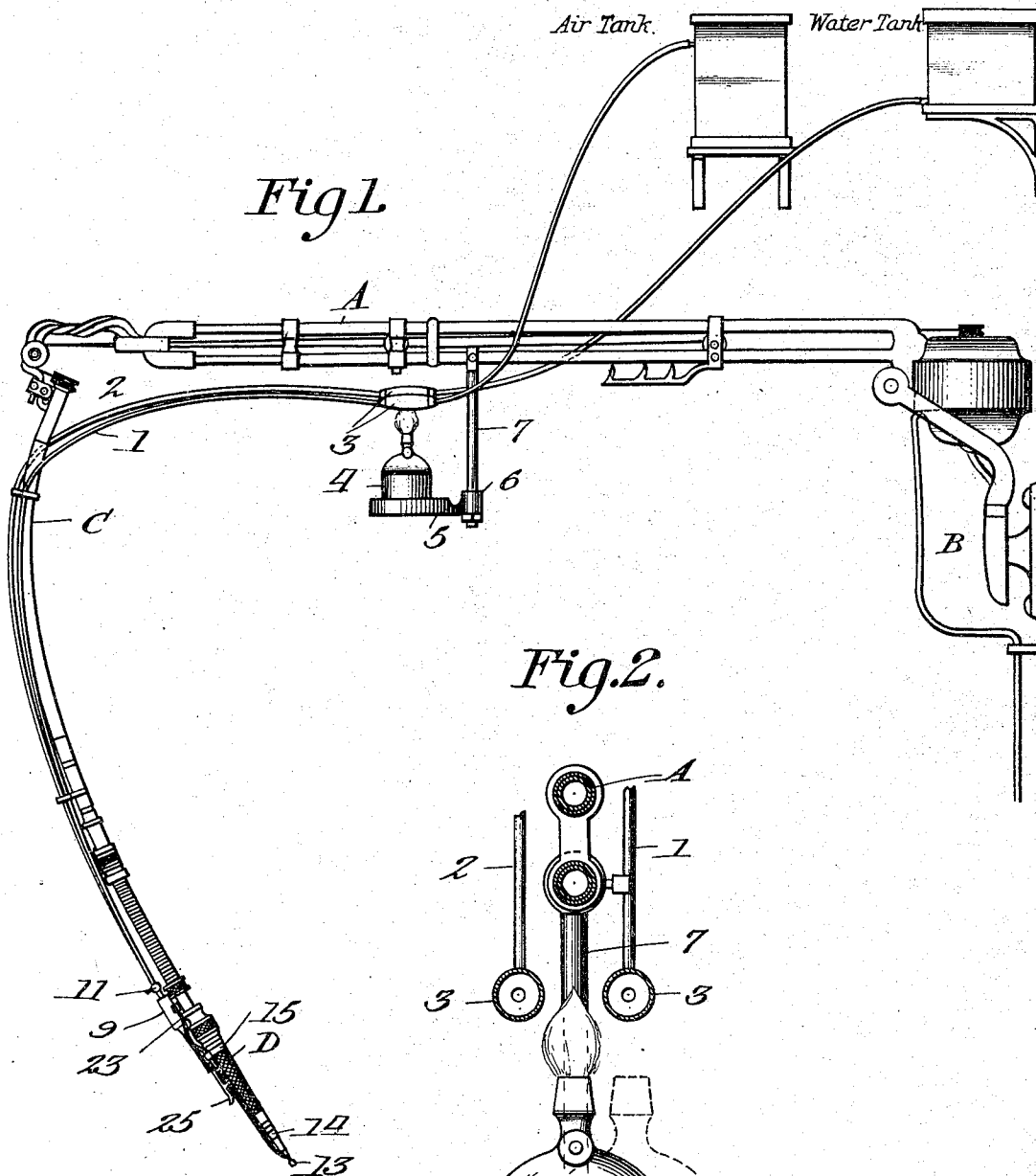


R. E. CUNNINGHAM & A. C. SMITH.
AIR AND WATER ATTACHMENT FOR DENTAL ENGINES.
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Patented Aug. 15, 1911.

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Fig. 3.

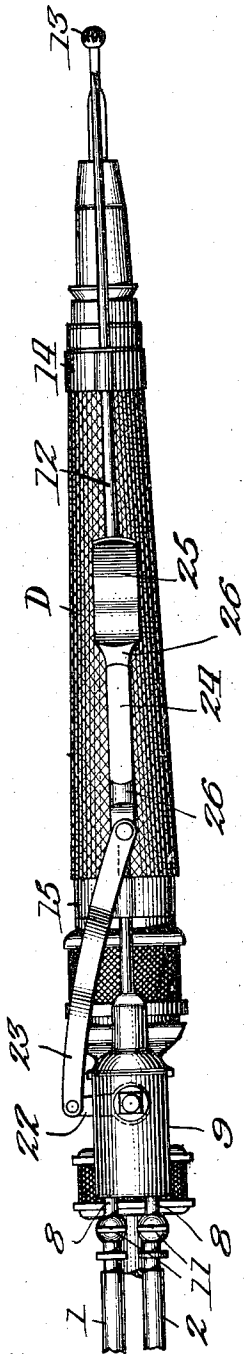


Fig. 4.

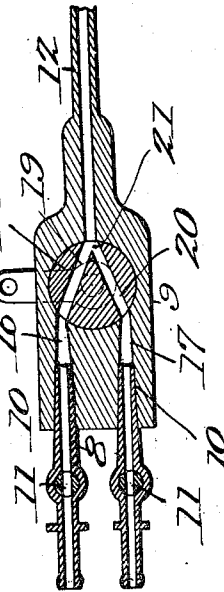
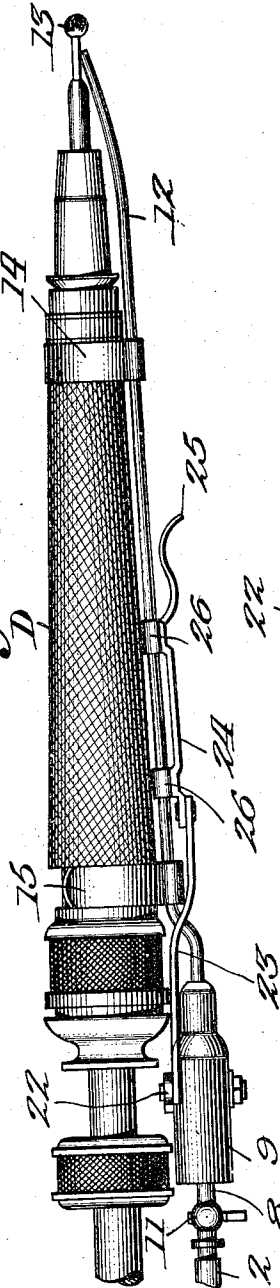


Fig. 5.

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AIR AND WATER ATTACHMENT FOR DENTAL ENGINES.

1,000,785.

Specification of Letters Patent. Patented Aug. 15, 1911.

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To all whom it may concern:

Be it known that we, ROBERT E. CUNNINGHAM and AMOS C. SMITH, citizens of the United States, residing at Elberton, in the county of Elbert and State of Georgia, have invented new and useful Improvements in Air and Water Attachments for Dental Engines, of which the following is a specification.

10 This invention relates to an attachment for dental engines whereby hot or cold air or water, or a combination of both may be directed on the tooth on which the dental engine is operating.

15 The invention has for one of its objects to provide a device of this character which is reliable and efficient in use, readily manipulated, and capable of being applied to any ordinary dental engine.

20 Another object of the invention is the provision of a novel attachment for the hand piece of the engine including a controlling valve for opening or closing the flow of air or water, as required, the air and water being supplied by separate tubes or conduits to the valve and in each conduit is a cut-off valve whereby water or air singly or in combination can be directed on the tooth for cleaning, cooling or drying the same.

30 Another object of the invention is the employment of novel means for heating the air or water, or both, as it is supplied to the nozzle of the device.

35 With these objects in view and others, as will appear as the description proceeds, the invention comprises the various novel features of construction and arrangement of parts which will be more fully described hereinafter and set forth with particularity in the claims appended hereto.

40 In the accompanying drawings, which illustrate one embodiment of the invention, Figure 1 is a side view of a dental engine showing the air and water supplying attachment applied thereto. Fig. 2 is a transverse section showing the air and water heater. Fig. 3 is a side view of the hand piece of the engine with the nozzle and controlling valve applied thereto. Fig. 4 is a plan view of
50 Fig. 3. Fig. 5 is a detail sectional view through the valve block and showing the

manner of detachably connecting the air and water pipes thereto.

Similar reference characters are employed to designate corresponding parts 55 throughout the views.

Referring to the drawings, A designates the supporting arm of the engine, which is hingedly mounted on a suitable support such as a wall bracket B, and on the outer 60 end of the arm is the usual flexible shaft C to which a removable hand piece D is attached. The engine is of ordinary construction and the water and air-feeding apparatus is applied thereto without requiring 65 any change in design.

Extending along the arm A and suitably supported thereby are air and water supply pipes 1 and 2, the first being connected with a suitable source of compressed air and 70 the second to a city service water system or to a tank located at a point above the engine so that water will flow by gravity. At a suitable point in each conduit or pipe 1 and 2 is a bulb or heating chamber 3, and 75 disposed in coöperative relation therewith is a heater of any suitable character such as an alcohol lamp 4, although an electric heater may be employed. The lamp is supported on a bracket 5 that is pivoted at 6 80 on the lower end of a member 7 that is fastened to the supporting arm A. By pivotally mounting the bracket 5 on the member 7, the lamp can be thrown so that the flame will play on one heating chamber 3 or the 85 other, or upon both, the said chambers being located side by side for simultaneous heating by a single flame. The conduits 1 and 2 extend to the outer end of the arm A and continue down along the flexible shaft 90 C to which the pipes may be connected. The lower ends of the pipes are equipped with nipples or hollow plugs 8 so as to be inserted in a block or valve body 9, the said body having tapered openings 10 into which 95 the nipples snugly fit so as to make a fluid-tight joint. The nipples are provided with valves 11 so that water and air can pass through the respective pipes or be interrupted.

The hand piece D has extending along the same a nozzle tube 12 which terminates 100

adjacent the bur 13, emery wheel, polishing cup or any other instrument being used. This nozzle tube 12 has a ring 14 at one end so as to slip longitudinally on and off the tip of the hand piece, and at the inner end of the tube is a U-shaped clip 15 that snaps over the hand piece adjacent the butt thereof. The nozzle tube is jointed to the valve casing 9 and this casing has separate passages 16 and 17 that are adapted to be brought into communication with the nozzle tube through a rotary valve 18 in the valve casing, said valve having separate passages 19 and 20 that unite in a single port 21. This port 21 is adapted to be thrown into and out of communication with the passage leading to the nozzle tube and when it is in communication with such passage, the passages 19 and 20 will be in communication with the passages 16 and 17, respectively. The rotary valve 18 is provided with an arm 22 that is connected by a link 23 with a slide 24 that moves longitudinally of the nozzle tube. This slide has a thumb piece 25 so shaped that the thumb of the hand gripping the hand piece can be engaged therewith and slip longitudinally back and forth for opening and closing the controlling valve 18. The slide includes lugs 26 that are bent around the nozzle tube to slide thereon. When the air and water valves are open, the controlling valve can be manipulated by sliding the thumb piece back and forth so as to deliver air and water upon the tooth being operated on, or interrupt it when desired. When the valve of one supply pipe is open, only air or water will be delivered to the teeth when the controlling valve is opened. This ready supply of either air or water in cold or heated condition, or a combination of air and water, is extremely useful in dental operations, as will be appreciated by those practicing the profession.

From the foregoing description, taken in connection with the accompanying drawings, the advantages of the construction and of the method of operation will be readily apparent to those skilled in the art to which the invention appertains, and while we have described the principle of operation of the invention, together with the device which we now consider to be the best embodiment thereof, we desire to have it understood that the device shown is merely illustrative, and that such changes may be made when desired as are within the scope of the claims appended hereto.

Having thus described the invention, what we claim as new, is:—

1. The combination of a dental engine including a supporting arm, a flexible shaft suspended thereby, and a hand piece, with a supply pipe extending along the arm and flexible shaft and including a heating cham-

ber, a heater supported on the arm and disposed in coöperative relation with the chamber, and a valve at the hand piece for controlling the discharge of fluid on the teeth being operated on.

2. The combination of a dental engine including a supporting arm, a flexible shaft, and a hand piece, air and water pipes extending along the arm and shaft, a nozzle at the hand piece to which the pipes are connected, each pipe including a heating chamber, and a heater supported on the arm and disposed adjacent the heating chamber for heating one or the other or both.

3. The combination of a dental engine including a supporting arm, a flexible shaft, and a hand piece, air and water pipes extending along the arm and shaft, a nozzle at the hand piece to which the pipes are connected, each pipe including a heating chamber, a bracket movably mounted on the arm, and a heater on the bracket movable to position for heating either chamber or both.

4. A dental engine including a hand piece, air and water pipes, a valve attached to the hand piece, removable connections between the pipes and valve to permit the latter to be detached therefrom with the hand piece, independent valves in the pipes, and means for operating the first-mentioned valve.

5. In a dental engine, the combination of a flexible shaft, a removable hand piece connected therewith, a nozzle tube disposed on the hand piece and having its orifice arranged adjacent the instrument in the hand piece, a ring on the nozzle tube for slipping on and off the hand piece, a clip on the nozzle tube for embracing the hand piece, air and water pipes extending along the flexible shaft, and a device removably connecting the nozzle tube with the pipes and including a valve for opening and closing the supply of air and water to the nozzle tube.

6. In a dental engine, the combination of a flexible driving shaft, a hand piece detachably connected therewith, air and water supply conduits extending along the shaft, nipples on the ends of the conduits and including cut-off valves, a valve casing into which the nipples are removably inserted, a valve in the casing controlling the supply of air and water, a nozzle tube connected with the valve casing, and means for mounting the valve casing and nozzle tube on the hand piece.

7. In a dental engine, the combination of a flexible driving shaft, a hand piece detachably connected therewith, air and water supply conduits extending along the shaft, nipples on the ends of the conduits and including cut-off valves, a valve casing into which the nipples are removably inserted, a valve in the casing controlling the supply of air and water, a nozzle tube connected

with the valve casing, means for mounting the valve casing and nozzle tube on the hand piece, a slide on the nozzle tube, and a connection between the slide and controlling valve whereby the thumb of the hand holding the hand piece can be used for opening and closing the controlling valve.

In testimony whereof we affix our signatures in presence of two witnesses.

ROBERT E. CUNNINGHAM.

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Witnesses:

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GEORGE HASLETT.