

PATENT SPECIFICATION

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DRAWINGS ATTACHED

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(54) WATER-TIGHT WATCH CASE

(71) We, KABUSHIKI KAISHA SUWA SEIKOSHA, a Japanese company, of 3-4, 4-chome, Ginza, Chuo-ku, Tokyo, Japan, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention concerns a water-tight watch case for a wrist watch.

According to the present invention, there is provided a water-tight watch case for a wrist watch comprising an outer casing of plastics material which is fitted about an inner casing of metal, the inner casing being provided with a crystal and with a back casing.

A bezel is preferably fixed to the inner casing and firmly engages the upper portion of the outer casing.

The inner casing may be provided with a peripheral surface on which the outer casing is mounted.

The back casing may be screwed into the inner casing.

A colour contrast may be provided between the inner and outer casings.

The invention also comprises a wrist watch provided with a case as set forth above.

The invention is illustrated merely by way of example in the accompanying drawings, in which:—

Figure 1 is a broken-away cross-sectional view of a conventional watch case for a wrist watch, and

Figure 2 is a broken-away cross-sectional view of one embodiment of a watch case for a wrist watch according to the present invention.

In Figure 1 there is shown a water-tight watch case having an annular casing 1 which is provided with a band attaching lug 4. The casing 1 is provided with a bezel 2 which has an interference fit with the upper part

of the casing 1, the casing 1 also being provided with a crystal 3 a back casing 5 and a gasket 6. The crystal 3 is compressed into the casing 1 so as to have an interference fit therein, the outer peripheral wall of the crystal 3 and an inner peripheral wall of the casing 1 being rigidly interfitted. The gasket 6 is deformed as a result of the back casing 5 being screwed into the casing 1, whereby to ensure water-tightness of the watch. In the watch case shown in Figure 1 the casing 1 has necessarily been made of high mechanical strength so as to be capable of having the back casing 5 screwed into it and to take the strain arising from its interference fit with the bezel 2 and crystal 3. Thus metals such as stainless steel or brass have been used in the formation of the casing 1. This has meant that the colouring of the casing 1 has been restricted to silver and gold, and watches of other colours were unobtainable.

Moreover as the greater part of the watch case of Figure 1 is made of metal, if the watch case is large it is also very heavy and therefore uncomfortable to wear. Furthermore in producing watch cases as shown in Figure 1, manufacture may be difficult and time-consuming and consequently expensive. Watch cases made of metal may of course be subject to rust when subjected to moisture or water, with consequent shortening of the life of the case.

In the case of the embodiment of the invention shown in Figure 2, however, a part of the watch is made of plastics material, which material may be readily workable, capable of being made in many colours, and light in weight.

Referring now to the watch case shown in Figure 2, an annular outer casing 7, made of plastics material, is fitted about an annular inner casing 8, made of a metal, the casing 8 engaging a crystal 10 and a back casing 11 made of a metal. A bezel 9 made of a metal is fixed to the inner casing 8 and firmly 90

engages the upper portion of the outer casing 7. The back casing 11 is screwed into the inner casing 8, a gasket 12 being employed for sealing purposes. An annular flat surface 13 formed externally of the inner casing 8 is provided for the mounting thereon of the outer casing 7. The outer casing 7 is fitted to the periphery of the inner casing 8 from the upper side and is interposed between the flat surface 13 of the inner casing 8 and the bottom of the bezel 9 fixed to the upper portion of the inner casing 8. By this means, the outer casing 7 is secured to the inner casing 8.

The watch case shown in Figure 2 has its water-tightness ensured in the same way as in conventional watch cases. Thus the crystal 10 is compressed into the inner casing 8 with certain interferences both in the inner periphery of the inner casing 8 and in the outer periphery of the crystal 10 so as to fit each other rigidly. Moreover, the back casing 11 is screwed into the inner casing 8, and the gasket 12 is thereby deformed in order to ensure water-tightness.

In the case of the present invention, however, the connection between the outer casing 7 and the inner casing 8 may be by other means, for example, by the use of screws or interengaging parts, by deformation by heat, or by the use of adhesives.

A watch case as described herein may have two casings, i.e. an inner casing, which is made of metal and thus has the necessary mechanical strength, and an outer casing of plastics (visible from the outside) which need only have medium mechanical strength. At the same time, the said watch case can be made as water-tight as that of a conventional metal watch case. Moreover as the outer casing is made of plastics material, the colouring can be selected as desired and various colours of watches can be obtained.

In the case of the present invention, the colouring does not need to be applied to the outer casing by plating or painting, but can be incorporated in the plastics itself, whereby the initial colour can be maintained without peeling off. Further the colour of the outer casing can be matched with that of the watch band or with the dial of the watch, or these colours may be contrasted with each other or form part of a decorative pattern. The outer casing, which may have a colour contrast with the inner casing, is easily formed by injection moulding. Moreover, since the inner casing is annular, the conventional way of pressing it from sheet material is not necessary. The watch case may therefore be made by mass production techniques, with consequently reduced production costs. Thus low cost watch cases can be supplied to the market.

Since the outer casing is made of plastics material, it is very light in weight, and when

wearing it on the wrist, one does not feel uncomfortable.

The conventional watch case made of a metal has been restricted in form by virtue of the need to machine it, and only cases with relatively simple shapes could be made. In the case of the present invention, however, the outer casing can be made by injection moulding. This makes it possible to produce a case of complicated shape, and many watches in a great variety of designs can be obtained.

By employing the said injection moulding, some means, e.g. a projecting portion, can easily be formed in the inner wall of the outer casing in order to prevent relative rotation between the outer casing and the inner casing when the back casing is screwed into the inner casing. Furthermore if the outer casing is made of a resilient plastics material, if the watch is dropped through carelessness, it can absorb a shock and prevent the time-piece mechanism from breaking. Moreover, rust will not form on the outer casing.

While the preferred embodiment of the invention which has been illustrated and described employs a back casing which has a screw connection with the inner casing, it is to be understood that the present invention is not limited to the precise construction herein disclosed. Thus the back casing may be integral with or may snap into the inner casing.

WHAT WE CLAIM IS:—

1. A water-tight watch case for a wrist watch comprising an outer casing of plastics material which is fitted about an inner casing of metal, the inner casing being provided with a crystal and with a back casing.

2. A case as claimed in claim 1 in which a bezel is fixed to the inner casing and firmly engages the upper portion of the outer casing.

3. A case as claimed in claim 1 or 2 in which the inner casing is provided with a peripheral surface on which the outer casing is mounted.

4. A case as claimed in any preceding claim in which the back casing is screwed into the inner casing.

5. A case as claimed in any preceding claim in which there is a colour contrast between the inner and outer casings.

6. A water-tight case for a wrist watch substantially as hereinbefore described with reference to and as shown in Figure 2 of the accompanying drawings.

7. A wrist watch provided with a case as claimed in any preceding claim.

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The watch case shown in Figure 2 has its water-tightness ensured in the same way as in conventional watch cases. Thus the crystal 10 is compressed into the inner casing 8 with certain interferences both in the inner periphery of the inner casing 8 and in the outer periphery of the crystal 10 so as to fit each other rigidly. Moreover, the back casing 11 is screwed into the inner casing 8, and the gasket 12 is thereby deformed in order to ensure water-tightness.

In the case of the present invention, however, the connection between the outer casing 7 and the inner casing 8 may be by other means, for example, by the use of screws or interengaging parts, by deformation by heat, or by the use of adhesives.

A watch case as described herein may have two casings, i.e. an inner casing, which is made of metal and thus has the necessary mechanical strength, and an outer casing of plastics (visible from the outside) which need only have medium mechanical strength. At the same time, the said watch case can be made as water-tight as that of a conventional metal watch case. Moreover as the outer casing is made of plastics material, the colouring can be selected as desired and various colours of watches can be obtained.

In the case of the present invention, the colouring does not need to be applied to the outer casing by plating or painting, but can be incorporated in the plastics itself, whereby the initial colour can be maintained without peeling off. Further the colour of the outer casing can be matched with that of the watch band or with the dial of the watch, or these colours may be contrasted with each other or form part of a decorative pattern. The outer casing, which may have a colour contrast with the inner casing, is easily formed by injection moulding. Moreover, since the inner casing is annular, the conventional way of pressing it from sheet material is not necessary. The watch case may therefore be made by mass production techniques, with consequently reduced production costs. Thus low cost watch cases can be supplied to the market.

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3. A case as claimed in claim 1 or 2 in which the inner casing is provided with a peripheral surface on which the outer casing is mounted.

4. A case as claimed in any preceding claim in which the back casing is screwed into the inner casing.

5. A case as claimed in any preceding claim in which there is a colour contrast between the inner and outer casings.

6. A water-tight case for a wrist watch substantially as hereinbefore described with reference to and as shown in Figure 2 of the accompanying drawings.

7. A wrist watch provided with a case as claimed in any preceding claim.

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