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ILLUMINATED WRIST WATCH

Filed March 16, 1961

FIG. 1

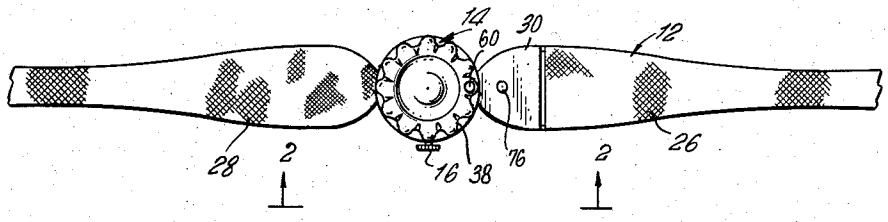


FIG. 2

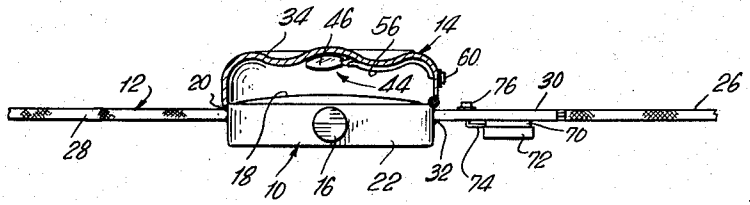
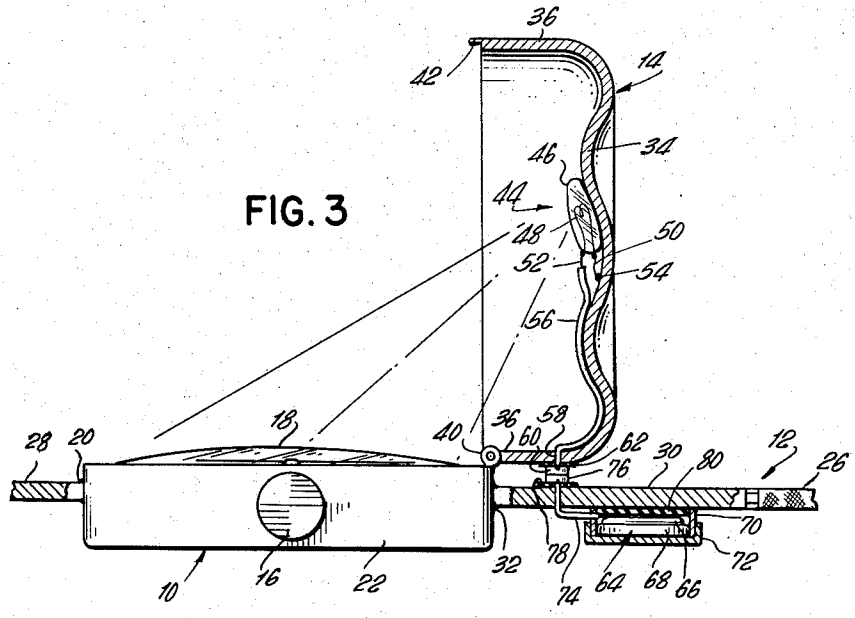


FIG. 3



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ILLUMINATED WRIST WATCH

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The present invention relates to a novel and improved illuminated wrist-watch, and in particular to a wrist-watch assembly including a self-contained electrical circuit, light bulb and switch means for illuminating the face of the watch.

It has been proposed to provide a watch with a self-contained electric light and power supply assembly, these having been built directly within the watch body. This requires that the watch have a special construction and that the lighting arrangement be built in at the time of manufacture of the watch. In addition, the mounting of the electric bulb, power supply, switch and circuit within the watch body necessarily increases the size of the watch and makes the assembly unsuitable for use in the smaller-sized ladies' watches. Further, conventional illuminated watches have the light bulb built into the face of the watch at the margin thereof, so that one side of the watch face is illuminated and it is difficult to read the opposite side.

An object of the present invention is to provide novel means for illuminating the face of a wrist-watch in which a miniature electric bulb is mounted exteriorly of the watch body and is so arranged that its light is directed uniformly over the entire face of the watch so that the latter can be easily read in dark surroundings.

Another object of the invention is the provision of an illuminated watch assembly including a watch band and a hinged cover for the watch face, in which an electric bulb, power supply and switch are built into the watch band and cover and apart from the main body of the watch, so that the lighting arrangement does not increase the size of the watch and can be used advantageously for miniature ladies' wrist watches.

A further object of the invention is the provision of a watch assembly of the character described in which the watch band and cover with their built-in lighting arrangement may be applied to various watches of conventional type so that standard watches may be afforded illumination without changing the structure of the watch itself.

In accordance with the invention herein, there is provided a wrist watch assembly including a watch, a metallic band made of electrically conductive material and a watch cover also made of conductive material and hinged to the watch body for movement between a closed position in which the watch face is covered over and an open position in which the watch face is exposed to view. A miniature electric bulb is mounted in the watch cover and a miniature electric battery cell is mounted on the watch band. The watch cover and battery carry respective electrical contacts so positioned as to engage when the cover is opened to complete an energizing circuit between the battery cell and the light bulb and illuminate the latter. The open cover then acts as a reflector to direct the light from the bulb onto the face of the watch.

Additional objects and advantages of the invention will become apparent during the course of the following specification when taken in connection with the accompanying drawings, in which:

FIG. 1 is a top plan view of a watch assembly made in accordance with the invention herein, and showing the watch cover in closed position and the watch band partially broken away;

FIG. 2 is an enlarged side elevational view taken along line 2—2 of FIG. 1, with portions shown in section to reveal inner construction; and

FIG. 3 is a side elevational view partially in section, similar to FIG. 2, but on a more enlarged scale and with the cover shown in raised position.

Referring in detail to the drawings, there is shown a watch assembly incorporating the features of the present invention and generally including a wrist watch **10**, a watch strap **12**, and a hinged cover **14**.

The wrist watch **10** may be of any conventional type and is shown herein as a ladies' watch which is customarily made of small size. The watch **10** may have the usual winding crown **16**, and has a face (not shown) covered by a transparent crystal **18**. The watch casing **22** is also conventional, and for purposes of this invention is preferably made of electrically-conductive material such as a gold or silver for a purpose which will be presently apparent.

The watch strap **12** is also of conventional construction and is preferably made of electrically conductive material so as to form a part of the electrical circuit for the light bulb, as will be presently explained. For this purpose, a watch strap made of gold, silver, or other conductive metal may be employed. In the drawings, by way of example, the watch strap **12** is shown made of a metallic mesh or linked type material and is formed of two separate strap sections **26** and **28**. The inner end of strap section **28** is rigidly secured to the watch casing **22** as by welding or soldering **20**. The strap section **26** terminates at its inner end in a rigid and inflexible portion **30** which is also made of electrically conductive material and preferably of the same metal as the remainder of the watch strap **12**. This rigid portion **30** is secured to the opposite side of the watch casing **22**, as by soldering **32**. The free ends of the strap sections **26** and **28** may be provided with conventional clasp means (not shown) for securing the watch band **12** around the wrist.

The cover **14** is of inverted cup-shape having a top wall **34**, and a depending peripheral wall **36**, which in the drawings is shown as annular in shape to correspond to a circular watch body. This shape of wall **36**, however, is shown merely by way of illustration, and it is to be understood that the watch casing **22** and cover **14** may have any suitable shape. The cover **14** is sized to overlie the top surface of the casing **22** and to cover over the face thereof, in the manner shown in FIG. 2, with the top wall **34** spaced above the crystal **18**. In this manner, the crystal **18** and watch face are protected when the watch is not in use. The outer surface of top wall **34** may be provided with suitable design ornamentation designated by numeral **38** to enhance the appearance of the watch.

The edge portion of the cover peripheral wall **36** is movably mounted on the upper edge portion of the watch casing **22** by a hinge **40**. The cover **14** may thus be swung between its closed position of FIGS. 1 and 2, overlying the watch face, to the opened position of FIG. 3 in which it upstands substantially perpendicularly from the plane of the watch face and exposes the latter to view. It will be observed that the hinge **40** is located adjacent the rigid portion **30** of strap section **26**, so that when the cover **14** is raised, it overlies the inner end of said rigid strap portion **30**. Opposite said hinge **40**, the cover wall **36** has an integral extension tab **42** which snaps into a position overlapping the adjacent side wall portion of the watch casing **22** to hold the cover **14** releasably in closed position.

A miniature electric bulb **44** is mounted within the cover **14**, the bulb having a glass envelope **46** containing a filament **48**. The bulb envelope **46** is secured to the inner surface of the cover top wall **34**, as by cementing. The filament **48** has a pair of terminal wires **50** and **52**

which project from the envelope 46, the terminal wire 50 being electrically connected to the cover top wall 34 as by soldering 54. The other terminal wire 52 is covered by a layer of insulation 56 and extends along the inner surface of the top wall 34 to the peripheral wall 36, extending through an aperture 58 in the latter. The free bare end of wire 52 is electrically connected to a contact 60 mounted on the outer face of peripheral wall 36, but separated therefrom by an insulated plate 62.

The electric bulb 44 is energized by a miniature mercury electric cell 64 of the button type customarily used in hearing aids and similar devices. The battery cell 64 has a flat end portion 66 constituting the positive pole of the cell, and an opposite end portion 68 of larger diameter constituting the negative pole. The battery cell 64 is mounted on the lower surface of the rigid portion 30 of watch band section 26 within a hollow battery casing 70 made of conductive material and formed integrally with the bottom surface of said strap rigid portion 30. The battery casing 70 has a bottom open end which is closed off by a cup-shaped cover section 72 which frictionally fits upon the casing 70 to retain the cell 64 therein. The negative pole section 68 of the battery cell 64 makes electrical contact with the conductive cover section 72 and through the casing 70, band section 26, watch casing 22 and hinged cover 34, with the bulb terminal wire 50. The aforementioned parts thus serve as a ground for the electrical circuit.

The positive battery section 66 is insulated from the watch band section 26 by a non-conductive plate 80 which carries the bare end of an insulated wire 74. The wire 74 extends through the rigid portion 30 of watch band section 26 and its opposite bare end is connected to a contact 76 mounted on the outer surface of said rigid strap portion 30 and separated therefrom by an insulating plate 78. The contact 76 is so mounted that when the hinged watch cover 34 is turned to its open position of FIG. 3, the contact 60 engages the contact 76 and closes the battery circuit through the light bulb 44. It will be appreciated that the rigid strap portion 30 serves as a secure mount for the contact 76 and cannot move relative to the watch casing 22, thereby preventing accidental engagement of the contacts 60, 76 during wearing of the watch.

In use, the watch 10 is normally worn with the cover 14 in closed position, in the manner illustrated in FIG. 2, and since the contacts 60 and 76 are separated, the energizing circuit to the light bulb 44 is interrupted and the light is extinguished. When the user is in a darkened room, theatre, or other dark surroundings, and wishes to ascertain the time by reading the watch face, it is merely necessary to open the cover 14 and turn it to its upstanding position of FIG. 3. This exposes the face of the watch 10 and at the same time brings the contact 60 into engagement with the contact 76 to illuminate the bulb 44. An energizing circuit is thus completed by electrically connecting one end of the bulb filament 48 with the positive battery pole 66 through terminal wire 54, contacts 60, 76, and wire 74. As previously explained, the other end of filament 48 is already electrically connected to the positive battery pole 68 through the ground connections provided by the conductive battery casing 70, cover section 72, strap section 26, watch casing 22, and hinged cover 14.

The inner surface of the cover 14 is highly polished to provide a reflective surface for directing the light of the illuminated bulb 44 onto the face of watch 10. The direct and reflected light of the bulb 44 is sufficient to effectively illuminate the entire face of the watch so that it may be easily read in complete darkness.

While a preferred embodiment of the invention has been shown and described herein, it is obvious that numerous omissions, changes and additions may be made in such embodiment without departing from the spirit and scope of the invention.

What we claim is:

1. A wrist watch assembly comprising a watch case having a watch face, a wrist strap secured to said case, a cover hingedly secured to said case and movable between a closed position overlying the watch face and an open position exposing said watch face, a power source carried by said strap, an electric bulb mounted on said cover for illuminating said watch face when said cover is open, and circuit means for electrically connecting said power source to said bulb and including a first contact electrically connected to said bulb and carried by said cover and a second contact electrically connected to said power source and carried by said wrist strap, said contacts being spaced from each other when the cover is in closed position, said first contact being positioned to engage the second contact when the cover is moved to its open position and complete the circuit means for energizing said bulb and illuminating said watch face.

2. A wrist watch assembly comprising a watch case having a watch face, a wrist strap secured to said case, a cover hingedly secured to said case and movable between a closed position overlying the watch face and an open position upstanding from one side of the watch case and exposing said watch face, a miniature electric cell mounted on said strap, a miniature electric bulb mounted on the inner surface of said cover for illuminating said watch face when said cover is in open position and having a pair of terminals, an energizing circuit for electrically connecting said electric cell to said bulb and including circuit means connecting one pole of said cell to one terminal of said bulb, a first contact electrically connected to the other terminal of said bulb and carried by said cover, and a second contact electrically connected to the other pole of said cell and carried by said wrist strap, said contacts being separated from each other when the cover is in closed position, said first contact being positioned to engage the second contact when the cover is moved to its open position, thereby completing the energizing circuit for said bulb and illuminating the watch face.

3. A wrist watch assembly according to claim 2 in which said wrist strap and cover are made of electrically conductive material and are included in said circuit means.

4. A wrist watch assembly comprising a watch case having a watch face, a wrist strap secured to said case, a cover hingedly secured to said case and movable between a closed position overlying the watch face and an open position exposing said watch face, said wrist watch assembly including a power source, an electric bulb mounted on said cover for illuminating said watch face when said cover is open, and circuit means for electrically connecting said power source to said bulb and including a first contact electrically connected to said bulb and carried by said cover and a second contact electrically connected to said power source, said contacts being spaced from each other when the cover is in closed position, said first contact being positioned to engage the second contact when the cover is moved to its open position and complete the circuit means for energizing said bulb and illuminating said watch face.

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