

# United States Patent

## Hurt

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### [54] TIMEPIECE

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[58] Field of Search .....58/152 A; 73/384

### [56] References Cited

#### UNITED STATES PATENTS

1,913,481 6/1933 Gody .....58/152 A

2,716,327 8/1955 Franklin et al. ....58/152 A X

3,157,985 11/1964 Zenger .....58/152 A

3,315,462 3/1967 Bosquet .....58/152 A

### FOREIGN PATENTS OR APPLICATIONS

324,756 11/1957 Switzerland .....58/152 A

309,241 11/1955 Switzerland .....58/152 A

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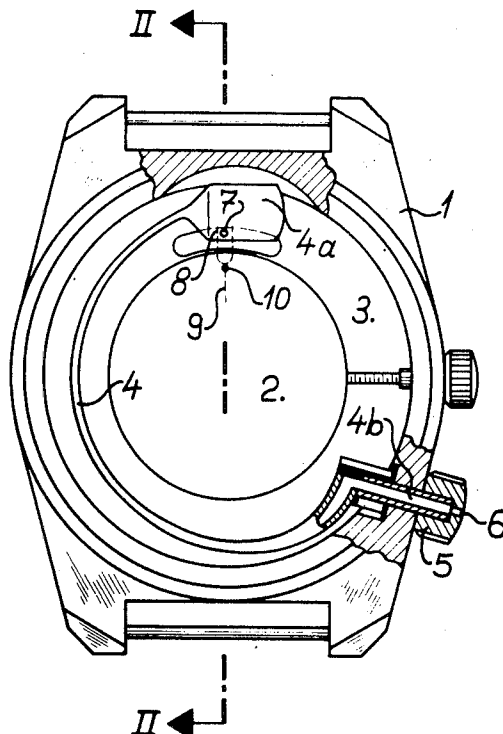
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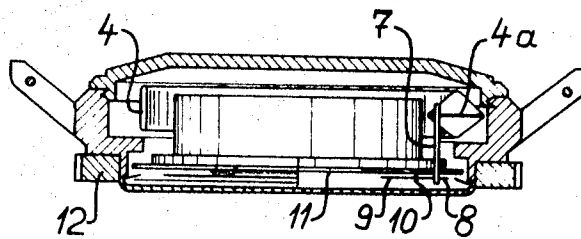
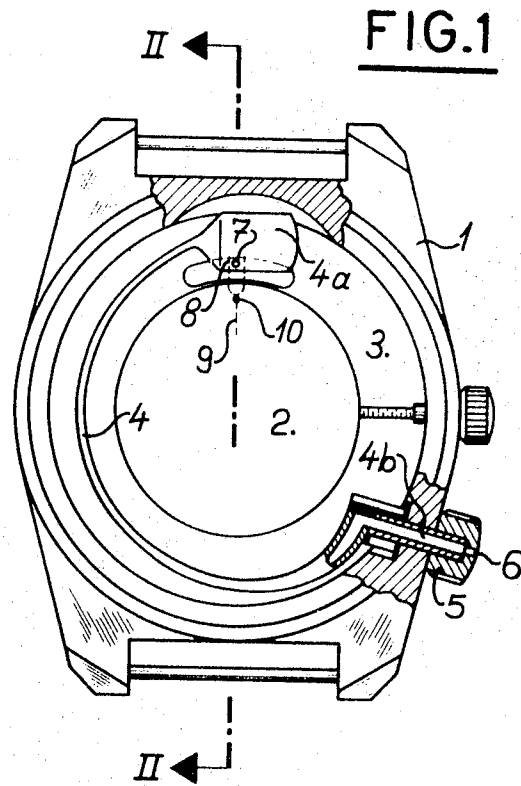
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### ABSTRACT

A timepiece for underwater use, includes a conventional movement arranged within a case and a manometer in the form of a resilient tube arranged in the space between the movement and the inner surface of the case. An open end of the tube communicates with ambient medium around the case and pressure variations in the tube are communicated to an indicator by means of a pin mounted on the opposite closed end of the tube. The pin is arranged between two legs at one end of the indicator.

3 Claims, 2 Drawing Figures





**FIG. 2**

# 1

## TIMEPIECE

### BACKGROUND OF THE INVENTION

The present invention relates to timepieces, and in particular, to watches for use underwater, by divers and the like.

Watches are known, in which a resilient tube having spring-like qualities moves a geared sector which drives a pinion connected to an indication hand, in accordance with the pressure variations in the tube. The indicator hand is mounted coaxially to the hands of the watch. The known watch requires a special horological movement, which movement permits the passage therethrough of the axis of the pressure indicator hand. Further, the horologic movement and the manometric mechanism are superposed which gives the watch an unacceptable thickness.

### AIMS OF THE INVENTION

An object of the present invention is the provision of a timepiece suitable for use underwater, which includes pressure indicating means and a conventional movement without increasing the thickness of the watch.

According to the present invention, a timepiece for use underwater, comprises a case, a movement contained within the case, a manometer in the form of a resilient tube extending at least partially around the movement, in a space between the movement and an inner surface of the case, the tube having an open end in communication with the ambient medium around the case and an opposite closed end, free to move in accordance with variations in pressure within the tube and an indicator movable by means on the closed end of the tube in said space.

### DESCRIPTION OF THE FIGURES

An embodiment of the invention will now be described, by way of an example, reference being made to the Figures of the accompanying drawing in which:

FIG. 1 is a bottom plan view partly in cross-section, of a watch according to the invention; and

FIG. 2 is a cross-section on the line II—II of FIG. 1.

# 2

## DESCRIPTION OF A PREFERRED EMBODIMENT

As shown, a timepiece in the form of a watch for use underwater, comprises a case 1 containing a movement 2, the diameter of the movement being such, that an annular space 3 remains between the movement and an internal wall of the case 1. In the annular space 3 there is arranged a manometer in the form of a resilient tube having spring-like qualities of the "de Bourdon" type. The tube 4 has one end 4a closed, that is, the end is flattened and an opposite open end 4b communicating with ambient medium surrounding the case 1 through a crown 5 provided with a hole 6. The tube 4 is also fixed by its end 4b, its end 4a being able to move freely.

That flat closed end 4a carries a vertical pin 7 (as seen in FIG. 2) freely engaging between the legs 8 of a bifurcated end of an indicator 9 pivoted on an axis 10. An indicator arm of the indicator 9 moves over a dial 11 carrying indicia indicating pressure measurements for example, graduations in meters or feet, indicating the depth to which the holder of the watch has reached.

Crown 5, which has only a decorative effect, can be employed to drive or clamp a turning bezel 12. k.

The indicator arm is caused to move over the indicia in accordance with variations in pressure sensed by the tube 4.

What is claimed is:

1. A timepiece for use underwater, comprising a case, a movement contained within the case, a manometer in the form of a resilient tube extending at least partially around the movement, in a space between the movement and an inner surface of the case, the tube having an open end in communication with the ambient medium around the case and an opposite closed end, free to move in accordance with variations in pressure within the tube, and an indicator movable by means on the closed end of the tube in said space.

2. A timepiece according to claim 1, wherein the means is a pin attached to the closed end of the tube, the indicator being pivotally mounted and having at one end an indicating arm, the opposite end being bifurcated, the pin extending between the legs of the bifurcation.

3. A timepiece according to claim 1, wherein the open end of the tube extends into a crown on the periphery of the case.

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