June 11, 1963 J. F. WARRINER 3,092,910

END INSTRUMENT FOR DENTAL EVACUATOR

Filed March 2, 1961

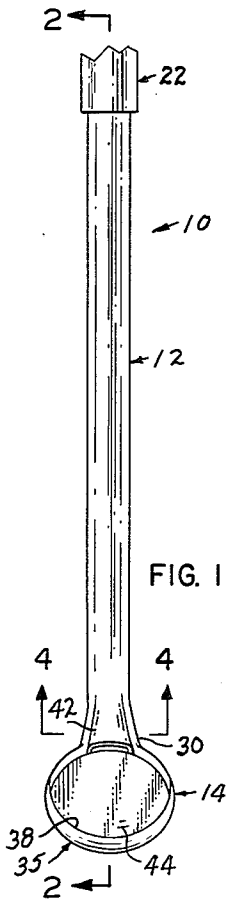


FIG. 1

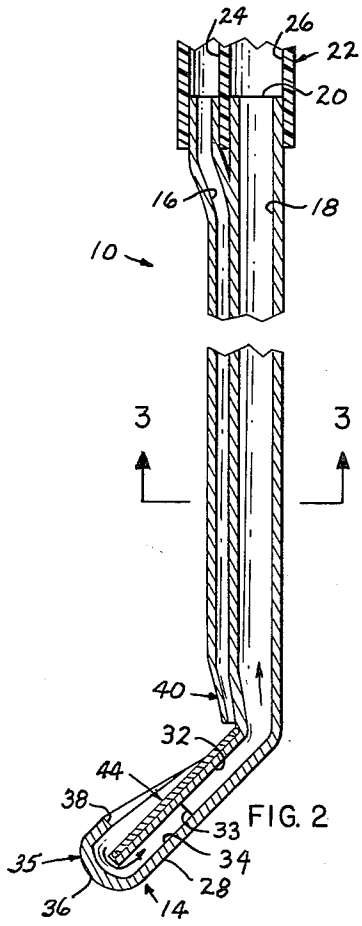


FIG. 2

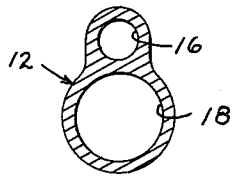


FIG. 3

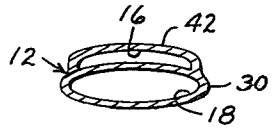


FIG. 4

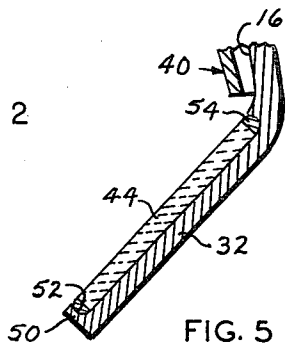


FIG. 5

JOE F. WARRINER
INVENTOR.

BY
Robert K. Rhea
AGENT

United States Patent Office 3,092,910 Patented June 11, 1963

3,092,910

END INSTRUMENT FOR DENTAL EVACUATOR

Joe F. Warriner, 1903 Dorchester Drive,
Oklahoma City 20, Okla.

Filed Mar. 2, 1961, Ser. No. 92,808
5 Claims. (Cl. 32—69)

The present invention relates to dental instruments and more particularly to a dental mirror.

Dental drills presently used, which rotate the drill at a relatively high speed or revolutions per minute, require a constant flow of coolant fluid applied to the point of contact. When using a high speed drill of this type in drilling an upper tooth of the patient the operator finds it difficult to maintain a clear reflecting surface on the dental mirror being used by which progress of the drilling is observed. The difficulty in maintaining a clear surface on the dental mirror is caused by the coolant fluid fogging the mirror and by cuttings or debris falling on the surface of the mirror. One means of eliminating the fogging of the mirror has been the use of fluid into which the mirror is dipped, but this does not eliminate the problem of cuttings falling thereon and obstructing the reflected view.

It is, therefore, the principal object of the instant invention to provide a dental mirror which will maintain a clean reflecting surface at all times while being used.

Another object is to provide a device of this class which will eliminate the necessity of stopping the drilling action to clean the mirror surface.

Another object is to provide a device of this class which may be easily used in a patient's mouth in holding the patient's cheek outwardly of the tooth being drilled without hindering the surface cleaning action of the device.

Another object is to provide a device having a replaceable reflecting surface wherein only this reflecting surface need be replaced when the latter becomes damaged as by scratching by abrasive material contacting its surface.

Still another object is to provide a dental mirror device wherein a film of fluid acts to remove foreign particles falling on the reflecting surface.

Yet another object is to provide a device of this class which eliminates fogging of the mirror surface.

The present invention accomplishes these and other objects by providing a handle portion having fluid inlet and outlet passageways therethrough adapted to be connected with a source of fluid supply and a vacuum pump respectively. A hollow substantially circular head end member is angularly connected to the end of the handle opposite its connection with the fluid and vacuum supply in communication with the outlet passageway. A mirror is connected to one surface of the head member adjacent the fluid supply passageway.

Other objects will be apparent from the following description when taken in conjunction with the accompanying single sheet of drawings, wherein:

FIGURE 1 is an elevational view of the device;

FIGURE 2 is a longitudinal cross-sectional view, to an enlarged scale, taken substantially along the line 2—2 of FIG. 1;

FIGURES 3 and 4 are vertical cross-sectional views, to an enlarged scale, taken substantially along the lines 3—3 and 4—4, respectively, of FIG. 1; and,

FIGURE 5 is a fragmentary cross-sectional view, to an enlarged scale, illustrating the manner of removably connecting a mirror to its supporting surface.

Like characters of reference designate like parts in those figures of the drawings in which they occur.

In the drawings:

The reference numeral 10 indicates the device, as a whole, comprising an elongated handle portion 12 and a

head end portion 14. The handle 12 is formed to provide parallel longitudinally extending fluid inlet and outlet passageways 16 and 18, respectively. The fluid passageway 16 is preferably substantially smaller diametrically than the outlet passageway 18. The handle member 12 is preferably unitary in structure, as shown in FIG. 3, or separate tubular members, not shown, may be suitably joined together if desired. One end portion 20 of the handle member is adapted to be connected to a tubular member 22 similarly provided with fluid inlet and outlet passageways 24 and 26 in respective communication with the inlet and outlet passageways 16 and 18. The tubular member 22 may be a single tube having the respective fluid passageways, 24 and 26, or, formed of separate tubular members if desired. The fluid inlet passageway 24 is connected with a source of fluid, such as water under pressure, while the fluid outlet passageway is connected with a suitable suction or pressure reducing pump, preferably of the continuous air flow type, not shown.

The head or end member 14 is preferably connected in angular relation with respect to the longitudinal axis of the handle. The end portion of the handle 12, at its juncture with its end member 14, is preferably flattened transversely, as at 30. The end member is preferably disk-like in general configuration having a substantially circular lower wall or bottom portion 28 integrally connected to the wall of the handle 12. The other or upper wall 32 of the end member is integrally connected with the wall of the handle 12 and is positioned in spaced parallel relation with respect to the inner surface of the wall 28. The lower wall 28 and upper support wall 32 are integrally joined around a substantially semi-circular portion of their peripheries, forwardly of their juncture with the handle, to a point indicated by the line 33 (FIG. 2) thus forming a circular fluid outlet passageway 34 communicating with the fluid outlet passageway 18. The lower and upper walls, 28 and 32, respectively, are not connected together forwardly of the line 33. A peripheral portion of the lower wall 28 is extended beyond the upper wall 32 to form a lip portion 35 which is arcuately curved upwardly and rearwardly, as at 36, in spaced relation with a substantially semi-circular forward portion or arc of the upper or support wall 32. The free edge 38 of the lip portion 35 is arcuately curved on a small radius concentric with respect to the support wall 32 so that the edge 38 overhangs an arc of the forward end portion of the support 32. The free or forward end portion 40, of the handle forming the fluid inlet passageway, terminates adjacent the support 32 at the juncture of the latter with the handle and is transversely flattened or widened, as at 42, for the purposes which will be readily apparent.

A substantially circular mirror 44, or, other suitable disk-like member having a desired reflecting surface, is flatly secured to the outer surface of the end member support wall 32. The mirror 44 is substantially equal diametrically with respect to the support wall 32, or, if desired, may be formed of slightly reduced diameter wherein an upstanding flange 50, formed on the periphery of the support wall 32, may be provided with a suitable recess 52 for removably snapping the peripheral edge of the mirror in place (FIG. 5). In this instance the periphery of the mirror is bonded to a metallic ring 54 for protecting the edge of the mirror.

Operation

In operation one end of the handle 12 is connected with a suitable source of fluid and a continuous air flow or suction pump, neither of which are shown, by the tubular member 22 as disclosed hereinabove.

The fluid supply flows through the inlet passageway **16** and is spread by the transversely widened portion **42** to eject a thin film or layer of fluid across the outer surface of the mirror **44**. The continuous flow of air, drawn through the passageways **34**, **18** and **26**, by the suction pump draws the fluid across the arc of the forward portion of the mirror and downwardly into the circular passageway **34**, in the direction shown by the arrows and outward through the outlet passageway **18** in a continuous flow or stream. The film of fluid, not shown, continuously flowing across the reflecting surface of the mirror **44** thus removes any tooth cuttings or other foreign particles falling on the surface of the mirror. The operator, by holding the handle **12** may place the end member **14** at any desired position within the patient's mouth. The end member **14** may be used to hold the lip or cheek of the patient in an out of the way position, by means of the lip portion **35**, without affecting or hindering the flow of fluid across the mirror.

Obviously the invention is susceptible to some change or alteration without defeating its practicability, and I therefore do not wish to be confined to the preferred embodiment shown in the drawings and described herein, further than I am limited by the scope of the appended claims.

I claim:

1. An end instrument for a dental evacuator, comprising: a handle having fluid inlet and outlet passageways; an end member forming a continuation of said handle and arranged at an angle with respect to the axis of said handle, said end member having an upturned lip portion adjacent its forward end, said end member having an upper portion forming a support and defining a fluid receiving compartment communicating with the fluid outlet in said handle, said support having a substantially semi-circular free forward edge portion terminating in spaced relation with respect to said upturned lip portion; and an image reflecting member secured to the outer surface of said support.

2. A device of the class described, comprising: an elongated handle having parallel longitudinally extending fluid inlet and outlet passageways; a substantially circular end member forming a continuation of said handle, said end member having an overhanging lip portion adjacent its forward end, said end member having an upper portion forming a support and defining a fluid receiving compartment communicating with the fluid outlet in said handle, said support having a substantially semicircular free forward edge portion terminating in spaced relation with respect to said upturned lip portion; and an image reflecting member secured to the outer surface of said support.

3. An end instrument for a dental evacuator, comprising: an elongated handle having parallel longitudinally extending fluid inlet and outlet passageways; a substantially circular end member having opposing walls forming a continuation of said handle at one end thereof in communication with the outlet passageway, said end member being arranged in angular relation with respect to the longitudinal axis of said handle, one wall of said end member forming a support, said support having a substantially semicircular free forward edge portion, the other wall of said end member being extended beyond said support and arcuately curved to extend rearwardly of the arc of its free end portion and overhang an arc of the forward end portion of said support; and an image reflecting member secured to the outer surface of said support.

4. An end instrument for a dental evacuator, comprising: an elongated handle having parallel longitudinally extending fluid inlet and outlet passageways, said handle adapted to be connected, at one end, to a suction pump and a source of fluid under pressure; an end member connected to the other end of said handle in angular relation with respect to the longitudinal axis of the handle, said end member characterized by substantially circular spaced-apart parallel walls forming a circular fluid outlet passageway in communication with the fluid outlet passageway in said handle, one wall of said end member forming a support, said support having a substantially semi-circular free forward edge portion, a substantially semi-circular portion of the other wall of said member extending beyond said support to form a lip portion arcuately curved upwardly and rearwardly in spaced relation with respect to the arc of the forward edge portion of said support; and an image reflecting member secured to the outwardly disposed surface of said support.

5. An end instrument for a dental evacuator, comprising: an elongated handle having parallel longitudinally extending fluid inlet and outlet passageways, said handle adapted to be connected, at one end, to a suction pump and a source of fluid under pressure; an end member connected to the other end of said handle in angular relation with respect to the longitudinal axis of the handle, said end member characterized by substantially circular spaced-apart parallel walls integrally connected throughout a substantially semi-circular portion of their peripheries with the wall of said handle forming the fluid outlet passageway forming a circular fluid outlet passageway in communication with the fluid outlet passageway in said handle, one wall of said end member forming a support, said support having a substantially semi-circular free forward edge portion, a substantially semi-circular portion of the other wall of said member extending beyond said support to form a lip portion arcuately curved upwardly and rearwardly in spaced relation with respect to the arc of the forward edge portion of said support; and an image reflecting member secured to the outwardly disposed surface of said support.

References Cited in the file of this patent

UNITED STATES PATENTS

3,014,279 Fosdal ---------- Dec. 21, 1961