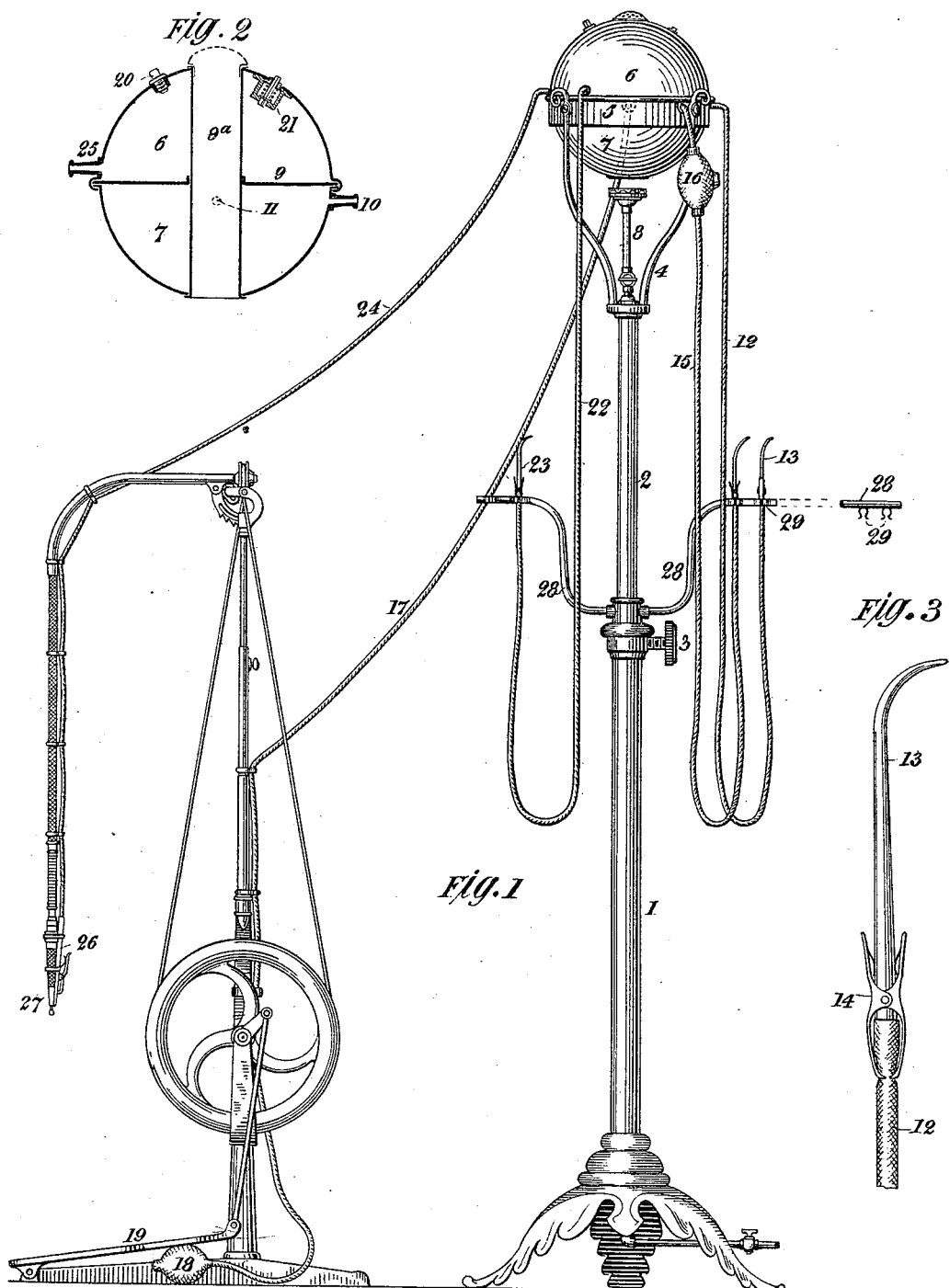


(No Model.)

F. M. OSBORN.  
DENTAL APPARATUS.

No. 525,816.

Patented Sept. 11, 1894.



Witnesses:

Robt. F. Gaylord  
James W. Callow

Inventor  
Francis M. Osborn  
by Duncan & Page  
Attorneys.

# UNITED STATES PATENT OFFICE.

FRANCIS M. OSBORN, OF PORT CHESTER, NEW YORK.

## DENTAL APPARATUS.

SPECIFICATION forming part of Letters Patent No. 525,816, dated September 11, 1894.

Application filed June 6, 1894. Serial No. 513,628. (No model.)

*To all whom it may concern:*

Be it known that I, FRANCIS M. OSBORN, a citizen of the United States, residing at Port Chester, in the county of Westchester and State of New York, have invented certain new and useful Improvements in Dental Apparatus, of which the following is a specification, reference being had to the accompanying drawings.

The present invention relates to mechanism for heating air and water and delivering the same to the working ends of tools or at the point of work.

As is well understood in the art of dentistry, water properly heated, as well as air, is used for various purposes of treatment, as for cleansing or medicating the teeth of a patient when under the operator's hands. Usually individual tools have been used for these purposes. Thus, a dentist ordinarily has a syringe or similar device for applying temperate water to the teeth of a patient; and also he has an air blower or ejector for the purpose of applying warm air, medicated or otherwise, to the teeth of a patient. In this connection, it is to be noted that much inconvenience, loss of time and discomfort to the patient, result from the necessity of the alternate use of such tools, and their preparation or charging during moments when the patient is prepared for being operated on and at which times the discomfort of his position is only prolonged by the time taken to prepare or charge the instruments to be used.

It is the object of the present invention to combine the various tools or instruments, or other like or similar means, for applying water, air or medicated air or gases, to the teeth of the patient, with means of connection to suitable sources of air and water as also with valves for controlling the exit of the same through the instrument, in such manner and arrangement that the operator may have these instruments at hand at all times during operation, readily charged and in condition for instant use.

Another object of the invention is to combine the sources of air and water, for supplying said tools, in one structure so as to be heated by a common source of heat, the one

source or tank through or by the heat applied to the adjoining source or tank.

I have discovered that by combining the water tank or reservoir with the air tank or reservoir and heating the one through the other, especially heating the water tank through the air tank from a common source of heat, that the uniformity of heat imparted to the two fluids is better preserved than when the two reservoirs are independently heated and by independent heating devices. As is well understood in this art, it is desired to maintain the heat of the fluids and gases to be used in dental operation at a definite point or degree of temperature, for the purpose of not shocking the patient when the heated gas, air or fluid is applied to a tooth being operated on. To this end, much nicety of adjustment of the heating flames has hitherto been necessary, in order to prevent overheating, and at the same time to preserve an efficient degree of heat. By combining the reservoirs together as above suggested, and heating the one through the other—or even heating them conjointly, the desired temperature of both can be readily preserved. The body of water present will absorb excessive heat from the body of air, so that the latter will not become burned or overheated; so, too, if the body of water be nearer the heating source, the reservoir of air will absorb heat from the water and can not become overheated. This condition is of course preserved only within reasonable limits, but it is found in experience, that much saving in time, in attending to the reservoirs when heated independently, results if the two be joined together as I propose.

The invention further consists in combining the fluid and gas, or air reservoirs used for supplying dental tools or instruments, in such manner that they may be practically in one structure and capable of being heated from one source, and in providing said tanks with flexible pipes or conduits extending to and connected with tools of various kinds and of such length as is adapted to the free use of the tools in the practice of dentistry.

Referring to the drawings accompanying this description, Figure 1 is a general eleva-

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tion view of a reservoir apparatus designed for the purposes above set forth, the machine represented in the left hand of this view being a foot-power drill, boring or cutting machine, shown on a reduced scale and illustrating one means of charging the air portion of the main reservoir. Fig. 2 is a vertical, central cross-section of the reservoir structure on a somewhat enlarged scale. Fig. 3 is an enlarged detailed view of one of the nozzles employed.

Referring to the views in detail, 1 represents a standard containing an adjustable tube 2 capable of being fixed at any desired height by the screw 3 or other similar locking means. At the upper end of the slide rod 2 and supported thereon, is the bracket 4 bearing a ring 5 which supports the main reservoir structure 6 and 7.

8 represents a heating jet which may stand for a gas jet, or may stand for a heating lamp or other heat producing device adapted to be placed below the reservoir and supported in the bracket 4. These reservoir supporting and heating parts may be of any desired construction or arrangement, the essential point being that they be so constructed as to be capable of ready movement from one place to another, and to adjust the reservoir to a height somewhat above the usual height of the head of a patient when being operated upon.

6 indicates the water reservoir, and 7, the air reservoir. These reservoirs are shown as semi-spherical in form though any other suitable form may be employed. The reservoirs are joined in one structure as shown. In the present instance they constitute practically a spherical structure. 9 is a diaphragm or partition separating these reservoirs, and 9<sup>a</sup> is a centrally arranged flue for conducting the heated products of combustion through the reservoirs. The air reservoir is provided with suitable exits such as the pipe sockets 10 and 11, to the former of which is attached the flexible tube 12 ending in a nozzle 13, exit from which is controlled by the spring-clamp or other valve device 14 which normally pinches the tube 12 and holds it closed. Another air pipe 15 is similarly connected to the air reservoir and ends in a similar valve controlled nozzle such as is on pipe 12. In this pipe 15 is located an auxiliary reservoir 16, which internally is of common construction and is for the purpose of containing a medicating material through or over which the air from the main reservoir can pass and become charged or loaded with medicament.

17 is a pipe attached to the air reservoir socket 11, which pipe is for supplying air to the air reservoir. One means of so supplying the air reservoir may be by the flexible bulb pump 18, which is of usual construction and is adapted upon being compressed to force air into the air reservoir and hold the same therein. This bulb may be placed under the treadle 19 of the drilling or grinding machine

shown in Fig. 1, so that when said machine is in operation the air reservoir will be in process of charging. Other means for thus charging the air reservoir may be availed of.

The fluid or water reservoir 6 is provided with an inlet 20, to which a supply pipe may be attached or through which fluid may be forced to the water reservoir. 21 is a relief valve of common construction acting to hold the water in the reservoir tank under slight pressure, but adapted to readily yield to permit steam or water vapor to escape when at too high a pressure. 22 is a pipe extending from this fluid reservoir and ending in a nozzle jet 23 controlled by a proper valve device which may be the same as shown in Fig. 3, or of other suitable construction. 24 is another pipe extending from socket 25 of the fluid reservoir and attached to the valved nozzle 26, which may be located adjacent to a grinding or drilling tool 27 operated by the foot power machine shown in Fig. 1, this being for the purpose of supplying warm water directly to the tool when in operation. Other similar combinations of air or water nozzles with tools, are possible and will be readily understood.

The standard 1 of the tank mechanism is provided with a bracket 28, having holders 29 of spring clamp form, in which may be removably hung the various nozzles or ends of the tubes attached to the air and fluid reservoirs. By these means, the various instruments for applying air, gas or fluid during the process of dental manipulation, may be arranged, within easy reach of the operator. He can readily place the reservoir standard in convenient position, it being assumed, of course, that the lamp is properly adjusted, and the various tools are kept charged and in condition for instantaneous and rapid use. If hot air be required, for example, the operator has but to take the nozzle 13 and apply it at once to the place being treated; and the same is true as to the other two fluids.

In case it be desired to apply hot air, water, or even medicated air, conjointly with operating upon a tooth, or without the necessity of removing the operating tool from operative position, any one of the nozzles of the various tubes may be attached to the operating tool, as seen in Fig. 1, so that while the tool is in position, the proper fluid may be ejected for the purpose of cleansing the parts being operated upon, or otherwise treating them.

I am aware that it is not new to conduct a fluid to the point of an operating tool so that the fluid may be ejected upon the parts being operated upon simultaneous with the action of the tool. Also, I make no claim broadly to dental nozzles which are valve controlled, nor to such nozzles when attached to a source of fluid pressure.

What I claim as new is—

1. A reservoir mechanism for dental use adapted to separately contain different fluids as air and water, and provided with means

for heating the same, and flexible passages or pipes extending from the separate portions of said reservoir and ending in valve controlled nozzles, substantially as and for the purpose set forth.

2. In combination in a dental reservoir mechanism for heating separate fluids, an air or gas reservoir and a fluid or water reservoir separate from each other but combined in one structure and supported upon a transportable standard, means for heating said reservoirs carried also on said standard, and passages or flexible pipes each provided with a valve controlled nozzle or similar device, substantially as and for the purpose set forth.

3. In combination in a dental reservoir mechanism for heating separate fluids, a transportable standard carrying two conjoined but separately spaced fluid-reservoirs, means for heating the said reservoirs also supported from said standard and arranged to heat one reservoir through the other, separate pipes or passages for independently charging said reservoir, flexible pipes or passages attached to said reservoirs and each provided with a valve controlled nozzle or

similar device whereby the fluid from said reservoirs may be directed at the will of the operator, as and for the purposes set forth.

4. In combination with the reservoir standard 1 and the reservoirs 6 and 7 supported thereon, a heating device also carried on said standard, pipes or passages for delivering the contents of said reservoirs at the point of operation, and a bracket or similar supporting device on the standard for holding said pipes in convenient position for the operator, as and for the purpose set forth.

5. In combination with the herein described transportable reservoir mechanism for heating separate fluids, means for charging one of said reservoirs consisting of a pipe or passage as pipe 17 extending from said reservoir to a compression mechanism as pump 18, and the foot treadle or similar mechanism to be worked by the operator and for running the said pump, as and for the purpose set forth.

FRANCIS M. OSBORN.

Witnesses:

ROBT. F. GAYLORD,  
JAMES N. CATLOW.