

[54] **DENTAL HANDPIECES**

3,032,878 5/1962 White 32/27

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[22] Filed: **Dec. 23, 1971**

[21] Appl. No.: **211,458**

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[52] **U.S. Cl.** **32/27**
[51] **Int. Cl.** **A61c 1/10**
[58] **Field of Search** **32/26, 27**

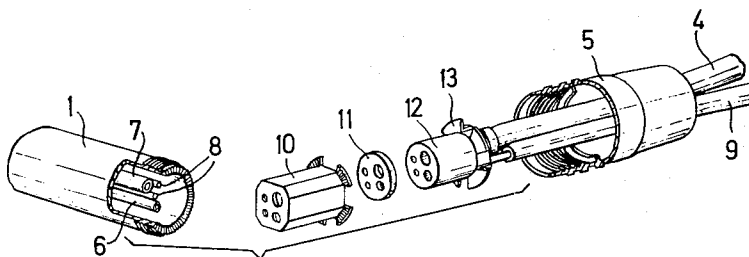
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[57] **ABSTRACT**

A handpiece for a dental drill comprising a fibre optic light conductor passing along inside the handpiece and emerging towards the operative end thereof the said conductor terminating adjacent the operative end of the handpiece so as to illuminate a drill tip when such is fitted in the handpiece.

3 Claims, 3 Drawing Figures



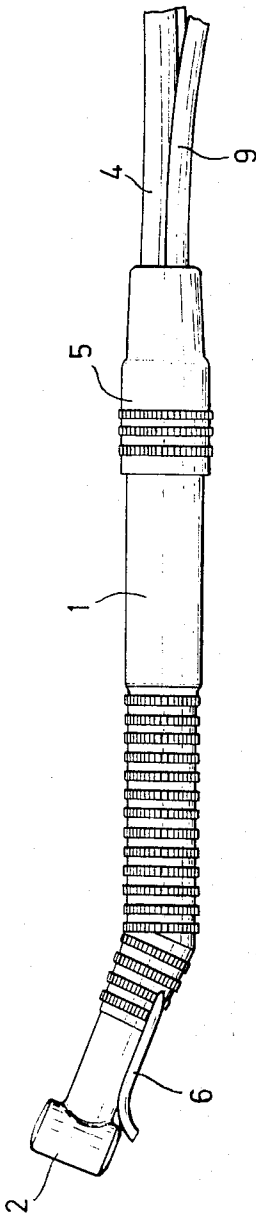


FIG. 1.

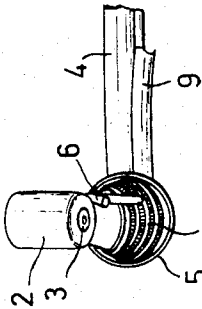


FIG. 2.

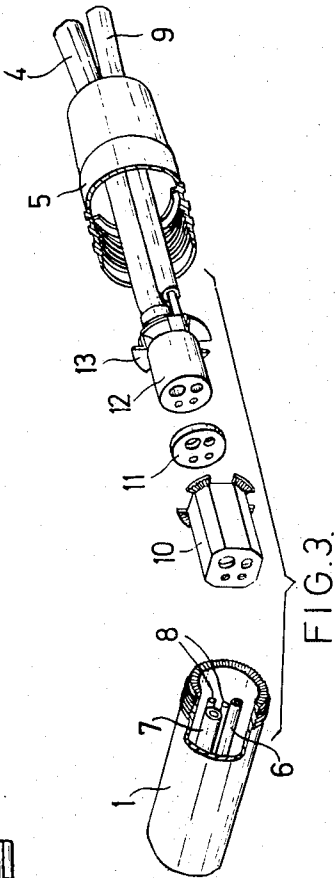


FIG. 3.

DENTAL HANDPIECES

This invention relates to handpieces for dental drills, and more particularly to an improved arrangement for providing illumination at or near the drill tip.

Proposals have been made for providing clip-on illumination devices for dental drill handpieces, using fibre optic techniques, but these bring manipulative difficulty in using the drill, and are therefore not wholly satisfactory.

The present invention consists in a handpiece for a dental drill comprising a fibre optic light conductor passing along inside the handpiece and emerging towards the operative end thereof the said conductor terminating adjacent the operative end of the handpiece so as to illuminate a drill tip when such is fitted in the handpiece.

The conductor may be continued, either directly or through a connection, by a flexible conductor suitable for attachment, e.g., by securing bands over part of its length, to air and water lines for the handpiece.

The free end of the flexible conductor may be illuminated by a suitable light source, e.g., a 150 W bulb focussed onto the free end.

If a connection is provided in the light path, then the handpiece may be separated from its service lines, i.e., air, water and light, for maintenance, sterilization or other purposes.

The invention is applicable to dental handpieces of all types, including both straight and contra-angle handpieces, and in particular, it is independent of the form of power used for driving the drill.

The invention will be further described with reference to the accompanying drawings, in which:

FIG. 1 is a side elevation of a dental handpiece incorporating a light conductor according to a preferred form of the invention;

FIG. 2 is an end elevation of the handpiece of FIG. 1; and

FIG. 3 is an exploded view of a connection between the handpiece and a flexible light conductor and air and water lines.

The drawings illustrate the application of the invention to a dental handpiece of the turbine driven type, and the handpiece is illustrated at 1 and is shown as incorporating a head 2 in which is mounted a rotary drill holder 3 (see FIG. 2). The handpiece is supplied with air and water through a composite flexible line 4 which is attached to the handpiece by a connection to be more described below and which incorporates a mould sleeve 5.

A fibre optic light conductor 6 passes through the body of the handpiece 1 and emerges therefrom so as to terminate close to the tip of a conventional drill when such is held in the tool holder 3. It is to be noted from FIG. 2 that the end of the conductor 6 emerges somewhat off centre of the handpiece and is bent near its end so as to direct the light towards the position of the drill tip. The conductor 6 is itself substantially rigid and mounted so as to maintain its location within the body of the handpiece 1 in relationship with a water

conduit 7 and a pair of air conduits 8. Light is supplied to the conductor 6 by way of a flexible light conductor 9, the remote end of which (not shown) is located adjacent a suitable light source. For ease of handling, the conductor 9, may be secured to the assembly 4, at least over part of their mutual length.

In order to obtain an adequate connection between the assembly 4 and the conduits 7 and 8 and between the conductors 6 and 9, the form of connection illustrated in FIG. 3 is adopted. The free ends of the conductor 6 and the conduits 7 and 8, which are within the body of the handpiece 1, are received through suitable apertures in the base of a socket 10 seated in the body, and a neoprene or like gasket 11 is also sealingly received over the free ends. The passages in the assembly 4, and the conductor from the flexible conductor 9, are suitably terminated in a plug 12 which fits within the socket 10 to provide a proper mating connection between the parts. After assembly, the sleeve 5 is screwed over the end of the body 1 and bears on abutments 13 on the socket 12 to compress the gasket and maintain a water air and light tight joint.

Various modifications may be made within the scope of the invention.

I claim:

1. In a handpiece for a dental drill having a tubular wall and an operative end adapted to receive a drill tip, a plurality of internal service lines extending through said handpiece, that improvement comprising a fibre optic light conductor passing along inside the tubular wall of the handpiece and emerging through the wall thereof adjacent said operative end, the said conductor terminating adjacent the operative end of the handpiece, a second flexible fibre optic light conductor arranged as a continuation of the said first mentioned light conductor at the end remote from said operative end for illuminating a drill tip when such is fitted in the operative end of the handpiece, a composite connection for connecting said internal service lines to external service lines and said second fibre optic conductor to the first fibre optic conductor including a socket inserted in the end of the handpiece remote from the operative end, said socket having a base through which project ends of the internal service lines and the said first mentioned fibre optic light conductor from within the handpiece, and a plug member received in the socket and having recesses for receiving the said external service lines and flexible light conductor whereby the external lines and conductor and internal lines and conductor may be connected together.

2. A handpiece as claimed in claim 1 comprising a compressible gasket between the end of the plug member and the base of the socket.

3. A handpiece as claimed in claim 1 in which the light conductor emerges at a position through the wall of and offset from the center axis of the handpiece adjacent the operative end thereof, and is angled to direct light towards the position of the drill tip received on the operative end.

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