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3,040,150

WATCH CONTACT POST

Filed Sept. 5, 1958

Fig. 1.

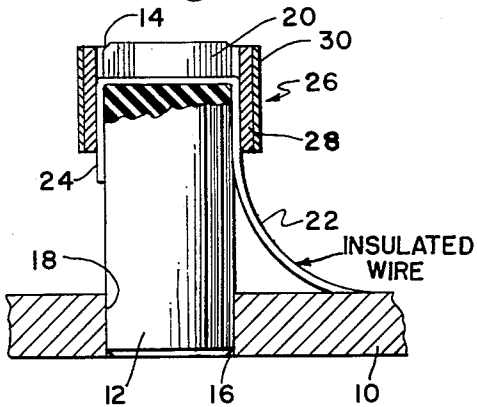


Fig. 2.

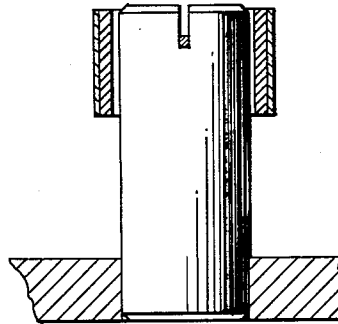


Fig. 3.

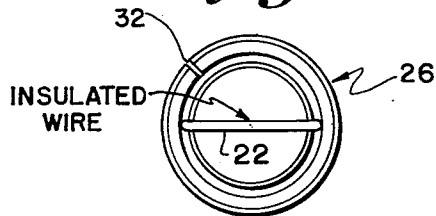


Fig. 6.

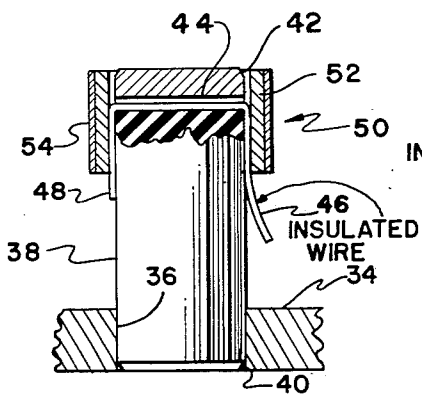
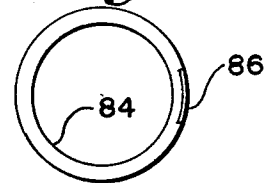


Fig. 4.

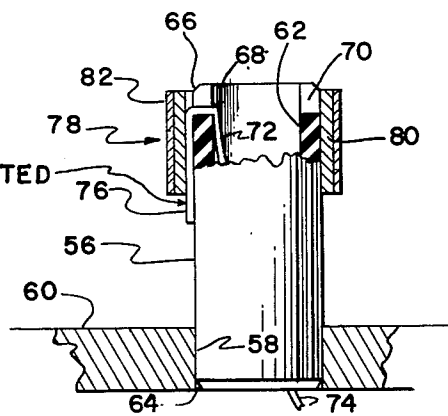


Fig. 5.

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3,040,150

WATCH CONTACT POST

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1 Claim. (Cl. 200-166)

This invention relates to electric time pieces and more particularly to an improved contact assembly for electric time pieces.

The problem of small size is one which the watch and clock industry has continuously lived with and has for the most part conquered. However, with the advent of battery operated clocks of small size entirely new problems have arisen and success in the production of clocks is largely dependent on the success of their solution. One such problem is found in connecting the live wire from the battery to a suitable contact post against which a movable contact is periodically brought to bear. The small size of the wire, the miniature size of the post and its general inaccessibility renders manufacture difficult. The use of solder is not practical and a conventional screw coupling would be so small as to render the connection inadequate.

It is accordingly a primary object of the present invention to provide a contact post assembly which is satisfactory in operation and which permits practical and economical manufacture.

It is another object of the invention to provide an assemblage of the foregoing type utilizing an insulating post supporting an insulated wire and a contact sleeve wherein the act of assembling the parts makes good electrical connection between the wire and sleeve.

It is a still further object of the present invention to provide a sleeve for making contact with a current carrying wire which will, at the same time, provide a contacting surface which will not oxidize under ordinary conditions.

These and further objects and advantages of the invention will become more apparent upon reference to the attached specification and claim and appended drawings wherein:

FIGURE 1 is a vertical elevation of the contact post partly in section;

FIGURE 2 is a view similar to FIGURE 1 at a 90° angle to the view of FIGURE 1;

FIGURE 3 is a top plan view of the post with wire and retainer sleeve assembled;

FIGURE 4 is a vertical elevation of another embodiment of a contact post, partly in section;

FIGURE 5 is a vertical elevation of still another embodiment of a contact post, partly in section; and

FIGURE 6 is a plan view of another embodiment of a retainer sleeve.

Referring to the drawings, the contact post is intended for use in a contact arrangement of the general type shown in the co-pending application Serial No. 631,850 of Daniel Fritsch, filed December 31, 1956, now Patent No. 2,926,534 and is shown without any of the additional details of the electric watch. The post is primarily designed to be used in a battery operated electric clock, the post itself being approximately one-tenth of an inch in diameter and three-tenths of an inch long.

Referring particularly to FIGURES 1, 2 and 3 of the drawing, plate 10 in a battery operated electric clock supports a post 12 which is formed of an insulating material. The upper and lower edges of the post 12 are bevelled at 14 and 16 to permit easy insertion of the post into the opening 18 of the plate 10 and to permit

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easy mounting of the retainer sleeve over the post in a manner to be presently described. A diametric slot 20 is formed at the upper end of the post and is of sufficient width and depth to receive the end of an insulated wire 22 which may be connected to a battery in the clock (not shown). The wire 22 may be formed with an oxide or other coating as insulation and its free end 24 extends beyond the slot 20 a distance equal approximately to the diameter of the post.

A retainer sleeve 26 is formed of an inner lamination 28 of brass or a similar metal and an outer lamination 30 of silver or other metal which will provide good contact and not be subject to oxidation under normal operating conditions. Bimetallic strips from which such a sleeve may be formed are commercially available. Referring to FIGURE 3, it is seen that the retainer sleeve 26 is broken or split at 32 so as to have a resiliently variable inner diameter.

In forming the assemblage shown in FIGURE 1, the wire 22 is laid through the slot 20 with the free end 24 extending beyond the post a distance equal approximately to the diameter of the post. The sleeve 26 is then forced down over the post and wire. As the lower edge of the sleeve engages the wire on both sides of the post, it strips away the insulating coating on the wire so that intimate electric contact is established between the bared wire and the inside of the sleeve. The bevelling 14 at the upper end of the post 12 facilitates the mounting of the sleeve and it will be appreciated that the act of mounting the sleeve at one and the same time, mechanically locks the wire to the post and establishes electric contact to the sleeve.

While the sleeve is preferably slit as shown at 32 in FIGURE 3 in order to provide resilience, it will be understood that such a split is not necessary and that the sleeve may be provided in an unbroken form of such a diameter as to effectuate the same purpose.

The outside of the sleeve is adapted to be engaged or contacted by a spring contact arm (not shown) which is intermittently brought into contact with the sleeve through the operation of a toothed wheel, as is discussed in detail in the aforementioned co-pending application.

Referring to FIGURE 4, there is shown another embodiment of the invention wherein a plate 34 has mounted in an opening 36 therein, an insulating post 38. The post 38 is bevelled at both ends at 40 and 42 as in the preceding embodiment of the invention. According to this embodiment, the slot of FIGURES 1 through 3 is replaced with a diametric hole or bore 44 extending through the upper portion of the post. An insulated wire 46 has its end passed through this hole 44 so that the free end of the wire 48 extends beyond the post on the other side. A metallic sleeve 50 having an inner lamination 52 of brass or similar metal and an outer lamination 54 of silver or similar metal is forced down over the post and wire to mechanically lock the wire in position and establish electrical contact with the sleeve.

Referring to FIGURE 5 there is shown still another embodiment of the invention wherein an insulating post 56 is mounted in an opening 58 in a plate 60. According to this embodiment of the invention the post 56 is axially bored at 62. That is to say, the post is hollow. The top and bottom edges of the post 56 are bevelled at 64 and 66 as in the previous embodiments of the invention for the same purpose.

A diametric slot is cut through the top of the post and forms slots 68 and 70 in the peripheral walls of the cylindrical post. According to this embodiment of the invention, a wire 72 may be fed into the interior of the post 56 from the bottom thereof as shown at 74 and looped over one wall of the post as shown at 76.

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A retainer sleeve 78 formed of an inner lamination 80 of brass or similar metal and an outer lamination 82 of silver or similar metal is forced down over the top of the post and the wire end 76 to mechanically lock the wire in position and establish electrical contact as in the preceding embodiments of the invention.

While the retainer sleeves discussed in connection with all of the preceding embodiments of the invention have been of a bi-metallic nature throughout their periphery, it is also within the purview of the invention to use a retainer sleeve formed of a single metal but having a more precious metal inlaid in the outer surface of the sleeve at the contact position only. Thus, referring to FIGURE 6 there is shown a sleeve 84 of brass or similar metal having an inlay 86 of silver or a similar good contact metal which will not oxidize under normal operating conditions.

It will be apparent from the foregoing that a contact formed in the manner of the invention is quite simple and may be economically produced. With bi-metallic sleeves of the type shown in FIGURES 1 through 5 of the drawings, it is possible to continuously renew the contact area by simply rotating the sleeve about the post. While round or cylindrical posts and sleeves are the most economical, it will also be appreciated that other shapes could be used where desired.

The invention may be embodied in other specific forms without departing from the spirit or essential characteristics thereof. The present embodiments are therefore to be considered in all respects as illustrative and not restrictive, the scope of the invention being indicated by the appended claim rather than by the foregoing description, and all changes which come within the meaning and range of equivalency of the claim are therefore intended to be embraced therein.

What is claimed and desired to be secured by United States Letters Patent is:

A horological device having a post mounted electrically conductive first contact sleeve engageable by a second contact movable relative to said post comprising: an insulating post having a diametric bore therein; an in-

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ulated wire extending through said bore and along the sides of said post; an electrically conductive first contact sleeve fitting tightly about said post and frictionally gripping the portions of said wire along the sides of said post; said first contact sleeve is of a laminated construction having inner and outer electrically conductive layers of different compositions; the composition of the outer layer being substantially non-oxidizable under normal operating conditions of said device; insulation stripping means on said sleeve engageable with the portions of said wire along the sides of said post for stripping the insulation from the portions of said wire along the sides of said post, whereby an electrical contact will be made between said first contact sleeve and the stripped portions of said wire so that an electrical connection will be made between said second contact and said wire upon the engagement of said second contact with said first contact sleeve.

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