

- [54] **PROTECTIVE CASING FOR A WRIST-WATCH**
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[22] Filed: **June 13, 1972**
[21] Appl. No.: **262,263**

[30] **Foreign Application Priority Data**
June 21, 1971 Switzerland.....9078/71

- [52] **U.S. Cl.**..... **58/105, 224/4 F**
[51] **Int. Cl.**..... **G04b 43/00**
[58] **Field of Search**..... **58/105; 224/4 F,**
224/4 K

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[57] **ABSTRACT**
Protective casing for a wrist-watch particularly for use under rare or nil atmosphere conditions, said casing comprising a bezel and a bottom removably secured one to the other, the bottom having diametrically opposed recesses to accommodate passage of the wrist band of the watch and the bezel part having an aperture defined therein opening on the glass of the watch face. The casing functions to insulate the enclosed watch by reducing calorific exchanges by radiation when the watch is exposed to rare or nil atmosphere conditions. The surfaces of the casing parts are treated to maintain the ratio between the absorption and the emission of heat by radiation so that the temperature inside the casing does not go beyond -40°C in a given interval of time, and does not grow beyond 40°C in an unlimited time. The aperture defining portion may include a bearing edge surface engaging the glass of the watch face to prevent bursting thereof under vacuo environmental conditions. The bezel can carry a pair of push buttons operable upon the control pushers of a chronograph, if desired. A portion of the outer face of the bottom of the protective casing is anodized and colored.

6 Claims, 4 Drawing Figures

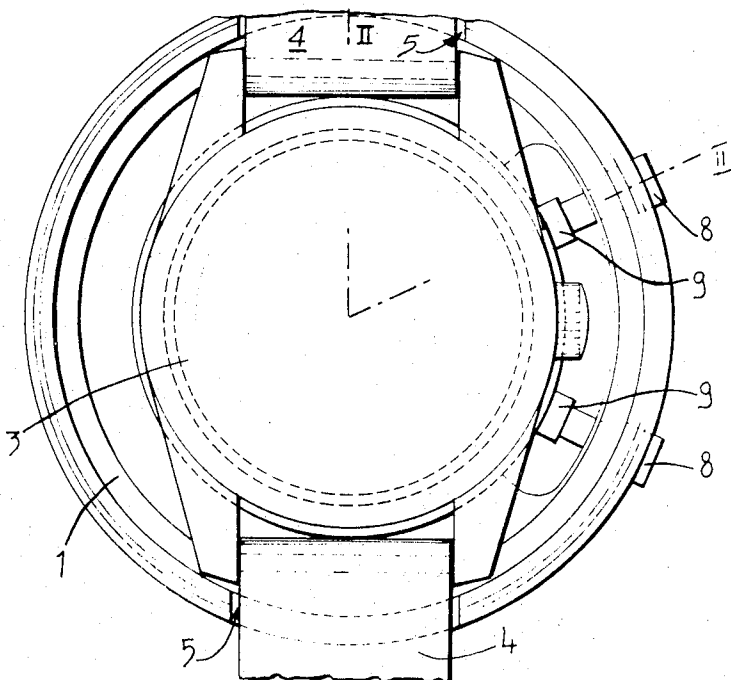


FIG. 1

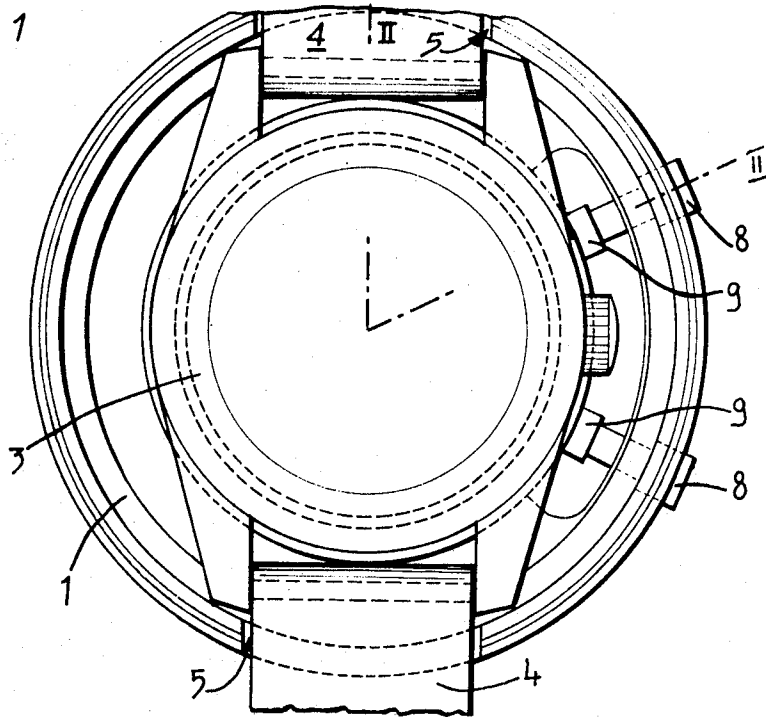


FIG. 2

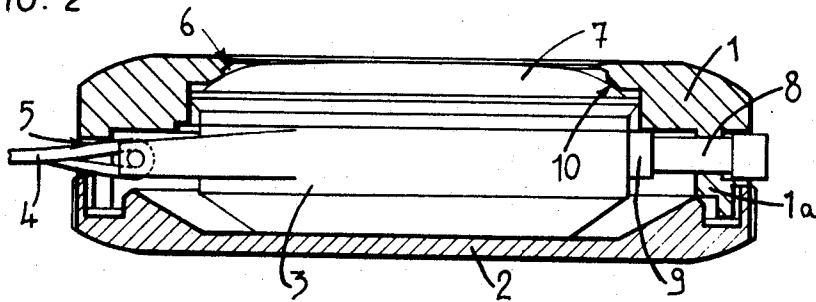


FIG. 3

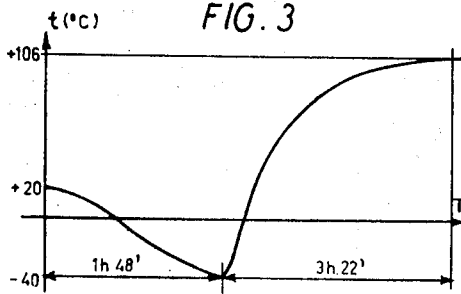
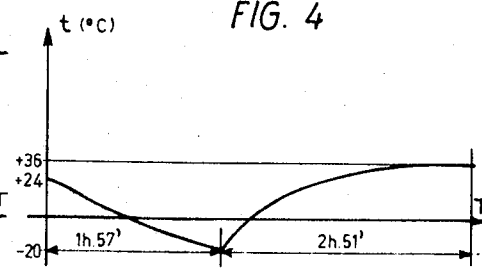


FIG. 4



PROTECTIVE CASING FOR A WRIST-WATCH

The present invention relates to a protective casing for a wrist-watch.

The watches used by the cosmonauts which are located in a rare atmosphere or even in a nil atmosphere are subjected to differences of temperatures which are very important depending they are or not exposed to the sun, for instance.

The purpose of the present invention is to protect thermically the watches so as to reduce the effects of the radiation. As a matter of fact, in vacuum, the thermal exchanges are obtained only by radiation.

The casing according to the invention is characterized by the fact that it comprises two parts secured to each other removably, at least one of which is provided with diametrically opposed recesses, intended to let passage to the two portions of the wrist of the watch, and the other one of which is provided with an aperture opening on the glass of the watch, the whole in such a way that the watch be insulated in view of reducing the calorific exchanges by radiation to which is submitted the watch when it is in a rare or nil atmosphere, the surface of the said parts of the casing being treated so as the ratio between the absorption and the emission of heat by radiation be kept in such limits that the temperature inside the casing does not go beyond -40°C in a given interval of time, and does not grow upper $+40^{\circ}\text{C}$ in an unlimited time.

The drawing shows, by way of example, one embodiment of the object of the invention.

FIG. 1 is a plane view from underneath of one of the parts of a protective casing enclosing a wrist-watch.

FIG. 2 is a sectional view along line II—II of FIG. 1, the casing being complete, and

FIGS. 3 and 4 are diagrams of the dissipation of heat.

The casing represented in FIGS. 1 and 2, made of aluminum, the outer face of the bottom of which is treated by anodization, comprises a part 1 having the shape of a bezel, on which is screwed a part 2 constituting the bottom. This casing is intended to contain a wrist-watch 3, with chronograph, the two portions of the wrist, designated by 4, passing through two recesses 5, diametrically opposed, provided in the lateral wall of the bezel 1. This latter is provided with a central aperture 6 opening on the glass 7 of the watch 3. This central aperture is limited by a bearing surface 10 which serves to prevent the bursting of the glass when the watch is in vacuum conditions.

The bezel 1 carries two radial push-buttons 8 permitting to act from the outside of the casing on the two control pushers 9 of the chronograph.

When the watch is enclosed in the casing 1-2, it is thermically protected, that is to say prevented from the effects of the radiation, so that the differences of temperature to which it is subjected are strongly damped.

The two curves of FIGS. 3 and 4, in each of which the temperature t has been indicated vertically while the time T has been indicated horizontally show that, while interrupting the solar exposition, when the watch is at

a temperature of $+20^{\circ}\text{C}$, its temperature decreases in 1 h 48' to -40°C if the watch is not protected by the present casing (FIG. 3) while, on the contrary, a watch at $+24^{\circ}\text{C}$ has its temperature which decreases, after a time of 1 h 57' only to a temperature of -20°C (FIG. 4) when it is protected by the present casing.

Likely, so far as the heating is concerned, in the case of FIG. 3, that is to say in the case where the watch is not protected by the casing, its temperature arises, if it is exposed to the rays of the sun, from -40°C to $+106^{\circ}\text{C}$ in a duration of 3 h 22' while, as shown in FIG. 4, it goes only to $+36^{\circ}\text{C}$, coming from -20°C , in 2 h 51', if it is protected by the casing. FIGS. 3 and 4 show that the curve of temperature reaches but does not go beyond a maximum limit whatever the duration of exposition may be.

These tests have been effected in a vessel the pressure of which was lower than 10^{-6} Torr, at a temperature of about -200°C (320°F) and by means of a source of energy of 0,14 Watt/cm², that reproduces the solar spectrum measured outside the atmosphere, called solar constant.

What I claim is :

1. Protective casing for a wrist-watch with wrist-strap connections, characterized by the fact that it comprises two parts secured to each other removably, at least one of which is provided with diametrically opposed recesses, intended to let passage to the two portions of the wrist-strap connections of the watch, and the other one of which is provided with an aperture opening on the glass of the watch, the whole in such a way that the watch be insulated in view of reducing the calorific exchanges by radiation to which is submitted the watch when it is in a rare or nil atmosphere, the surface of the said parts of the casing being treated so that the ratio between the absorption and the emission of heat by radiation is kept in such limits that the temperature inside the casing does not go below -40°C in a given interval of time, and does not go above $+40^{\circ}\text{C}$ in an unlimited time.

2. Casing according to claim 1, characterized by the fact that it is made of aluminum.

3. Casing according to claim 2, characterized by the fact that a portion of its outer surface is treated by anodization and then colored.

4. Casing according to claim 1, characterized by the fact that its two parts are secured to each other by screwing.

5. Casing according to claim 1, for chronograph-watch, characterized by the fact that one of its parts carries at least one radial push-button permitting to act, from the outside of the casing, on a control pusher of the watch.

6. Casing as claimed in claim 1, characterized by the fact that one of its parts is provided with a bearing surface facing the inside of the casing, which prevents the bursting of the glass of the watch when this latter is under vacuum conditions.

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