Aug. 14, 1945. E. KUPCHICK 2,382,728

WATER-PROOF WATCH

Filed Feb. 15, 1943

Fig. 1.

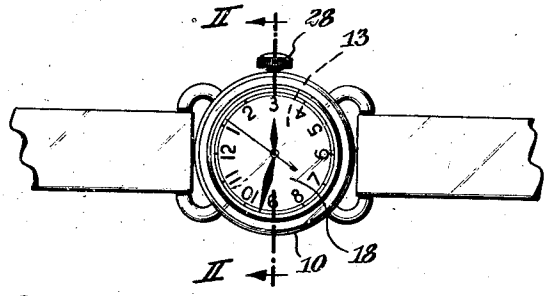


Fig. 2.

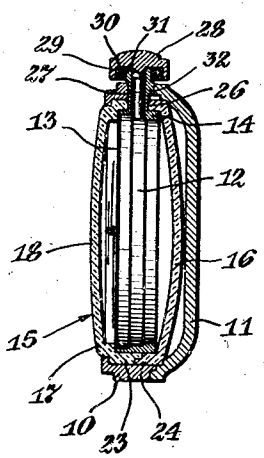


Fig. 3.

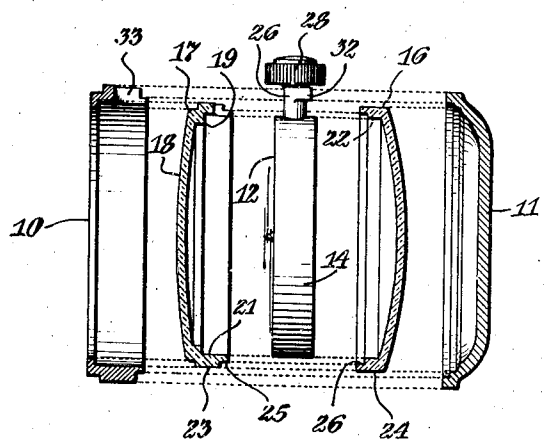


Fig. 4.

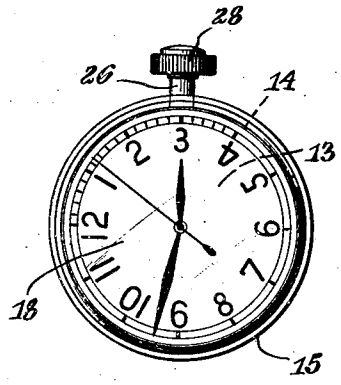
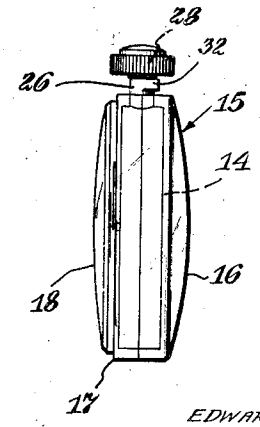


Fig. 5.



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WATERPROOF WATCH

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5 Claims. (Cl. 58—90)

This invention relates to an improvement in watch construction and more particularly to what is termed a moisture-proof watch.

Many construction have been proposed wherein the elements of a watch casing have been fashioned and fitted to prevent the entrance of moisture adding to the manufacturing cost in the required accuracy of the parts. In cases where a watch is subjected to severe treatment such as partial or total immersion leakage occurs with a subsequent detrimental corrosion.

It is an object of the present invention to provide an hermetically sealed watch movement of such construction as to be economical to manufacture and effective in sealing a movement from moisture as well as dust particles.

A further object of the invention is to provide a substantially one-piece casing for a watch movement in the form of a shell or capsule, preferably of a plastic material either transparent, translucent or opaque.

Other objects and advantages of the invention will be more readily understood from the following description and accompanying drawing, in which

Fig. 1 is a wrist watch constructed in accordance with the present invention.

Fig. 2 is a cross-sectional view of a watch shown in Fig. 1 on line II—II.

Fig. 3 is a cross-sectional view of the watch parts ready for assembly about the movement.

Fig. 4 is a front view of the watch movement sealed in a water-tight casing ready to be enclosed in a casing and

Fig. 5 is an edge view of the movement in its water-tight casing.

Although the present invention is shown as applied to a wrist watch it is evident that other types of horological instruments may be waterproofed by the present novel construction.

As shown more clearly in Fig. 3 the present invention may include a bezel 10, a cover 11 and a movement 12 provided with a dial 13 in the usual manner.

In accordance with the present invention a band or ring 14 is provided to fit the circular periphery of the movement, the inner surface of the band being suitably stepped or recessed to receive the movement.

The band 14 serves as a receiver or support for a capsule 15 which completely encloses the movement and seals it from the atmosphere. This capsule is preferably of a plastic material and in the present embodiment of the invention consists of two elements or portions 16 and 17. The portion 17 is transparent and the section 18 thereof functions as the watch crystal when the portion 17 is in place over one side of the movement. An annular seat 19 is provided to contact with the outer edge of the ring 14 and with an annular surface 21 extending partway over the outer surface of the ring. The element 16 is provided with an annular surface 22 which also extends over the outer surface of the ring 14. The material of the elements providing the surfaces 21 and 22 constitute flanges 23 and 24 respectively which meet centrally of the ring and are provided with overlapping edges 25 and 26 to provide joining surfaces to receive cement for sealing the elements into an integral member or capsule. The surfaces of the flanges 23 and 24 provide large areas for sealing or cementing to the ring 14.

It will be readily appreciated that by reason of the substantially one-piece enclosure provided by the capsule or imperforate compartment that the movement is completely sealed against the entrance of moisture or foreign matter.

For the purpose of winding and setting the watch it is necessary to provide a passage for the stem and to complete the seal the present invention provides an effective seal which permits the required movement of the stem.

As shown the ring 14 is provided with a tubular extension 26 through which the stem 27 extends into the winding and setting mechanism and is adapted for endwise or longitudinal movement in the usual manner. The elements 16 and 17 are received to fit about and adapted to be cemented or otherwise sealed around the extension 26.

The stem 27 is provided with an operating head or crown 28 having an annular internal slot 29 containing a suitable packing material 30 the surface 31 of which makes resilient water-tight contact with the surface of the upper end of the extension 26. The crown and stem are thus free to rotate or move endwise while maintaining an hermetic seal between the interior of the capsule and the atmosphere.

From the foregoing it will be evident that when a watch movement is enclosed in its capsule with the stem in place with the seal effecting crown, that it is in fact a complete product and may be sold as such to be enclosed in any suitable type of outer casing.

In the present embodiment of the invention the capsule enclosed movement is provided with the bezel 10 and back cover 11. The movement with its sealed enclosure fits into the bezel so as

to expose the crystal portion 18 of the capsule and the cover 11 is snapped or otherwise secured to complete the casing. As shown the extension 26 is provided with a flattened portion or lug 32 and a slot 33 is provided in the bezel thus when the bezel is in place to receive the cover the slot and lug serve to align the parts.

Although water-tight watches have been heretofore proposed no one so far as I am aware has provided a complete one-piece water-tight seal such as accomplished by the plastic capsule provided in accordance with the present invention which entirely encloses the watch movement. This capsule may be of any suitable material such as a synthetic resin, as for example, methyl acrylate ester which may be cast or molded. Obviously other forms of plastics may be employed such as a cellulose acetate and others sold under various trade names on the market.

By reason of the present construction which provides a capsule initially in two parts it is possible, if desirable to insure against subsequent condensation within the container, to seal the movement while in a dry atmosphere, thus excluding any moisture that might cause corrosion and in providing a capsule through which moisture will not diffuse.

Although a preferred embodiment of the invention is shown and described herein, it is to be understood that modifications may be made without departing from the scope of the appended claims.

What is claimed is:

1. A watch comprising a movement, a band fitted to and surrounding the periphery of said movement, a two part capsule, said band having a surface to receive and seat flanges of said two part capsule, said capsule enclosing said band and movement with opposing edges of said flanges of the capsule parts sealed together to constitute a one piece hermetically sealed container enclosing said band and movement.

2. A watch comprising a casing including a bezel and a back cover, a movement, a band fitted to and surrounding the periphery of said movement, a sealed enclosure for said movement consisting of a two part capsule of plastic material each of said parts having a flange with the edges thereof sealed together to provide a homogeneous housing for said movement, a tubular extension projecting from said band and sealed through said housing for a stem whereby the sealed movement may be inserted into or removed from said casing as a complete unit.

3. A time piece comprising a casing including a bezel and a back cover, a removable hermetically sealed movement for said casing consisting of a band fitted to and surrounding said movement, a two part transparent hermetically sealed casing mounted on said band and enclosing said movement and a tubular member extending from said band for a stem extending from said movement, said parts having flanges disposed about said band with the edges of said flanges in sealed relation said sealed casing serving as a crystal when said sealed casing is positioned adjacent to said bezel and held by said back cover said sealed casing being removable as a complete time piece unit upon a removal of said back plate.

4. A watch comprising a band, a movement removably mounted in said band, a tubular extension projecting from said band to receive a watch stem, a plastic back cover having a flange disposed about the outer surface of said band enclosing the rear of said movement, a transparent plastic cover having a flange disposed about the outer surface of said band enclosing the dial of said movement; said flanges having opposite edges in sealed relation, a casing having a bezel disposed adjacent to said transparent front cover and a back cover for said casing.

5. In a moisture proof watch comprising a movement, a band surrounding said movement, a capsule of plastic material enclosing said band and movement, said capsule consisting of a crystal provided with an annular flange surrounding said band, and a back cover having an annular flange surrounding said band, the opposite edges of said flanges being in sealed relation to provide a homogeneous enclosure for said movement.

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