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W. W. MCLEOD

2,449,497

COMBINATION ASPIRATOR TIP

Filed Aug. 22, 1946

FIG. 1-

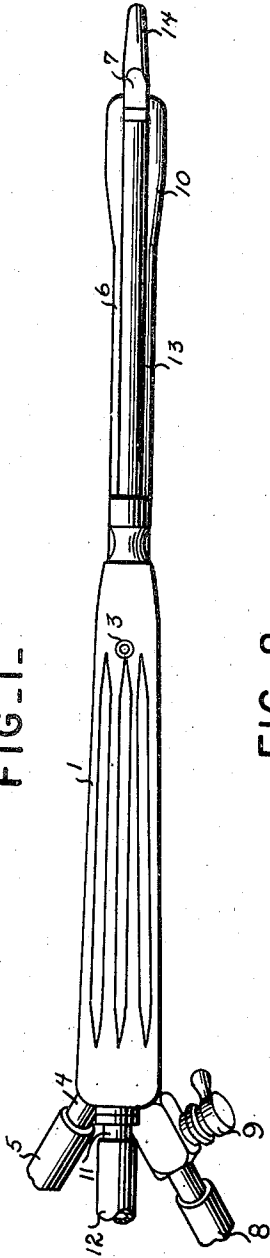


FIG. 2-

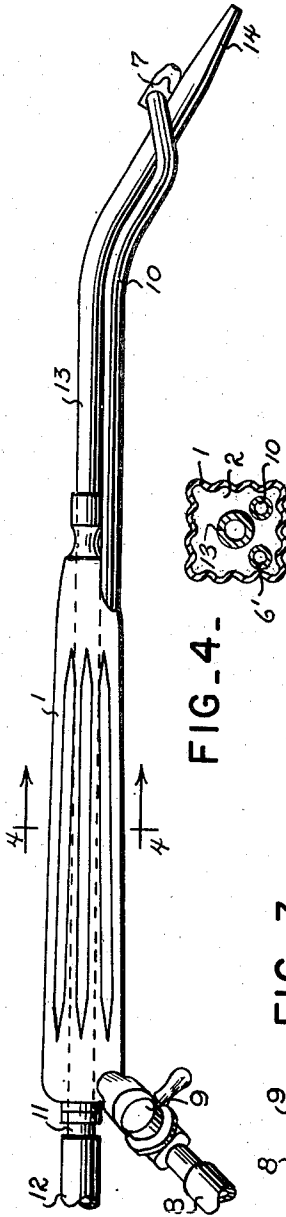


FIG. 4-

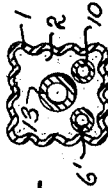
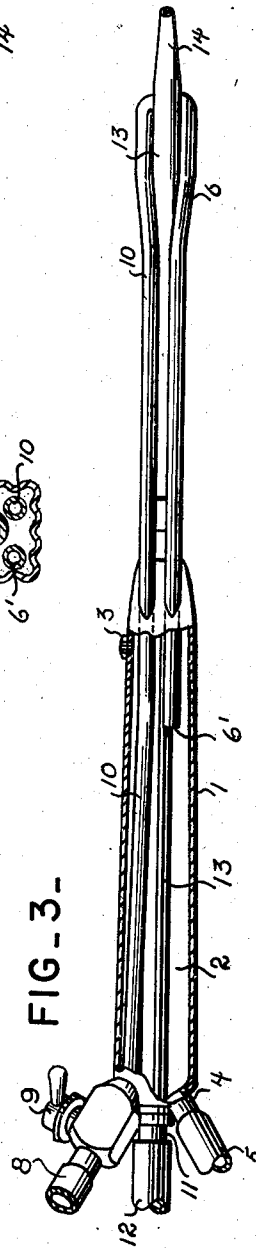


FIG. 3-



INVENTOR

W. W. MCLEOD

BY *Victor J. Evans & Co.*

ATTORNEYS

UNITED STATES PATENT OFFICE

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COMBINATION ASPIRATOR TIP

Will W. McLeod, Montgomery, Ala.

Application August 22, 1946, Serial No. 692,290

2 Claims. (Cl. 128—276)

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My present invention relates generally to improvements in dental and surgical instruments, and more specifically to an improved aspirator for use by professionals in dental and surgical procedures, as well as for use by others in various analogous arts and sciences.

The primary object of the invention is the provision of a pneumatic instrument of this type that is simple in construction, and composed of a minimum number of parts that may readily be assembled in compact form and shape for convenient use; and means are provided whereby the instrument may be manipulated with facility and accuracy in the efficient performance of its functions that are frequently required.

In carrying out my invention I utilize compressed air as the motive fluid, a liquid solution for atomizing and spraying, and suction for the removal of the atomized solution; and the instrument is quickly convertible under easy manual control for positive pressure in atomizing and spraying the liquid solution, and with negative pressure for the performance of the functions of an aspirator.

The invention consists essentially in an instrument embodying novel combinations and arrangements of these parts as will hereinafter be more fully set forth and claimed.

In the accompanying drawings I have illustrated one complete example of the physical embodiment of my invention wherein the parts are combined and arranged in accord with one mode I have devised for the practical application of the principles of my invention, but it will be understood that changes and alterations may be made in these exemplifying drawings and mechanical structures, within the scope of my claims, without departing from the principles of my invention.

Figure 1 is a top plan view of an implement in which my invention is physically embodied.

Figure 2 is a side view of the implement or instrument; and

Figure 3 is a bottom plan view of the instrument partly in section for convenience of illustration; and

Figure 4 is a transverse sectional view at line 4—4 Fig. 1 showing the arrangement of tubes within the interior air chamber of the hollow handle.

In this disclosure of my invention the machine for compressing air and creating suction, the source of supply for the liquid solution to be atomized, and other accessories, are omitted as unnecessary for a clear understanding of my in-

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vention, and only the portable instrument, or aspirator tip, for manipulation and manual control is depicted.

In this exemplified form of the invention I utilize a tubular handle 1 for the instrument, which is made of metal or other suitable material, and this tubular handle forms a reservoir or interior air chamber 2 for compressed air which is supplied from a suitable machine.

Near its front end the handle is provided with a control port 3 for the air reservoir, which port may be closed by the thumb or a finger to maintain pressure within the reservoir, and the port may be opened by removal of the thumb or finger to relieve pressure or to reduce pressure of air in the reservoir.

At the rear end of the handle an inlet nipple 4 is mounted, and a piece of rubber tubing or hose 5 is indicated for supplying air under pressure from the compressor to the interior of the reservoir.

The front end of the handle is equipped with an air tube 6 located partially within the reservoir and projecting forwardly from the exterior of the handle, with its open rear end terminating in a port 6' within the reservoir, and the front angular and exterior portion communicating with an atomizing tip or spray nozzle 7.

A liquid spraying solution is introduced to the instrument through a supply hose or flexible tubing 8 under control of a stop cock or cut-off valve 9 located where it is readily accessible at the rear of the handle, and the solution pipe 10 extends from the valve centrally through the air reservoir, and out through the front end of the reservoir or hollow handle to the spraying nozzle or atomizing tip 7.

The front angular ends of the air pipe 6 and solution pipe 10 are arranged in parallelism and they communicate with opposite sides of the spraying nozzle in order that the atomizing or spraying procedure may be controlled by the use of a thumb or finger applied to the control port 3 of the air reservoir.

For the removal of the atomized solution from a dental cavity, and for other purposes, by continuous suction or negative pressure, the rear end of the handle 1 is equipped with a nipple 11 from which a suction hose or line 12 extends to the power operated supply machine creating the suction. A suction tube 13 projects from the nipple through the rear wall of the hollow handle, and then extends centrally through the air reservoir to the front end of the handle, where

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it is rigidly mounted, in the tapered end of the handle. From the front of the handle the suction tube 13 projects forwardly with an angular shape and terminates in a suction nozzle 14 located in advance of the spraying nozzle 7.

The front exterior portions of the air tube 6, the solution tube 10, and the suction tube 13 project from the front end of the handle in close parallelism, with the air tube and the solution tube arched over the suction tube to the spraying tip or nozzle, and the latter is compactly arranged on the free end of the suction tube slightly to the rear of the suction nozzle, and pointing in the same direction, for convenience in use.

By this compact arrangement and combination of parts, the handle portion of the instrument is left free from obstructions in order that it may with convenience be grasped in one hand of the operator, leaving the thumb or finger free for control of the air port 3 of the reservoir. The three forward tubular extensions from the front of the handle are compactly and rigidly arranged to occupy a minimum of space, and the suction nozzle and spraying nozzle are closely associated for joint use if and when desired.

At the rear of the handle, the air supply, the solution supply, and the suction connection, are centralized to avoid obstructions and entanglements of their flexible connections; and the arrangements of the parts within the sealed reservoir provide simple but adequate means for conveying the solution and air currents, as well as for accommodating the suction device for the purposes described.

Having thus fully described my invention, what I claim and desire to secure by Letters Patent is:

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1. The combination with a tubular handle forming an air reservoir having an open port which is manually controlled by the finger tip of the operator thereof, a suction tube mounted within the handle and having a forward extension terminating in a suction nozzle, of a spraying nozzle mounted rigidly on the suction nozzle slightly to the rear thereof, an air pipe communicating with the interior of the reservoir and the spraying nozzle, and a solution tube mounted within the handle having a front extension communicating with the spraying nozzle.

2. The combination with a tubular handle forming an air reservoir having a port which is manually controlled by the finger tip of the operator thereof, a suction tube mounted within the handle and having an exterior forward extension terminating in a suction nozzle, of a spraying nozzle mounted rigidly on the suction nozzle slightly to the rear thereof, means for conveying a liquid solution to the spraying nozzle, and means for conveying air under pressure from the reservoir to the spraying nozzle.

WILL W. McLEOD.

REFERENCES CITED

The following references are of record in the file of this patent:

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