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MULTIPLE-READING WATCH WITH BUILT-IN ELECTRIC LIGHTING MEANS

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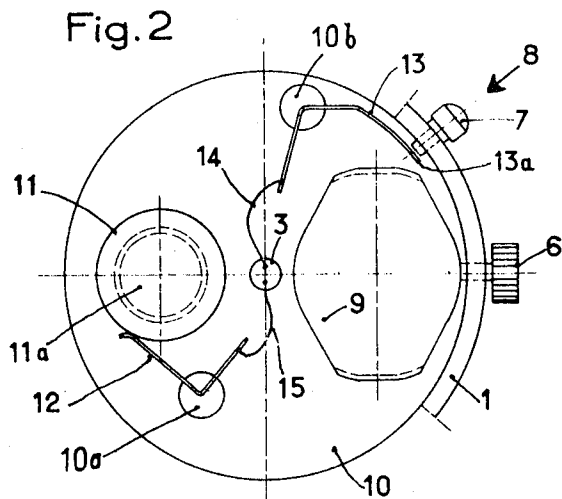


Fig. 5

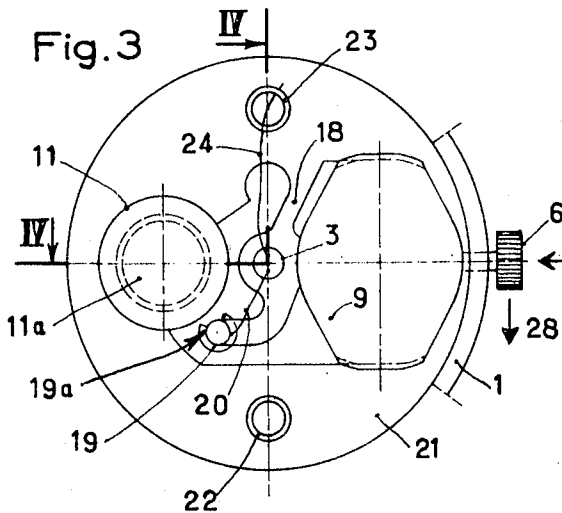
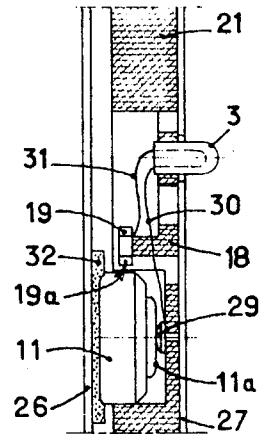


Fig. 4

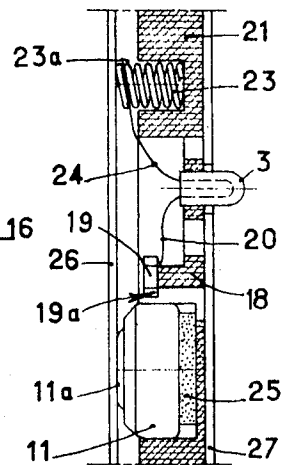
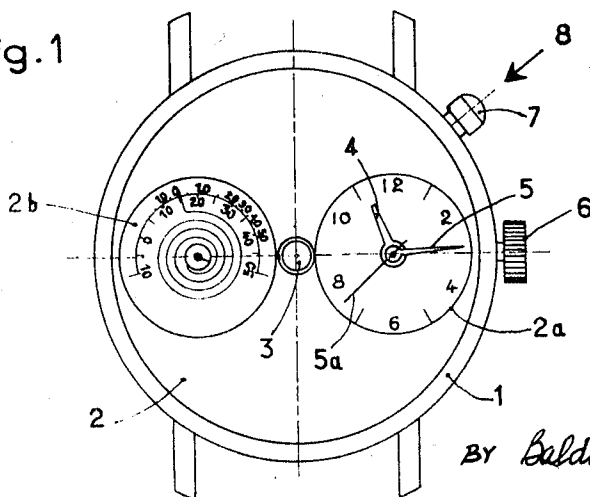


Fig. 1



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MULTIPLE-READING WATCH WITH BUILT-IN ELECTRIC LIGHTING MEANS

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4 Claims

ABSTRACT OF THE DISCLOSURE

The invention comprises a watch wherein the watch face has, in addition to the normal watch dial, a dial or dials of an ancillary instrument such as a thermometer, barometer, a source of illumination being provided in the watch face in the form of an electric bulb. For this purpose the casing of the watch is provided with a body part having two recesses, one of which is adapted to house an electric battery and the other the watch movement, control of the circuit being by means of a switch accessible from the exterior of the casing.

This invention comprises a watch having built-in electric lighting means.

It is common for a wrist watch to have an additional dial or indicator recording the day of the month, in which only the hour figures and the hands are luminous. In practice however this illumination is usually insufficient to enable the hour to be read and there is not sufficient illumination for the date to be read.

The object of this invention is to provide a new industrial product consisting of a wrist watch incorporating its own electric illumination means and containing, in addition to the watch movement having two or three hands, at least one other source of measurement, e.g. indicating temperature, atmospheric pressure, the degree of humidity of the air, and even another watch movement showing the time for other time zones.

The watch forming the object of the invention therefore comprises, in combination, a case containing a support or body part or insulating plate, which entirely or partly fits the interior shape thereof and in which there are provided on the one hand recesses to receive a watch movement having two or three hands and a miniature electric battery, and on the other hand a lamp projecting through the dial in order to illuminate not only that portion of the latter corresponding to said movement and indicating the time, but also at least one other device indicating time, atmospheric conditions, or other data, which device is accommodated in said support part or between the dial and the glass closing the front of the watch case, the lighting of the lamp being controlled by means situated outside the case.

In one embodiment of the invention the means controlling lighting of the lamp is constituted by a push button preferably situated near the winding knob (when provided) of the watch movement, which push button is connected to earth through the watch case and is capable, when depressed, of making contact with an elastic blade carried by the insulating support or body part and connected to one of the lead wires of the lamp, while the other lead wire is connected to another blade likewise carried by said support part and held in constant contact with the battery case, the other pole of which is in contact with the bottom of the watch case.

In another embodiment the means controlling the lighting of the lamp is constituted by the watch movement itself, which is capable of displacement inside the watch

case by depressing the winding knob and which then, in its displacement of very low amplitude, moves an elastic arm attached to the support part and carrying a contact means connected to one of the lamp lead wires, which comes into contact with the outer wall of the battery, the central pole of which is connected to earth, the other lamp lead wire being likewise connected to the casing which constitutes the earth.

In another embodiment the means controlling the lighting of the lamp is constituted by the entire watch movement, which can be displaced inside the watch case by depressing the winding knob and which in its displacement moves an elastic arm secured to the support part and carrying a contact device connected to one of the lamp lead wires, which comes into contact with the outer wall of the battery, the central pole of which is continuously in contact with a contact carried by the insulating support part and connected to the second lead wire to the lamp, the battery being pressed against said contact by a disc of elastic material inserted between it and the bottom of the case.

Springs may be placed between the bottom of the case and the internal support part in order to hold the latter against the front wall of the case.

The contact device on the elastic arm of the support part may be constituted by a fixed or rotatable metal contact comprising an eccentric portion permitting the adjustment of the distance between said device and the wall of the battery.

The contact device may consist of a sleeve having a relatively wide slot to enable the distance between one of the lips of the slot and the wall of the battery to be adjusted by turning the sleeve.

The invention is illustrated in the accompanying drawings, in which:

FIG. 1 is a front view of the watch from the dial side;

FIG. 2 is a view from the front with the dial removed showing the internal arrangement in accordance with one embodiment of the invention;

FIG. 3 is a front view with the dial removed showing another embodiment of the invention;

FIG. 4 is a developed section of the line IV—IV of FIG. 3; and

FIG. 5 is a similar section to that of FIG. 4, but illustrating an alternative form of electric circuit.

Referring to FIG. 1, the watch comprises a case 1 and a face 2 provided with a 12-hour time dial 2a and a spiral thermometer 2b with a temperature range from —10 to 50°.

In the center of the watch face 2 is a midget lamp 3, which projects sufficiently from the face to provide the best possible illumination of the dial 2a and the needles 4, 5 and 5a of the time piece, and also the thermometer.

The knob 6 for winding the watch movement is provided at one side of the case in the usual manner.

A push button 7 on the side of the case 1, preferably near the knob 6, makes it possible to close the electric circuit of the lamp 3 by depressing the button in the direction of the arrow 8 when it is desired to illuminate the face. The push button is returned to its original position by a spring (not shown).

Referring to FIG. 2, there is fitted into the case a body or support part 10, of unbreakable, injection mouldable insulating plastics material of any suitable type, which is housed in the case 1 and is shaped to match entirely or partly the shape of the case. This figure shows the portion of the case 1 from which the winding knob 6 and push button 7 project.

In the support part 10, which must constitute a means of projection against shock in at least two directions, recesses are provided to receive a watch movement 9 and

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an electric battery 11. Part 10 has fastening points 10a and 10b for elastic metal blades 12 and 13 intended to make electrical connections between the battery 11 and a lead wire 15 of the lamp 3 on the one hand, by means of the blade 12, and on the other hand between the other lead wire 14 of the lamp and the contact point of the push button 7 by means of the blade 13.

Since the central pole 11a of the battery 11 and the push button 7 are connected to earth, it is obvious that when the latter is depressed in the direction of the arrow 8 the circuit will be closed at the point of contact 13a, thus causing the lamp 3 to light up.

In the modified arrangement shown in FIGS. 3 and 4, contact is controlled by applying pressure to the winding knob 6 in the direction of the arrow 16, thereby displacing the watch movement in the same direction; such displacement, amounting to only a few tenths of a millimetre, which is imperceptible from the outside, is sufficient to operate a switch reliably.

In the embodiment of FIGS. 3 and 4 a support part 21 of plastics material is housed in the case 1.

In the support part 21 two recesses are provided, one of which houses the watch movement 9 and the other the battery 11. The recess for the movement 9 is obviously designed to allow the latter to move in the direction of the arrow 16 (FIG. 3) when pressure is applied in that direction to the knob 6.

In the central portion of the support 21 there is provided an elastic arm 18 which has at least three functions, namely to carry the lamp 3, the application of pressure to return the watch movement 9 in the opposite direction to the arrow 16, and thirdly, the carrying of a contact sleeve 19 to which one of the wires 20 of the lamp 3 is directly connected.

Mounted in recesses formed in the body or support part 21 are coil springs 22 and 23, which are held in compression by the removable metal base plate 26 closing the back of the case 1, and by means of which the assembly is fixed inside the case 1. The wire 24 of the lamp 3 is connected to earth by engaging this wire between two turns of the spring as indicated at 23a. The central pole 11a of the battery 11 is earthed by being in contact with the metal base plate 26.

The battery 11 is pressed against the back cover plate 26 by a pad 25 of elastic material in the bottom of the battery recess in the body part 21 which bears against the watch face.

This being the case, it will be seen that the lamp circuit can be completed at the point 19a on the sleeve 19, when the latter is brought directly into contact with the body of the battery 11, by application of the knob 6 in the direction of the arrow 16, which is possible because of the elasticity of the arm 18, thereby illuminating the lamp.

It is obvious that similar conditions of operation could be obtained by displacement of the watch movement brought about by moving the knob 6 in another direction than that of the arrow 16, for example in the direction of the arrow 28.

The external shape of the watch movement 9 is independent of the invention, that is to say circular or rectangular movements, for example, may be used provided the recess in the body part 10 or 21 has the required shape and dimensions.

The modified electric circuit shown in FIG. 5 is applicable to the embodiment illustrated in FIGS. 3 and 4.

In this modification the electrical circuit connections are independent of the metal body of the watch.

Nevertheless, as previously, a lead wire 31 to the lamp 3 is connected to the sleeve 19 and the other lead wire 30 is connected to a contact 29 in the bottom of the battery recess in body part 21. This contact 29 makes contact with the central pole 11a of the battery 11, which is firmly held against it by the bottom 26, but with the interposition of a disc 32 of insulating elastic material.

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In these circumstances, the circuit is made by direct contact between the point 19a of the sleeve 19 and the body of the battery 11 when pressure is applied to the knob 6 in the direction of arrow 16.

The sleeve 19 has a sufficiently wide slot to be turned by means of a suitable tool in order to change the distance separating the contact point 19a from the battery. This feature is useful for making the final adjustment, taking into account variations in manufacture.

The simple sleeve 19 may moreover be replaced by a rotating contact having an eccentric portion permitting the same adjustment.

In a less expensive construction the sleeve 19 may be dispensed with. In one arrangement the wire 31 is wound several times around the stud and secured in a slot. Similarly, in the same circumstances, the contact 29 (FIG. 5) may be eliminated.

The embodiments described above show the use of a single lamp situated at the centre of the watch. Clearly, the position of the lamp may be changed to suit lighting requirements and the most convenient esthetic conditions.

In place of a single lamp, a plurality of lamps connected electrically in parallel could equally well be used.

In the example of FIG. 1, the watch case 1 contains a spiral thermometer, the dial 2b of which has two graduations, one corresponding to the actual temperature on the users' arm, and the other to the approximate ambient temperature.

It should be understood, however, that other forms and kinds of indicator may be inserted in the case 1 in place of a thermometer, e.g. a barometer, hygrometer, a timer, a second watch movement intended to show the time in other time zones, and so on.

These alternative devices may be situated in the same position and of a size so as to reserve, preferably in the centre, a space to receive at least one miniature electric lamp intended to illuminate the dial and the hands.

The watch movements having two or three hands must obviously be of relatively small dimension, corresponding for example to the size of a movement for a lady's wristwatch.

Replacement of spent batteries is through an access opening in the bottom 26 of the case.

The glass of the case may be provided with reflecting surfaces in order to direct light towards points to be illuminated.

If desired, provision may be made for directing a light beam outwardly of the case for illuminating small surfaces or small objects, such as a keyhole, a card, etc.

The recess in the body part in which the watch movement is housed may be provided with grooves within which the movement is slidably mounted in order to permit displacement of the latter on depression of the knob 6.

What is claimed is:

1. In a watch, the combination of a casing, a body part mounted within the casing, said part having two recesses, one of which being an electric battery accommodating recess, a watch movement housed in the other of said recesses, a watch face in the casing provided with at least two dials, one being the dial of the watch and the other that of another instrument, an electric light bulb mounted in said casing and positioned to be seen from outside the casing, an electric switch mounted on the casing and being operable from the outside of the casing, and means within said casing providing an electric circuit connecting said battery, said bulb and said switch, whereby said bulb may be illuminated by operating said switch from outside of said casing, the watch movement being mounted within said other of said recesses so as to permit of limited displacement of said movement relative to said body part, said switch being responsive to displacement of said movement for closing the circuit to the bulb.

2. A watch as claimed in claim 1 wherein the electric

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circuit comprises a spring arm carried by the body part, which arm is located for engagement by the watch movement on displacement thereof, said arm having a contact device to which a lead wire of the bulb is connected, the contact device being adapted on displacement thereof to make contact with the wall of the battery, the other pole of which is connected to earth through contact with the watch casing, and a second lead wire which connects the bulb to the casing.

3. A watch as claimed in claim 2 comprising a contact on the body part engageable by a central pole on the battery, which contact is connected to the lead wire of the bulb, and including spring means in the battery accommodating recess for urging the battery into engagement with said contact.

4. A watch as claimed in claim 3 wherein the spring means is provided by a disc of resilient material.

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U.S. Cl. X.R.

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