

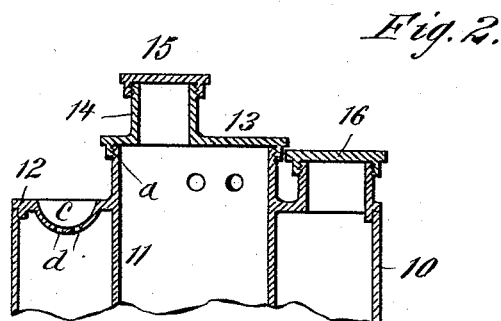
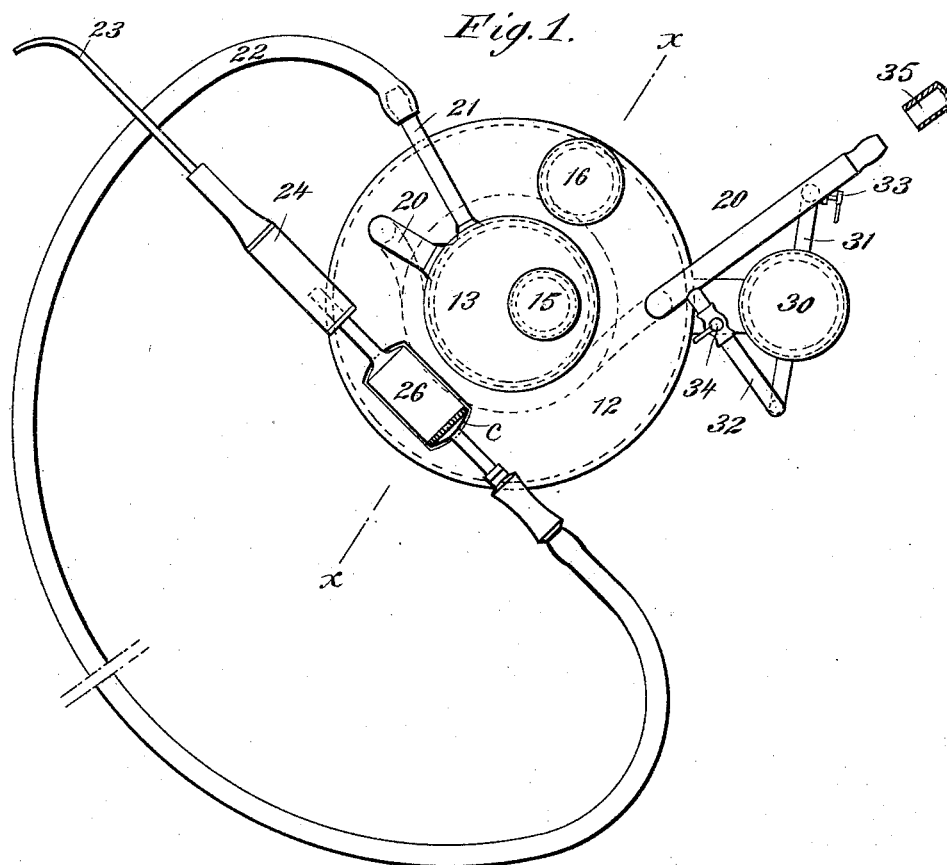
(No Model.)

2 Sheets—Sheet 1.

S. A. MILTON.  
DENTAL APPARATUS.

No. 419,787.

Patented Jan. 21, 1890.



WITNESSES:

*Donn Fritchell*  
*L. Sedgwick*

INVENTOR:

*S. A. Milton*

BY

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ATTORNEYS.

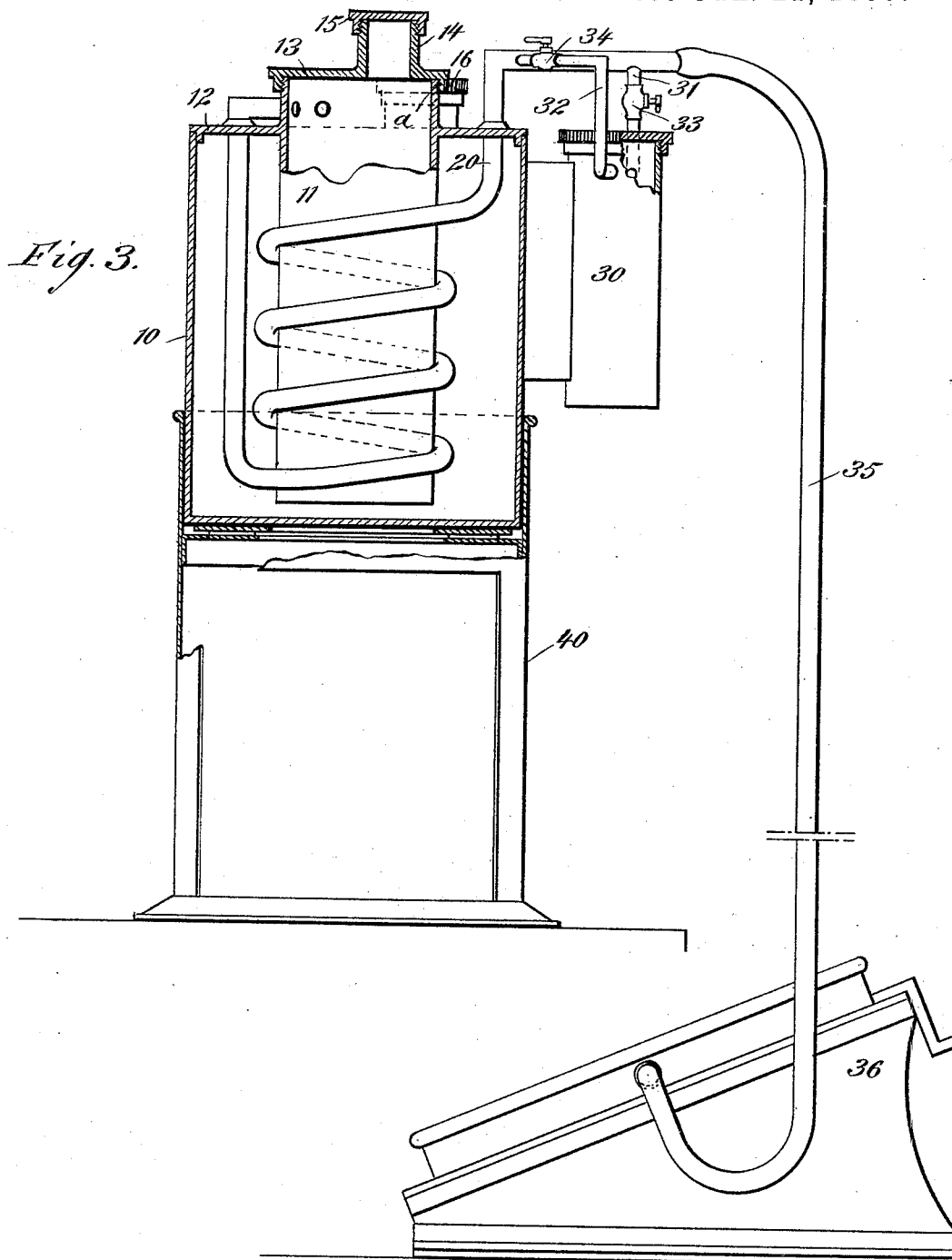
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WITNESSES:

*Sam. Twitchell*  
*C. Sedgwick*

INVENTOR:

*S. A. Milton*

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# UNITED STATES PATENT OFFICE.

SAMUEL A. MILTON, OF CLINTON, MISSOURI.

## DENTAL APPARATUS.

SPECIFICATION forming part of Letters Patent No. 419,787, dated January 21, 1890.

Application filed May 9, 1889. Serial No. 310,194. (No model.)

*To all whom it may concern:*

Be it known that I, SAMUEL A. MILTON, of Clinton, in the county of Henry and State of Missouri, have invented a new and Improved Dental Apparatus, of which the following is a full, clear, and exact description.

This invention relates to a novel apparatus that is applicable for use in the introduction of medicated heated air or nitrous-oxide gas to the tooth that is under treatment, provision being made for the charging of the conveying medium (that is, the air or the nitrous oxide) with the vapors of such volatile oils as it may be desired to employ.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar figures and letters of reference indicate corresponding parts in all the views.

Figure 1 is a plan view of my improved dental apparatus. Fig. 2 is a sectional detail view on line *xx* of Fig. 1; and Fig. 3 is a sectional elevation of the apparatus, representing the same as it appears when arranged in connection with a foot-bellows.

In the drawings, 10 represents a cylinder, which I call a "heating-cylinder," and within which there is arranged a smaller cylinder 11, such cylinder extending downward to a point just above the bottom of the cylinder 10. The cylinder 11 is rigidly connected to a cap or cover 12, which may be threaded to engage the walls of the cylinder 10, or the connection may be a permanent one at this point.

The cylinder 11 is closed by a cap 13, said cap being formed with a downwardly-extending and threaded flange *a*, which engages an internal thread formed at the upper end of the cylinder 11, and in order that access may be had to the interior of the cylinder 11 without removing the cap 13, I form said cap with an upwardly-extending tube 14, that is closed by a small cap 15, thus providing for the introduction of such oils or other ingredients as it may be desired to vaporize within the cylinder 11.

In order that access may be had to the cylinder 10, I provide said cylinder with a cap 16. Within the cylinder 10 there is arranged a tube 20, which by preference is coiled about the cylinder 11 and leads upward through the

cap 12, one end entering the cylinder 11 above said cap 12, and to the cylinder 11, I connect an outwardly-extending tube 21, which is formed with a coupling-head, to which there is secured a flexible tube 22, which said tube carries a discharge-nozzle 23, is provided with a hand-piece 24, and has a heating-chamber 26.

At one side of the cylinder 10 there is arranged a small cylinder 30, adapted to receive a supply of chloroform, ether, or other highly-volatile anæsthetic, communication between the tube 20 and the cylinder 30 being established by means of tubes 31 and 32, in which there are arranged stop-cocks 33 and 34, respectively. To the other end of the tube 20 there is connected a flexible tube 35, which leads to a foot-bellows 36 or to any other proper implement by means of which a current of air or gas may be forced through the said tube 35, through the tube 20, and to the discharge-nozzle 23, carried by the flexible tube 22.

In operation the cylinder 10 is filled with hot or warm water or placed over any proper heating appliance—such, for instance, as the stand shown at 40 in Fig. 3, said stand being arranged to receive the lower end of the cylinder and formed with an opening through which an alcohol or other lamp may be passed. Then as the air is forced through the tube 20 it becomes heated, and the material within the cylinder 11 becomes vaporized and charges the air as it enters the cylinder, and the air so charged passes out through the tube 21 to the tube 22. Chloroform, ether, or other suitable anæsthetic is placed in the cylinder 30, in order that it may be removed from the higher degree of heat necessary to vaporize the oils contained in the cylinder 11, and the amount of ether or chloroform taken up by the air may be regulated through the medium of the valves 33 and 34.

To keep the air from becoming unduly chilled as it passes through the tube 22, I have provided the heater 26, and in the cap 12, I have formed a recess *c*, the bottom of which is apertured, as shown at *d*, to provide for the passage of the warm air from the cylinder 10.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. In a dental apparatus, the combination, 100

with a warming-cylinder, of a tube extending within the cylinder, a vaporizing-cylinder with which the tube communicates, said vaporizing-cylinder being arranged within the  
5 warming-cylinder, and a discharge-tube connected to the vaporizing-cylinder, substantially as described.

2. In a dental apparatus, the combination,  
10 with a cylinder 10, of a cylinder 11, arranged therein, a tube 20, coiled about the cylinder 11 within the cylinder 10, communication being established between the bore of the tube and the cylinder 11, a means for forcing a current  
15 of air or gas through the tube 20, a flexible tube 22, a discharge-nozzle carried by said tube, and a connection, substantially as described, between the tube 22 and the cylinder 11.

3. In a dental apparatus, the combination,  
20 with a cylinder 30, of a tube 20, tubes 32 and 31, connecting the tube 20 and the cylinder 30,

an appliance for forcing a current of air or gas through the tube 20, stop-cocks arranged in connection with the tubes 32 and 31, a cylinder 10, a cylinder 11, arranged therein, the  
25 tube 20 being coiled about the cylinder 11 and communication being established between the interior of the cylinder 11 and the tube 20, a discharge-tube 21, a flexible tube 22, connected thereto, and a discharge-nozzle carried by the  
30 tube 22, substantially as described.

4. The combination, with a warming-cylinder, of a cap provided with a recess *c*, the lower walls of which are apertured, as at *d*, a  
35 discharge-tube 21, having a nozzle 23, and a heating-chamber 26, arranged to fit within the recess *c*, substantially as described.

SAMUEL A. MILTON.

Witnesses:

JOSEPH POLLOCK,  
S. T. NEILL.