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DENTAL IMPLEMENT

Thomas D. Hopkins, Montgomery, Ala.

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This invention relates to dental implements and has relation more particularly to mouth mirrors, and it is an object of the invention to provide an implement of this kind with means whereby the exposed face of the mirror may be maintained dry and free of dirt.

Another object of the invention is to provide a device of this kind having means whereby a blast of air may be conveniently employed to dry out a tooth cavity and to blow away drill dust, etc., and thus eliminate the services of an assistant or double loss of time to a dentist who does not employ an assistant.

An additional object of the invention is to provide a device of this kind with means under automatic control whereby a current or blast of air may be directed as desired over the exposed face of the mirror or for drying out a tooth cavity or the like.

The invention consists in the details of construction and in the combination and arrangement of the several parts of my improved dental implement whereby certain important advantages are attained and the device rendered simpler, less expensive and otherwise more convenient and advantageous for use, as will be hereinafter more fully set forth.

The novel features of my invention will hereinafter be definitely claimed.

In order that my invention may be the better understood, I will now proceed to describe the same with reference to the accompanying drawing, wherein:—

Figure 1 is a view in perspective illustrating a dental implement constructed in accordance with an embodiment of my invention;

Figure 2 is an enlarged fragmentary sectional view taken lengthwise through the mirror end of the implement;

Figure 3 is a sectional view taken substantially on the line 3—3 of Figure 1;

Figure 4 is a detailed sectional view taken substantially on the line 4—4 of Figure 1;

Figure 5 is a fragmentary view partly in section and partly in elevation illustrating the coupling between the outer end of the handle member and the flexible hose.

As herein disclosed, my improved implement comprises an elongated handle member H of desired dimensions which comprises two substantially duplicate sections 1 and 2 adapted to be superimposed one upon the other and of such cross sectional configuration to provide, when assembled, a handle member tubular from substantially one end to the other. The outer end

portion of the section 1 of the handle member is provided thereacross with a tube 3, one end of which opening through the wall of the section 1. Slidably mounted in this member 3 is a slide 4 constantly urged in one direction by a coil spring 5 placed within the member 3 and interposed between the slide 4 and the closed end of the member 3. The extent of movement of the slide 4 in either direction is limited by a pin 6 carried by and intersecting the member 3, said pin 6 being also disposed through a slot 7 provided in the slide 4.

The outer end of the slide 4 is provided with a head 3 affording means whereby a digit of the hand may be effectively engaged with the slide 4 to move the same in a direction against the tension of the spring 5.

The outer end portion of the section 2 of the handle member H is intersected by a plate 9 provided with an outstanding hook arm 10 adapted to extend within the tubular member 3 through a suitably positioned opening 11. The slide 4 under the influence of the spring 5 is adapted to interlock with the hook arm 10 and thereby effectively maintain the outer end portions of the sections 1 and 2 of the handle member H in assembled relation, yet readily permitting the separation of such sections when desired.

The plate 9 is also provided with the spaced lugs 12 adjacent to the opposite ends of the plate and which lugs have contact with the member 3 thereby providing a steadying means.

The extremity of the section 1 remote from the tubular member 3 carries an annular member 14 of desired dimensions and which is angularly disposed with respect to the longitudinal axis of the handle member H. This annular member 14 coacts and snugly engages a back plate 15 carried by the corresponding extremity of the second section 2 of the handle member H. The outer marginal portion of the back plate 15 is provided with an arcuate or curved hook 16 which engages with an inwardly disposed head 17 carried by the member 14 so that when the sections 1 and 2 are swung into overlying relation with the hook 16 as the fulcrum, said sections will be properly assembled and the annular member 14 properly placed with respect to the back plate 15.

The annular member 14 provides a mounting for a concave mirror 18, preferably metal, and which mirror is maintained in applied position within the annular member 14 in a well known manner by the split ring 19.

The portion of the section 1 of the handle member H immediately adjacent to the annular

member 14 is provided with a longitudinally disposed bore 20, the outer portion of which being continued by the discharge vent 21 delivering upon the outer face of the applied mirror 18 and a port 22 terminating inwardly of said mirror. The port 22 is continued by a pipe line 23 which extends across the annular member 14 and extends through the wall of said member 14 at a point substantially diametrically opposed to the bore 20, said outer end portion 24 of this pipe 23 constituting a vent for a purpose to be hereinafter more particularly referred to.

Disposed axially of the handle member H is a pipe line 25, one end portion of which being threaded or otherwise engaged within the inner portion of the bore 20 while the opposite or outer end portion of this pipe 25 is effectively held between the member 3 and the plate 9. While Figure 2 of the drawing indicates the pipe 25 as being threaded within the bore 20 yet such pipe, if desired, may be soldered or otherwise held within such bore. The outer end portion of the pipe 25 has coupled thereto a flexible hose 26 leading from a suitable source of air under pressure.

Interposed within the pipe 25 at a desired point therealong is a valve casing 27 in which is mounted a sliding valve 28 having an opening 29 to register with the bore of the pipe 25 when said valve 28 is moved in one direction.

The opening 29 of the valve 28, however, is normally out of register with the bore of the pipe 25 and maintained out of such registry by the coil spring 30 placed within the casing 27 and interposed between an end of the valve 28 and a cap 31 closing an end of the casing. As particularly illustrated in Figure 4, the casing 27 is carried by the section 1 of the handle member H and is in threaded engagement with an inwardly disposed annular flange 32 carried by such section.

Freely disposed through the wall of the section 1 is a shank 33, the outer end portion of which carrying a button 34 while the inner end of said shank has contact with the valve 28 so that by pushing the shank 33 inwardly the opening 29 of the valve 28 will be brought into register with the bore of the pipe 25. Upon release of such pressure, the valve 28 will be automatically moved by the spring 30 to bring the opening 29 out of register with the bore of such pipe.

When the opening 29 is in register with the bore of the pipe 25, air will discharge out through the vent 21 onto the outer face of the mirror 18 and thereby effectively dry the same of any moisture which may accumulate thereon and also to blow off dirt and other foreign matter collected thereon. A portion of such air, when the valve 28 is in open position and under certain conditions, will also pass out through the pipe 23 and out through the vent 24, thereby providing a blast of air which can be readily and conveniently employed by the dentist or drying out a tooth cavity and to blow away drill dust or the like, thus saving work of an assistant or a double loss of time by a dentist who does not employ an assistant.

The bore 20 is enlarged with respect to the vent 21 to provide a chamber in which is arranged a valve member M. This member M comprises a hub 35 provided with the oppositely disposed valve plates 36 and with an intermediate valve plate 37 at substantially right angles to the plates 36. The hub 35 is mounted upon a pin 38 or the like extending across the valve chamber or bore 20 at the point closely adjacent to the inner end of the vent 21. The hub 35 also has project-

ing therefrom the relatively short wing 39 with which engages the outer end portion of the leaf spring 40, the opposite extremity of the spring being suitably anchored as at 41 to the upper wall of the port 22. The spring 40 is slightly tensioned, but sufficient to normally hold the plates 36 in a position to close the port 22 against the flow of air when the air passing through the pipe line 25 is under slight pressure so that the desired stream of air may be directed over the exposed face of the mirror 18. This flow of air is the result of pressing lightly upon the button 34 for the valve 28. A quick opening of the valve 28 results in the air stream having such contact with the plate 37 as to cause the valve member M to rotate to a position whereby the plate 37 closes the flow through vent 21 but opens the flow through port 22. Upon closing the flow of air through the pipe 25, the spring 40 will return the valve member M to its normal position as illustrated by full lines in Figure 2 with the vent 21 open. The second position of this valve member M is indicated by broken lines in Figure 2.

It is to be noted that the pivot 38 is so alined with a wall of the air line or pipe 25 to assure the outer plate 36 to open parallel to line of pressure with the plate 37 closed at right angles to such line of pressure.

From the foregoing description, it is thought to be obvious that a dental implement constructed in accordance with my invention is particularly well adapted for use by reason of the convenience and facility with which it may be assembled and operated, and it will also be obvious that my invention is susceptible of some change and modification without departing from the principles and spirit thereof and for this reason I do not wish to be understood as limiting myself to the precise arrangement and formation of the several parts herein shown in carrying out my invention in practice except as hereinafter claimed.

I claim:—

1. In combination with a mouth mirror, means carried by the mirror end portion thereof for discharging a blast of air upon the outer face of the mirror or for directing a second blast of air beyond said end portion of the mirror, and means for shutting off one of the blasts when the other is effected.

2. In combination with a mouth mirror; means carried by the mirror end portion thereof for discharging a blast of air upon the outer face of the mirror or for directing a second blast of air beyond said end portion of the mirror, and automatic means for shutting off one of the blasts when the other is effected.

3. In combination with a mouth mirror, means carried by the mirror end portion thereof for discharging a blast of air upon the outer face of the mirror or for directing a second blast of air beyond said end portion of the mirror, and pneumatic operating means for shutting off one of the blasts when the other is effected.

4. An implement of the class described comprising a tubular handle member, a frame carried by an end portion of said member, a mirror arranged upon the frame, said handle member having a vent leading from the bore of the handle member and discharging upon the mirror, said handle member also having a port in communication therewith, said port discharging through and beyond the frame, a valve member, means for supporting said valve member for rocking movement within the bore of the handle member, said valve member comprising oppositely disposed

valve plates, and an intermediate valve plate substantially at right angles to the plates, the oppositely disposed plates controlling the discharge through the port and the intermediate plate controlling the flow through the vent, means for normally holding the plates in closed position and the intermediate plate in open position, and means for admitting fluid under pressure into the tubular handle member.

5. An implement of the class described comprising a tubular handle member, a frame carried by an end portion of said member, a mirror arranged upon the frame, said handle member having a vent leading from the bore of the handle member and discharging upon the mirror, said handle member also having a port in communication therewith, said port discharging through and beyond the frame, a valve member, means for supporting said valve member for rocking movement within the bore of the handle member, said valve member comprising oppositely disposed valve plates, and an intermediate valve plate substantially at right angles to the plates, the oppositely disposed plates controlling the discharge through the port and the intermediate plate controlling the flow through the vent, means for normally holding the plates in closed position and the intermediate plate in open position, and means for admitting fluid under pressure into the tubular handle member, said intermediate plate moving into closed position and moving the first named plates into open position upon predetermined degree of pressure of the fluid within the handle member, said intermediate plate returning to open position and the first named plates to closed position upon reduction of such pressure.

6. An implement of the class described comprising

a tubular handle member, a frame carried by an end portion of said member, a mirror arranged upon the frame, said handle member having a vent leading from the bore of the handle member and discharging upon the mirror, said handle member also having a port in communication therewith, said port discharging through and beyond the frame, a valve member, means for supporting said valve member for rocking movement within the bore of the handle member, said valve member comprising oppositely disposed valve plates, and an intermediate valve plate substantially at right angles to the plates, the oppositely disposed plates controlling the discharge through the port and the intermediate plate controlling the flow through the vent, a spring within the handle member and secured thereto and coacting with the valve member to normally hold the intermediate plate in open position and the first named plates in closed position.

7. An implement of the class described comprising a tubular handle member, a mirror frame carried by an end portion thereof, a mirror carried by the frame, said handle member having a vent disposed toward and discharging upon the outer surface of the mirror, said handle member also having a port extending through the frame rearwardly of the mirror, a pipe line supported by and extending across the frame, said pipe line being in communication with the port of the handle member and discharging through the wall of the frame at a point substantially diametrically opposed to the port, and means for carrying air under pressure within the handle member, the vent and port being each in communication with the bore of the handle member.

THOMAS D. HOPKINS.

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