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LIGHT ATTACHMENT FOR DENTAL DRILLS

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Fig. 1

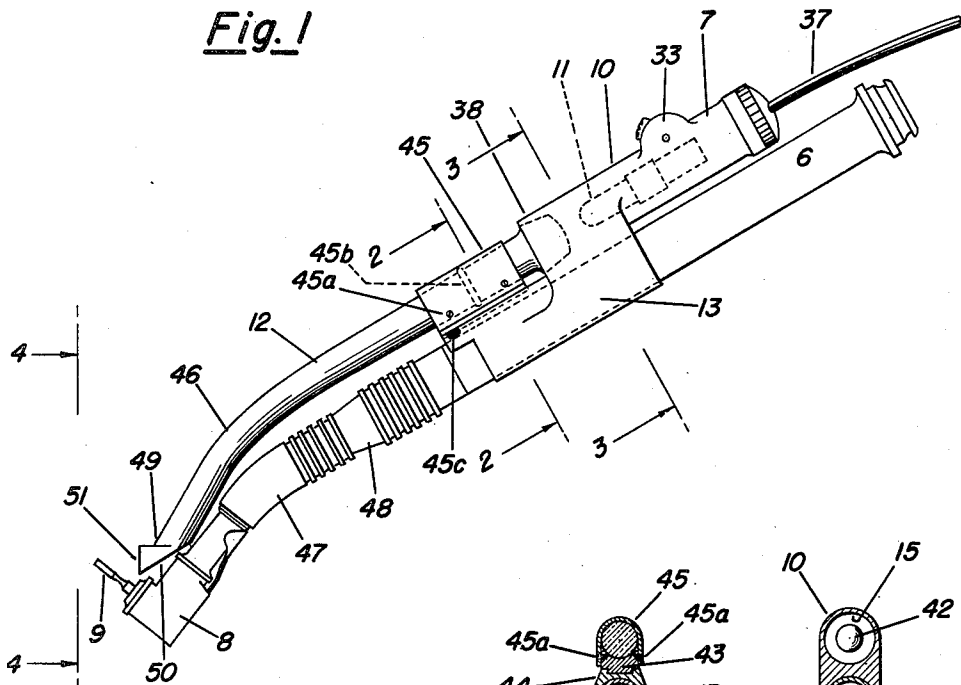


Fig. 2

Fig. 3

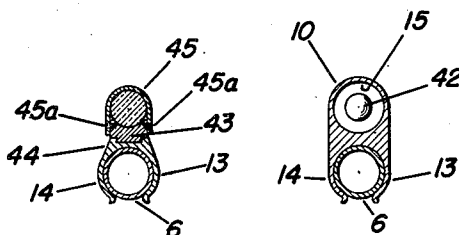


Fig. 4

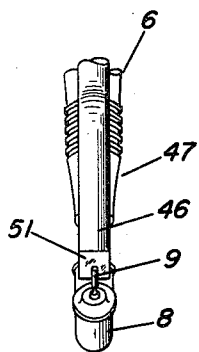
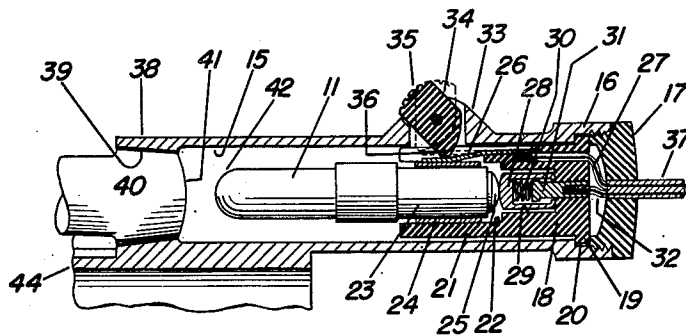


Fig. 5



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## LIGHT ATTACHMENT FOR DENTAL DRILLS

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3 Claims. (Cl. 240—2.18)

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Our invention relates to dental handpiece lights, and its objects are to provide better illumination of the drill and the area of dental operation; to guard at all times the electric lamp, or source of light, and connections therefrom against breakage or accidental dislodgement thereof within the mouth and consequent injury to the delicate membranes of the same; to furnish a more convenient handpiece drill illuminating attachment for more rapid and more efficient dental operation; to render the working parts of the device more readily accessible for inspection, adjustment, replacement or repair; to combine in one greatly simplified unit, novel adaptations, modifications and improvements of the working parts; and in general, to simplify and to cause to be more efficient and render more economical the constructions and operation of the several parts. These and other objects will appear from the drawing and as hereinafter more fully described and set forth.

Our invention primarily consists of an elongated lighting attachment unit extending parallel to and removably secured to a conventional dental handpiece for providing a beam of light within the mouth directed to the area of dental operation; the source of such light being an electric lamp encased in a metal cylinder at the end of the unit adjacent to the pulley end of the handpiece and the light from such source being conducted by a Lucite rod to the drill or burr end of said handpiece; the end of said rod being shaped, bevelled and silvered, or otherwise treated, so as to reflect the beam of light upon the drill and area of operation.

Our invention further consists in the improvements, novel features of construction, combinations and arrangements of parts, illustrated in the drawing and more particularly hereinafter described and claimed.

Attention is hereby directed to the drawing, illustrating a preferred form of our invention, in which similar numerals of designation refer to similar parts throughout the several views, and in which,

Figure 1 is a side elevation of our improved dental handpiece light, showing the lighting attachment secured to the handpiece and in operative position;

Fig. 2 is a lateral section on line 2—2 of Fig. 1, looking in the direction of the arrows;

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Fig. 3 is a lateral section on line 3—3 of Fig. 1, looking in the direction of the arrows;

Fig. 4 is an end view of the combined device shown in Fig. 1, looking in the direction of the arrows, and

Fig. 5 is an enlarged horizontal section through the lamp housing cylinder and switch, showing the electric lamp and connections, adjacent end of the light conducting Lucite rod and adjacent parts.

Referring to the drawing, our improved device comprises the conventional dental handpiece 6 and attached thereto and cooperating therewith, the new lighting attachment 7; the handpiece 6 carrying thereon the usual drillhead 8 in which is removably seated the burr or drill 9, connected to rotate in the manner well understood in the art; and the attachment 7 being constructed of the metallic cylindrical casing 10, within which the conventional electric lamp 11 and current connections are housed, and to which the round solid Lucite rod 12 is secured. For the purpose of detachably securing the attachment 7 to the handpiece 6, we preferably extend the sides of said attachment downwardly to form the spring clamps or clips 13 and 14, the inner walls of which are shaped to enclose and make close contact with the walls of the middle portion of the body of said handpiece, and resiliently but firmly to engage the same; such engagement being sufficient to guard against dislodgement of the parts so joined under the conditions of ordinary use.

In the inner lamp housing of the attachment 7 is located the chamber 15, having its upper end expanded to form the hub socket 16, closed by the cap 17 in threaded engagement therewith; the inner wall of the said socket, having the annular shoulder 20, seating the rim or bead 19 of the plug 18, the body 21 of which extends inwardly for a substantial distance into the chamber 15; both the cap 17 and the plug 18 being of electric insulating material. As shown, the plug 18 is formed with a vestibule 22, within which is seated the metal contact sleeve 24, in which is inserted the lamp base 23, having the usual contact 25; the sleeve 24 being positioned so as normally to be spaced in parallel relation with the electric conductor finger 26, mounted upon the outer wall of the plug 18 and connected with the lead wire 27; and the base 25 being positioned normally to be in contact with the electric conducting cup shaped

member 28, mounted to slide longitudinally within the bore 29, and to be constantly kept in such contact by the expansion spring 30, engaging with the inner end of the electric conductor bar 31, firmly secured to the head of said plug 18, and connected to the lead wire 32.

Pivotally mounted within a clevis expansion outlet 33 of the wall of the casing 10, and extending outwardly therethrough is the snap switch 34, the inner end 36 of which is in contact with the finger 26, and the outer end 35 of which is scored for convenient manipulation by the thumb of the operator so as to bring the finger 26 into or out of engagement with the sleeve 24 to close or open the electric circuit, and thereby to turn on or off the lamp 11; both of the lead wires 27 and 32 being encased in the electric cable 37, extending through an opening in the cap 17, and supplying current from a suitable source of electricity.

Preferably the end 38 of the cylindrical casing 10, which is adjacent to the Lucite rod 40, is constructed with the outwardly flaring mouth or outlet 39, the wall of which tapers inwardly as shown, and within which is wedged the truncated conical upper end 40 of the Lucite rod 12, whose inner face 41 is a lens surface in form with its apex located exactly opposite to the apex of the spherically shaped end 42 of the lamp 11, with a small gap between. In order to anchor the main portion of the rod 12 to the body of the attachment 10, we prefer to employ the cradle 43, removably dovetailed to the longitudinal extension 44 of said attachment; in which cradle, shaped to receive said portion of the rod 12, the same is firmly seated by the rounded cover 45, secured by screws 45a to the opposite vertical walls of said cradle 43. The Lucite rod 12 is further securely anchored against slipping by the raised annular bead 45b thereon about its circumference, said bead being shaped to fit snugly into corresponding grooves formed in the cradle 43 and cover 45. Also the cradle 43, when in operating position, is held in place in the extension 44 of the casing 10, by means of spring clip 45c, which snaps into a locking position when the cradle is in its normal location, and which may be pressed by the thumb of the operator to unlock the same upon removal of the parts for cleaning or sterilization.

As shown in Fig. 1 of the drawing, the lower end portion 46 of the round solid Lucite rod 12 is curved to conform to the usual bend 47 of the lower end portion 48 of the handpiece 6, carrying the drillhead 8, upon which is rotatably mounted in the manner well understood in the art the drill or burr 9, conventionally operated by the usual rotatable shaft with gear connections to a suitable source of power. Also the extreme end 49 of portion 46 is located so as to approach quite closely to the said head 8 and the drill 9; the portion 46 near and at the said end 49 being constructed with its lower wall flattened to form the bevelled planar surface 50, which is silvered and positioned at the angle required to reflect the light beam coming from the lamp 11 upon the area of operation of the drill 9; and the face of said end 49 being flattened to form the planar surface 51 located at right angles to the beam of light, as reflected from the silvered surface 50, so as not to divert the light rays from their reflected direction.

By the word "lucite" as used in the claims, we desire to be understood as including any equivalent material of like properties or which might

be used in a similar manner for the transfer of a beam of light from the electric lamp 11 to the area of illumination as hereinbefore set forth. Also by the word "silvered" as applied to the bevelled surface at the end of the Lucite rod adjacent to the drill 9, we wish to be understood as meaning any treatment of such surface which will tend to reflect the beam of light in the manner hereinbefore described.

Our invention may be embodied in such other specified forms without departing from the spirit or essential characteristics thereof. The present embodiment, as above set forth is therefore to be considered in all respects as illustrative and not restrictive, the scope of our invention being indicated by the appended claims rather than by the foregoing description, and all changes which may come within the meaning and range of equivalency of the claims are therefore intended to be embraced therein.

What we claim and desire to secure by Letters Patent is:

1. In a device of the class described, a lighting attachment for a dental handpiece, comprising a casing and an electric lamp housed therein, a Lucite rod with reflective silvered bevelled end, said rod serving to conduct a beam of light from said lamp to the end of said rod; both said casing and said rod being constructed generally to conform with the shape of said handpiece, and the sides of said casing being extended downwardly to form clamps shaped to engage with and removably to be secured to the body of said handpiece with the silvered bevelled end of said rod located adjacent to the drill of the handpiece so as to reflect said beam upon said drill and area of operation thereof; and anchoring means for said rod consisting of a removable cradle firmly affixed to the body of said attachment and to the shank of said rod.

2. In a device of the class described, a lighting attachment for a dental handpiece, comprising a metallic cylindrical casing and an electric lamp housed therein, a round solid Lucite rod with reflective silvered bevelled end, said rod serving to conduct a beam of light from said lamp to the end of said rod; both said casing and said rod being constructed generally to conform with the shape of said handpiece, and the sides of said casing being extended downwardly to form spring clamps shaped resiliently to engage with and removably to be secured to the body of said handpiece with the silvered bevelled end of said rod located adjacent to the drill of the handpiece so as to reflect said beam upon said drill and area of operation thereof; and anchoring means for said rod consisting of a removable cradle firmly affixed to the body of said attachment and to the shank of said rod.

3. In a device of the class described, a lighting attachment for a dental handpiece, comprising a metallic cylindrical casing with an outwardly flaring outlet formed therein, an electric lamp with a spherical end housed within said casing; a round solid Lucite rod one end of which is that of a truncated cone conforming to said flaring outlet and wedged therein, and having an inner face forming a convex lens whose apex is located opposite to the apex of the spherical end of said lamp; and the other end of which rod has a silvered bevelled surface reflecting light, said rod serving to conduct a beam of light from said lamp to the end of said rod; said casing together with said rod conforming generally to the shape of said handpiece; the sides of said casing being

extended downwardly to form a pair of mutually opposed spring clamps shaped resiliently to engage with, and removably to be secured to, the body of said handpiece, with the silvered bevelled surface of said rod located adjacent to the drill 5 of said handpiece so as to reflect said beam upon said drill and area of operation thereof; and anchoring means for said rod consisting of a removable cradle firmly affixed to the body of said attachment and to the shank of said rod. 10

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