Dec. 16, 1952 H. COLOMB 2,621,468

FLUIDTIGHT CASING, ESPECIALLY FOR WATCHES

Filed July 10, 1951 2 SHEETS—SHEET 1

Fig.1

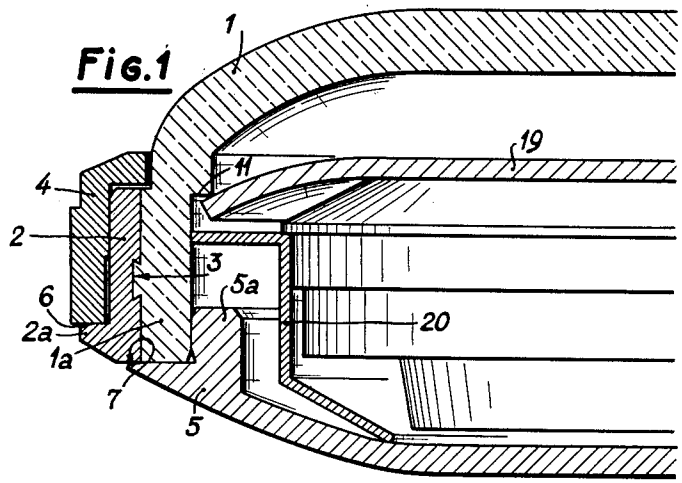


Fig.2

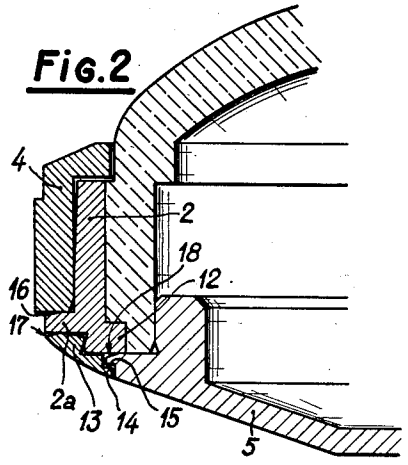
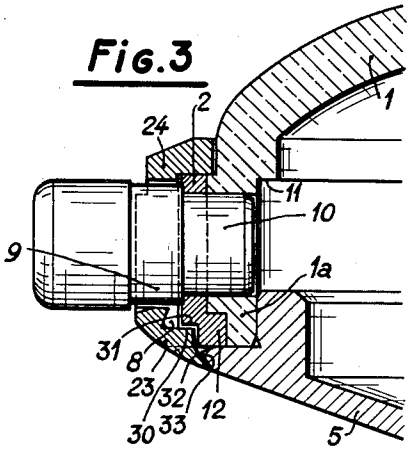


Fig.3



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Fig. 4

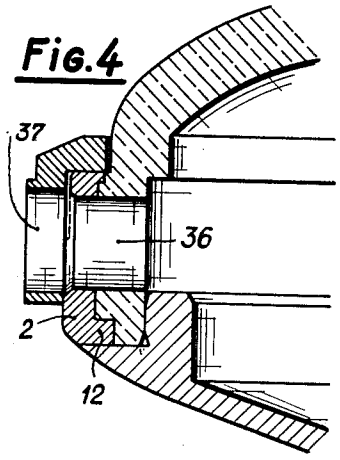


Fig. 5

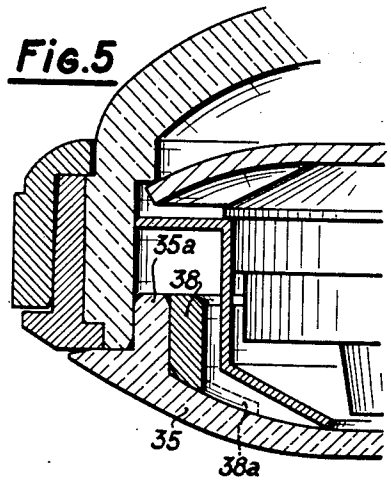
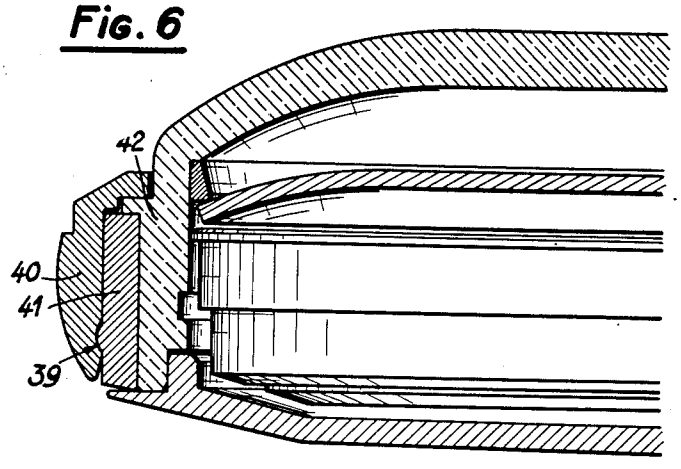


Fig. 6



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FLUIDTIGHT CASING, ESPECIALLY FOR WATCHES

Henri Colomb, Prilly-Lausanne, Switzerland

Application July 10, 1951, Serial No. 235,953
In Switzerland July 17, 1950

8 Claims. (Cl. 58—90)

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My invention has for its object improvements in watertight watch casings the bottom of which is merely fitted under friction inside the cap-shaped surface of the glass. In a known structure of this type, the body of the casing incorporating the bezel is rigid with the wall of the glass while its tube or winding up pendant is secured to this assembly and consequently the glass cannot be changed when it is damaged for any reason whatever.

My present invention has chiefly for its object to cut out this drawback and it relates to a fluidtight casing, chiefly for watches, the bottom of which is merely fitted through a peripheral flange inside the wall of the cup-shaped glass that is made of transparent unbreakable material and the main feature of this casing consists in that it includes a metal ring secured to the outer periphery of the glass wall so as to form a rigid assembly therewith, the ring carrying through suitable means the casing body incorporating the bezel and the wrist band attaching means.

I have illustrated by way of example in accompanying drawings three preferred embodiments of my invention and three modifications thereof:

Figs. 1, 2 and 3 illustrate each one of said embodiments in sectional view through a diametrical plane of the watch casing.

Fig. 4 illustrates a modification also in sectional view.

Fig. 5 is a sectional view similar to the preceding figures showing a casing the bottom of which is made of an unbreakable transparent material, the flange of which is reinforced by an annular metal member.

Fig. 6 is a similar cross section of a further modification.

In the embodiment illustrated in Fig. 1, the peripheral portion 1*a* of the cup-shaped glass 1 covering the watch casing is made rigid with a metal ring 2 forced over it or else mounted by casting the glass inside said ring, whereby, in both casing, there is obtained a removable and interchangeable ring and glass system which may be changed whenever the glass, made of transparent unbreakable material is damaged. If the assembly is obtained through molding, there is provided inside the ring a coaxial groove 3 of dovetailed shape for instance in cross-section, that is adapted to receive in the casting the material forming the glass so as to provide a perfect connection between the two members; this groove is shaped so that said material may adhere thereto while the ring 2 is provided with a peripheral flange 2*a* against which may bear the lower edge of the bezel-carrying casing body 4 fitted and forced over said ring; in the case illustrated, the body 4 is slightly enlarged in diameter over part of its height so that it may be fitted removably through engagement of the bottom of its bore only. The metal bottom section 5 of the casing is provided with an inturned flange 5*a* that is merely fitted frictionally inside the wall 1*a* of the glass 1; the joining surfaces, assembling fluidtightly the two members together, are cylindrical in the present case, but at least one of them may be slightly conical or suitably shaped otherwise so that the mounting may be executed with a slight interengagement. The flange 2*a* and the lower edge of the ring 2 serve respectively as bearings when required during dismantling of the bezel and of the bottom 5 of the casing. A sloping surface 6 at the periphery of the flange 2*a* of the ring and a similar sloping surface 7 at the periphery of the bottom 5 of the casing make such dismantlings easier.

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In order to provide for the ready mounting and dismantling of the casing body 4, there is provided therein a coaxial recess 8 that is slightly larger than the outer section 9 of the tube or winding up pendant incorporated to the casing, as illustrated in Fig. 3. The section 10 of smaller diameter of said tube is urged frictionally into an aperture of the glass and ring system and it is suitably secured and held fast therein. In the arrangement disclosed, the aperture is executed so as to register with the bearing surface 11 of the glass which latter defines the position in the direction of height of the clockwork inside the watch casing through engagement with the dial 19 (Fig. 1). A thin frame 20 for centering the clockwork in the casing, allows fitting said clockwork and holding it in position yieldingly through the agency of at least three spring blades cut out of said frame.

In the second embodiment illustrated in Fig. 2, the ring 2 of the system constituted by the ring and by the glass is provided in addition to the outer flange 2*a* with an inner flange 12, said ring and glass system being again interchangeable and carrying through frictional engagement the bezel-carrying casing body 4 which latter abuts against the outer flange of the ring; the surface of said ring is slightly conical over a part of its height so that the casing body 4 may be engaged yieldingly towards its lower end as required by the coaxial opening provided therein for housing the tube or winding up pendant. The lower end of the ring 2 is shaped so as to receive an

outer frame 13 and to hold it through interengagement in a suitably shaped notch; said frame engages through its inner surface 14 the corresponding surface 15 of a peripheral groove in the bottom 5 of the casing and prevents disengagement of the latter when the watch drops for instance, said bottom being mounted fluidtightly inside the glass and ring system in the manner already illustrated in Fig. 1. Bevels 16—17—18 provided respectively on the flange 2a, on the frame 13 and on the bottom 5 allow the dismantling of said parts with reference to the corresponding bearing surfaces of the rings. The bevel on the frame 13 may be replaced by a corresponding bevel provided on the adjacent surface of the ring flange.

In a third embodiment illustrated in Fig. 3, the metal ring 2 fitted over the wall 1a of the glass 1 has no outer flange while retaining an inner coaxial flange 12. The lower end of the bezel carrying casing body 24 is shaped in a manner such that it may carry inside a notch a double acting frame 23 that, on one hand, engages through its transverse surface 30 the surface 31 on the ring so as to connect the body 24 with the ring and glass system while, on the other hand, its oblique surface 32, adjacent to the surface 33 of the bottom of the casing, holds the latter in place.

It is sufficient to cut out the portion of the frame carrying the oblique surface 32 and to extend outwardly the adge of the bottom 5 as shown in dotted lines in order to obtain a modification wherein the frame 23 serves only for assembling the casing body with the ring and glass system. The disclosure relating to the tube 9—10 of the casing and the coaxial opening 8 in the body 24 as required for its dismantling has been already given hereinabove with reference to the first embodiment illustrated in Fig. 1.

Fig. 4 illustrates a modification wherein the usual tube or winding up pendant on the casing is cut out while the glass and ring system includes a glass similar to that of Fig. 2 and a ring 2 having an inner flange or shoulder portion 12, said system carrying under frictional conditions the bezel carrying casing body. Said system is provided with a cylindrical aperture coaxial with the winding up rod, which aperture may be smaller than that carrying the usual pendant and in this case, the winding up rod is watertightly connected with the ring and glass system through the agency of a fluidtight sleeve that is similarly connected with said rod and the actual pendant of the winding up knob may revolve freely inside the aperture 37 coaxially with the aperture 36 in the ring and glass system. To this end, it is possible to resort to one of the arrangements disclosed in the Swiss Patents 229,461 and 242,201.

In all the embodiments and modifications illustrated, the bezel carrying casing body is removably fitted under friction over the ring and glass system, but it is also possible to fit said parts together through a system of notches while shaping of course correspondingly the lower edges of the adjacent surfaces of said two parts.

Fig. 5 illustrates an embodiment incorporating a bottom 35 of unbreakable transparent material, the inturned flange 35a of which is reinforced by an annular metal member 38 fitted inside said flange and this annular member, the thickness of which is comparatively important, may also include an inwardly projecting thin coaxial section 38a, as illustrated in dotted lines. According to the room available, said thin section may be more or less wide and, on the other hand, it may be replaced by a series of interconnected

arms holding the bottom 35. The latter being transparent has the advantage of allowing the clockwork to be seen without opening the casing and it may be made of a colorless material although it is preferable to give it a color that protects the oil lubricating the clockwork against the action of light.

Fig. 6 shows a simple and efficient manner of assembling through interengaging notches at 39, the bezel-carrying casing body 40 with the ring 41 secured to the outer periphery of the cap-shaped glass 42.

My invention may obviously also be applied to the case of so-called fancy casings of any size whatever.

In order to increase if required the rigidity of the bezel-carrying casing body that is weakened through the opening provided for the pendant of the casing, it is possible to give the latter aperture a size corresponding to the section of small diameter of the pendant secured inside the ring and glass system, said section extending then up to the outer periphery of the casing body.

The pendant of the casing should be mounted in a perfectly fluidtight manner in its passage through the glass wall and furthermore it should be suitably carried by the metal ring and consequently for executing such a double fitting, it is necessary to make the section of the pendant that is to enter said glass wall smaller by a few hundredths of a millimeter than that of the section to be driven through the ring.

A thin metal ring may be urged into the glass wall to hold same against the outer ring, said inner ring being located consequently between the end of the flange on the bottom section and the bearing surface of the glass that defines the position of the clockwork axially of the watch casing, in which case the diameter of the opening in the ring coaxial with the pendant corresponds to the diameter of the winding up rod.

What I claim is:

1. A fluidtight casing especially for watch comprising a bottom section including an inturned flange at a small distance from its outer periphery, a system including a cap-shaped glass of unbreakable transparent material fitted over the flange of the bottom section and a metal ring permanently secured over the outer periphery of the glass and a casing body fitted yieldingly over a portion of the cylindrical outer surface of the ring through a fraction of the height thereof and including an upper flange forming the bezel for the glass above the upper edge of the ring.

2. A fluidtight casing especially for watch comprising a bottom section including an inturned flange at a small distance from its outer periphery, a system including a cap-shaped glass of unbreakable transparent material fitted over the flange of the bottom section and a metal ring permanently secured over the outer periphery of the glass, and a casing body fitted over the ring and glass system and including an upper flange forming the bezel for the glass above the upper edge of the ring, the lower edge of said casing body engaging the ring through notching.

3. A fluidtight casing especially for watch, comprising a bottom section including an inturned flange at a small distance from its outer periphery, a system including a cap-shaped glass of unbreakable transparent material fitted over the flange of the bottom section, and a metal ring permanently secured over the outer periphery of the glass, a casing body fitted over the ring and glass system and including an upper flange form-

ing the bezel for the glass above the upper edge of the ring, a frame in permanent notched engagement with the ring and means through which said frame urges the bottom section of the casing against the wall of the glass.

4. A fluidtight casing especially for watch comprising a bottom section including an inturned flange at a small distance from its outer periphery, said bottom being bevelled along its lower peripheral edge, a system including a cap-shaped glass of unbreakable transparent material fitted over the flange of the bottom section, and a metal ring permanently secured over the outer periphery of the glass, a casing body fitted over the ring and glass system and including an upper flange forming the bezel for the glass above the upper edge of the ring, a frame in permanent notched engagement with the ring and provided with an inner bevelled surface engaging the bevel on the bottom section.

5. A fluidtight casing, especially for watch, comprising a bottom section including an inturned flange at a small distance from its outer periphery, a system including a cap-shaped glass of unbreakable transparent material fitted over the flange of the bottom section and a metal ring permanently secured over the outer periphery of the glass, a casing body fitted removably over the ring and glass system and including an upper flange forming the bezel for the glass above the upper edge of the ring, a frame removably fitted over the lower periphery of the casing body and means whereby the frame, when in position, holds the casing body in position with reference to the glass and ring system.

6. A fluidtight casing especially for watch comprising a bottom section including an inturned flange at a small distance from its other periphery, a system including a cap-shaped glass of unbreakable transparent material fitted over the flange of the bottom section and a metal ring permanently secured over the outer periphery of the glass, said ring including an inwardly directed projection engaging the wall of the glass above the outer periphery of the bottom section of the casing and a casing body fitted over the ring and glass system and including an upper

flange forming the bezel for the glass, above the upper edge of the ring, a frame disconnectably engaging the lower periphery of the casing body and means whereby the frame, when in position, holds the casing body in position with reference to the glass and ring system.

7. A fluidtight casing especially for watch comprising a bottom section including an inturned flange at a small distance from its outer periphery, a system including a cap-shaped glass of unbreakable transparent material fitted over the flange of the bottom section and a metal ring permanently secured over the outer periphery of the glass, a casing body fitted removably over the ring and glass system and including an upper flange forming the bezel for the glass above the upper edge of the ring, a frame removably fitted over the lower periphery of the casing body, the frame engaging laterally the ring and being provided with a bevelled surface engaging the periphery of the bottom section of the casing.

8. A fluidtight casing especially for watch comprising a bottom section made of transparent unbreakable material and including an internal flange at a small distance from its outer periphery, an annular reinforcing metal member fitted inside the flange of the transparent bottom section, a system including a cap-shaped glass of unbreakable transparent material fitted under friction over the flange of the bottom section and a metal ring permanently secured over the outer periphery of the glass, and a casing body fitted yieldingly over a portion of the cylindrical outer surface of the ring through a fraction of the height thereof and including an upper flange forming the bezel for the glass above the upper edge of the ring.

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The following references are of record in the file of this patent:

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