material.

10. Watch case according to anyone of claims 1 to 9, of the type having means (40, 42) for having a wristlet fixed thereto, characterized in that said means are integral with said back (26).

11. Watch case according to anyone of claims 1 to 10, of the type having a hand-setting crown (18), characterized in that the outer ring has a slot (34a) housing said crown (18).

12. Watch case according to anyone of claims 1 to 10, of the type having a hand-setting crown (18), characterized in that the inner ring (36) has a recess (64) accommodating said crown (18).