Oct. 9, 1934. H. R. MORROW 1,976,084

LAMP FOR BODY CAVITIES

Filed May 22, 1933

Fig. 1.

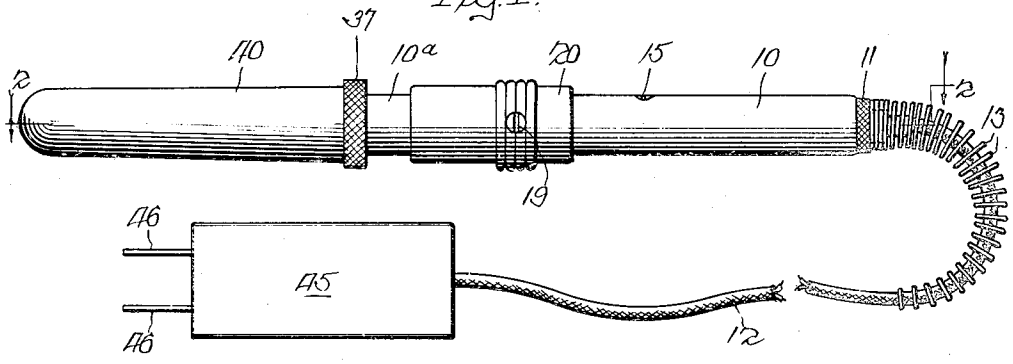


Fig. 2.

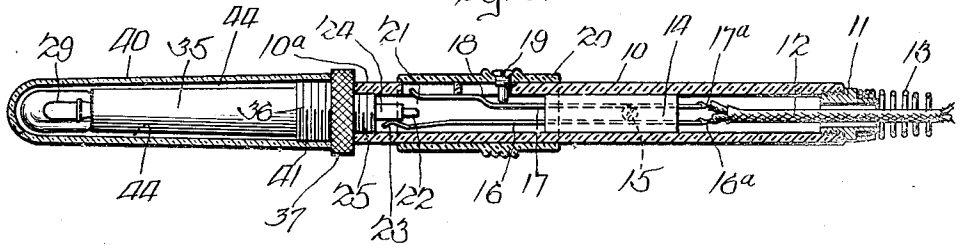
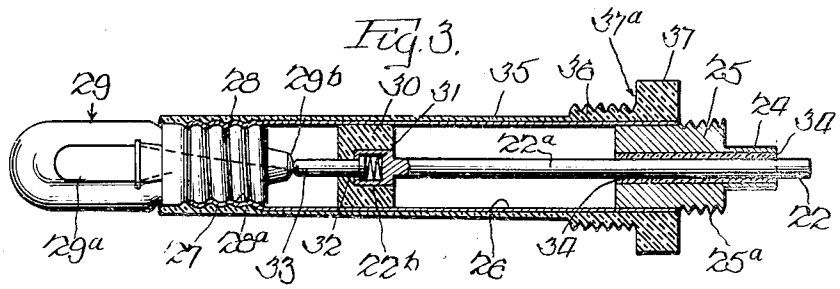


Fig. 3.



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LAMP FOR BODY CAVITIES

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5 Claims. (Cl. 128—23)

These improvements relate to lamps for illuminating body cavities, with special reference to oral work, as in dentistry. Small hand lamps of the general character of the present one and for the purpose indicated have been suggested and are in use.

Objects of the present improvements are to increase the efficiency of such devices through the provision of a relatively large amount of light; to prevent such expense and annoyance as is incident to the glass globes heretofore employed because of their frequent breakage; to lessen the initial and the maintenance expense by providing a device which may use a low-cost bulb instead of the relatively-high-priced special bulb heretofore suggested; to provide a cooler lamp; to render such devices more sanitary and more easily cleaned and sterilized; and, in general, to provide a device of few parts, one which is strong and durable, one which has its exposed members so well insulated that the operator will not be subject to shocks from current, and to overcome various objections and to provide advantages as will further appear hereinafter.

In the accompanying drawing Figure 1 is a side view of the device complete, in a highly satisfactory form, with the flexible current-carrying cable partly broken away;

Fig. 2 is a medial longitudinal vertical sectional view thru the hand-piece portion and thru the globe element of Fig. 1; and

Fig. 3 is an enlarged medial vertical longitudinal sectional view thru the lamp portion.

The hand-piece body 10 is shown as a cylindrical tube, formed of such insulating material as Bakelite, hard rubber or the like. The ordinary hand-piece has a metal tube, which is not only less satisfactory to the touch but has frequently resulted in current discharges through the operator's body due to faulty connections inside the tube. At the rear end of body 10 is a partial closure in the form of a screw-plug 11 through which passes the cable 12 and to which screw-plug is attached the spiral-spring-winding 13 adapted to protect the cable from undue bending where it enters the hand-piece. A support 14 of insulating material (Fig. 2) is held in place by a screw 15, and through this filler or terminal support 14 pass the two flat spring terminals 16 and 17, held tightly in support 14, the outer ends of which terminals are electrically attached to the two cable wires at 16*a* and 17*a* respectively.

Spring terminal 17 has an inclined surface at 18, and the free end of screw 19, passing through and carried by the sliding sleeve 20, contacts that incline 18 and moves the front end of terminal 17 into contact with the pin-like extension 22 of the lamp unit when sleeve 19 is moved to the left in Fig. 2. The front end 23 of contact spring 16 normally rests against the cylindrical stem 24 projecting from the base of the lamp. It will thus be clear that lamp terminals 22 and 24 will be put in circuit with the two current lines in cable 12 when slider 20 is moved to the left, or toward the lamp, in Fig. 2. The operator holds the hand-piece and thereby directs the front end as desired and with his thumb moves slider 20 forward to pass current through the bulb. It is old to make contact by a movable sleeve-type slider, but not according to the present means otherwise.

Turning to Fig. 3, terminal 24 is shown as a cylindrical co-axial extension of a metal screw-plug 25 having threads 25*a* which engage coacting threads in the end 10*a* (Fig. 2) of hand-piece body 10, and the lamp unit is thus held securely yet readily removably upon the hand-piece. Surrounding a portion of plug 25 is a metal tube 26, suitably of brass, as is plug 25, the tube 26 being rigidly and electrically secured to the plug as by soldering. Tube 26 terminates at its free end in a screw-threaded end portion 27 adapted to receive the threaded shell 28*a* of base 28 of bulb 29, one terminal of the filament 29*a* being connected to the brass shell of base 28 while the other terminal of the filament is connected to the contact part 29*b* of the bulb.

The lamp 29 distinguishes from the kind heretofore employed in dental lamps of this type in that it is an ordinary bulb such as is used, for example, in radio sets for illuminating the dial, or in small flash-lights. It is therefore readily obtainable in the open market, and at about one-tenth the cost of the special bulbs heretofore designed for such purposes. It is also larger and sturdier, and yields more light. By constructing the device as a whole to accommodate such a lamp I save cost and expense, avoid the annoyance and loss of time due to the greater difficulty of obtaining a special lamp, substantially avoid breakages and get better illumination. These miniature lamps are of standard construction, have a base about five-sixteenths of an inch in diameter and a transparent glass bulb which may be globular or elongated and is about three-eighths of an inch in diameter.

Fig. 3 shows that terminal 22 extends as a rod 22*a* centrally of plug 25 and tube 26 to a piece of insulation 30 rigidly secured in tube 26. The recessed enlargement 22*b* of rod 22 contains a coiled spring 31 pressing against a head 32 on contact

rod 33, and thus a yielding contact is made at 29*b* with rod 33. The rod 22, 22*a* is insulated as by a hard-rubber tube 34, from plug 25.

Rigidly secured to and outside of tube 26 is a tubular insulating member 35, 36, 37, the part 35 extending beyond the free end of tube 26, the part 36 having outer screw threads, and the part 37 being a collar-like element having a seat at 37*a* against which the end of globe 40 (Fig. 2) rests. This part 35, 36, 37 may be of Bakelite, hard rubber or the like.

The globe 40 (Fig. 2) has screw threads at 41 engaging those of part 36. This globe may therefore be readily removed, exposing bulb 29. Globe 40 is an elongated hollow shell closed at its free end, and it will be observed that with its screw-thread connection at 36 and its tight seat against surface 37*a* the interior of the device is thoroughly protected against the entrance of a liquid. The device is similarly protected at the connection 25, 10*a* (Fig. 2) where the lamp unit is threaded into the hand-piece.

A distinctive feature of globe 40 is that it is made of a material which avoids the bothersome and expensive breakage common with the ordinary frosted-glass globes currently in use, and it also, together with the bulb described, produces a stronger and more satisfactory illumination. Another important advantage is that it is comparatively cool and may be rested against the body tissues without discomfort. Again, screw-threads may be cut directly into this material and thus the necessity of a metallic collar, to which the ordinary glass globe is cemented, is avoided.

As a result of much experimentation with various materials, I found the substance known as Beetleware, which is of the order of Bakelite, but somewhat less fragile, well adapted to the present purpose. It is strong and tough, has the desired translucency in the lighter shades, conducts heat rapidly away from the bulb area to other portions of the globe and radiates it freely. The material may easily be moulded to the desired shape. It may be boiled and otherwise sterilized. In the preceding paragraph I have noted other advantages.

There are various compounds of the general order of Bakelite and Beetleware which would serve. These are both formed from a plastic synthetic resin, either of phenolic condensation product such as "Bakelite", or a urea product such as "Beetleware", sometimes known as "Plaskon" or "Beetle". I use the substance in a creamy gray color. The side and end walls may be as thin as the practical moulding operations will reasonably permit. I preferably make these walls of such substantial thickness as about a sixteenth of an inch. The material is peculiarly appropriate in its translucency, and yields a diffused glow that gives the desired high illumination of the oral cavity while being less trying to the eyes of the operator than is the frosted-glass globe heretofore used, in which kind the globe has a white-bright area immediately at the bulb; while in the present device the light is more subdued at the brightest areas while the entire globe glows with good illuminating effect, the glow tapering in intensity from front to rear. The present globe is somewhat larger in diameter than the ordinary one, providing a greater area of glow and also better radiation of heat.

From Fig. 2 it will be noted that the globe is circumferentially spaced from tubular part 35 at 44, due to the greater diameter of the threaded part 36 (Fig. 3) over that of part 35. This space 44 avoids direct heat conduction to the globe 40 and provides a passageway for light and heat rays from the bulb whereby substantially the entire globe has illuminating properties and the heat is less confined.

The cable 12 leads to a resistance unit 45 (Fig. 1) having terminals 46 adapted to plug into a wall socket or the like.

The device is notably simple and of few parts, is strong, durable, easily maintained sanitary, gives peculiarly satisfactory illumination and overcomes numerous objections incident to devices of the same general class heretofore suggested.

I contemplate as being included in these improvements all such variations, departures or changes from what is thus specifically illustrated and described herein as fall within the scope of the appended claims.

I claim:

1. In a dental hand lamp or the like, the combination of a tubular body of insulation material, a lamp bulb mounted at one end thereof, the body receiving the bulb with the glass of the bulb substantially in contact with the insulation of the body, current conductors passing through the body and completely enclosed by the body, switching means including an insulating movable member upon the exterior of the body for placing the bulb in electrical circuit with the conductors, and an elongated tapering globe enclosing the bulb and telescoping upon the body, said globe being formed of a translucent material and having readily removable engagement with the body, whereby the lamp may be used with or without the globe, and the entire exterior of the lamp with or without the globe thereon is formed of a material substantially non-current conducting.

2. The structure of claim 1 in which the globe and a portion of the body are in circumferential spaced relation to each other for a substantial distance.

3. The structure of claim 1 in which the globe and body have screw-threaded engagement at a point spaced a substantial distance from the lamp bulb, and the globe and the body between said screw-threaded engagement and said lamp bulb are in circumferentially spaced relation to each other and there is an exterior shoulder on the body abutting the globe to provide therewith a substantially hermetic seal therebetween.

4. A dental lamp or the like embodying a tubular insulating body and having a lamp bulb mounted at one end thereof, in combination with an elongated globe of a length several times greater than its greatest diameter enclosing the bulb and having readily removable engagement with the body, said globe being imperforate except where engaged with the body, and the globe and body being provided with interengaging means rendering the globe impervious to liquids, said globe being formed of a thin, synthetic resin material whereby the globe is translucent but not transparent and is substantially unbreakable in normal use.

5. A hand lamp of the character described comprising a metal base having a screw-threaded projection adapted to enter the end of a handpiece unit for ready removability therefrom, an insulating hand piece unit receiving said base, a substantially cylindrical metallic terminal element extending axially from said threaded pro-

jection and being adapted also to enter such hand-piece unit, a metallic rod insulated from the base and extending axially therethrough and axially beyond said terminal, the free end of said rod constituting another terminal, an elongated metallic tubular element rigidly secured to the base and in electrical contact therewith and extending from the base in the direction opposite to that of said terminals, the free end portion of said tubular element being adapted to receive the metallic base of a filament bulb lamp and to make electrical contact with the filament thereof, a filament bulb lamp held by said tubular element, means including said rod extending longitudinally within said tubular element adapted to make contact with said bulb lamp to complete a circuit through the filament thereof, tubular insulating means surrounding said base in fixed relation thereto and including an externally-threaded portion directed away from said terminals, said tubular insulating means extending beyond the free end of the metallic tubular element, and an elongated globe of a translucent substantially unbreakable material having an open end in screw-threaded and readily-removable relation to said last-mentioned threaded portion and encompassing said bulb lamp.

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