

No. 755,320.

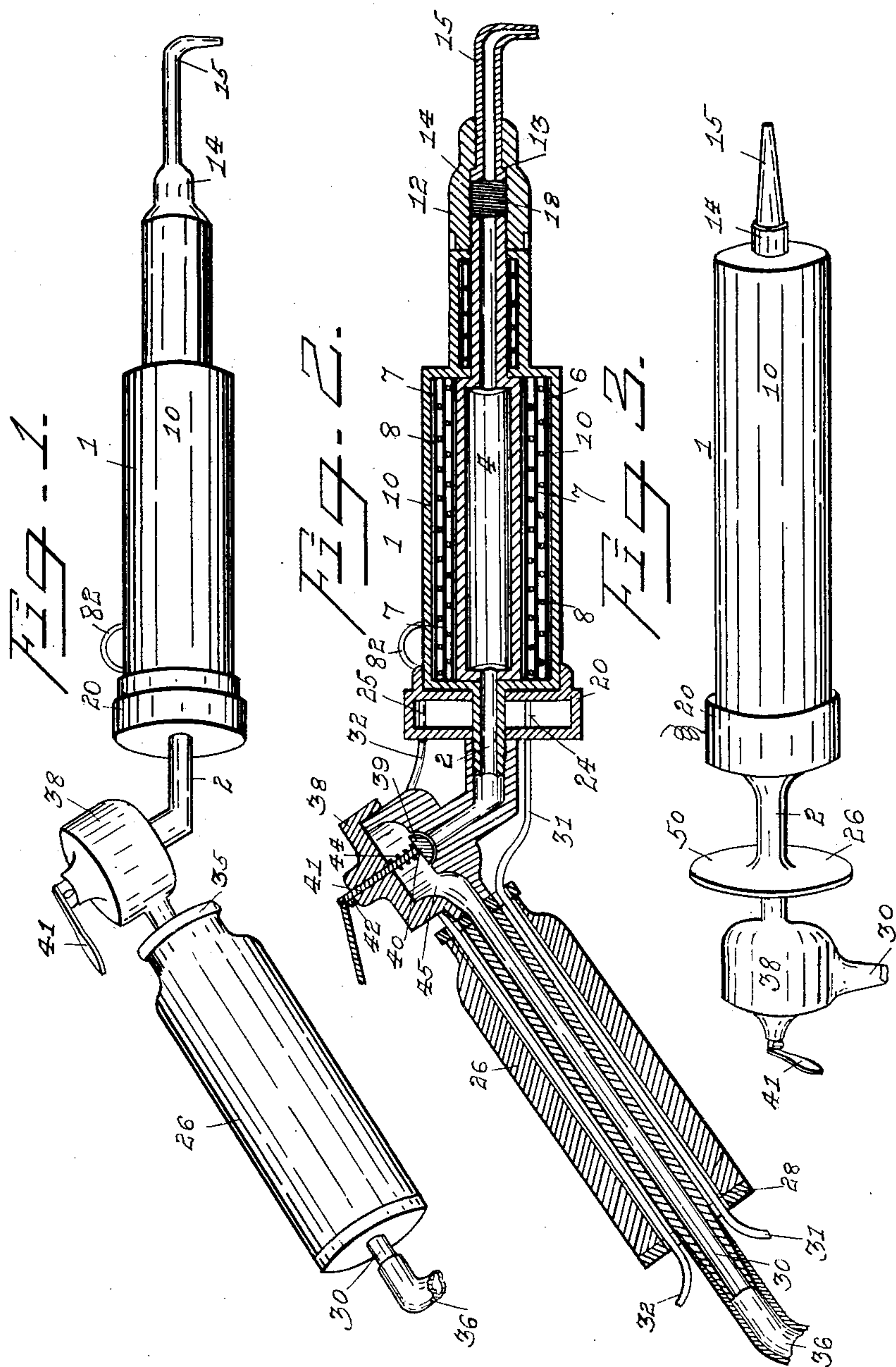
PATENTED MAR. 22, 1904.

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APPARATUS FOR HEATING AIR.

APPLICATION FILED JUNE 13, 1902.

NO MODEL.

2 SHEETS—SHEET 1.



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Fig. 5.

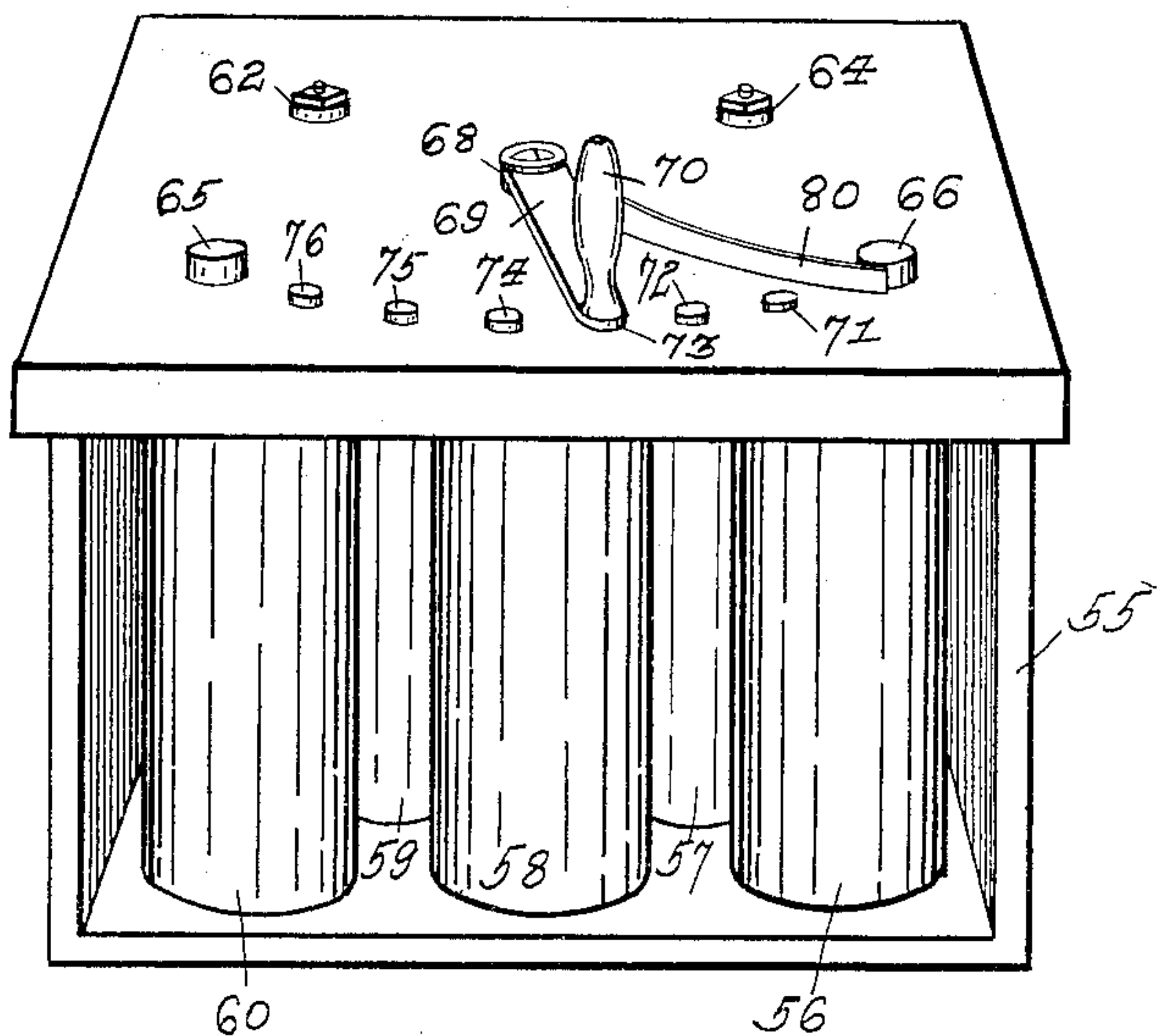
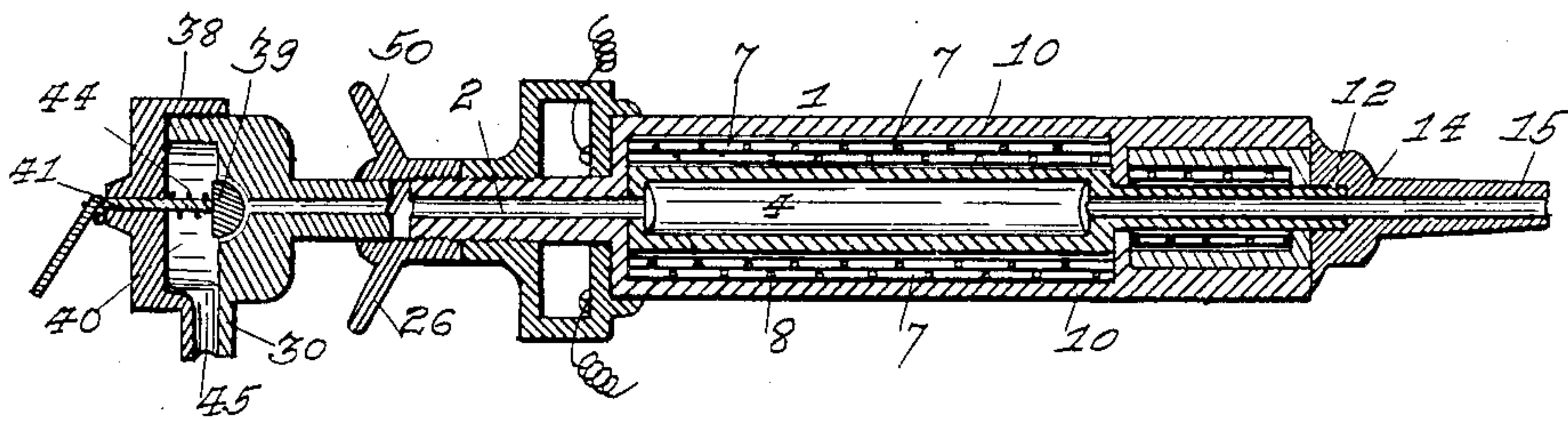


Fig. 4.



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# UNITED STATES PATENT OFFICE.

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## APPARATUS FOR HEATING AIR.

**SPECIFICATION** forming part of Letters Patent No. 755,320, dated March 22, 1904.

Application filed June 13, 1902. Serial No. 111,451. (No model.)

*To all whom it may concern:*

Be it known that I, WALTER K. SEELYE, a citizen of the United States, residing in the city and county of Dubuque and State of Iowa, have  
5 invented certain new and useful Improvements in Apparatus for Heating Air; and I do hereby declare the following to be a full, clear, and exact description of the invention, which will enable others skilled in the art to which it ap-  
10 pertains to make and use the same.

My invention relates to devices for heating air by electricity for therapeutic and other purposes, and one of the objects is to provide means whereby the air may be heated almost  
15 instantaneously even under great pressure.

Another object is to control the temperature of the air and keep it at a given temperature for a long period of time or during long operations, at the will of the operator, and under  
20 any desired pressure.

Another object is to adapt it for use under any ordinary current of electricity without the use of a current transformer or controller.

Still another object is to use the air at what-  
25 ever temperature desired and still not over-heat the instrument, to the inconvenience of the operator or the patient.

A further object is to provide means whereby the air may be delivered in any direction  
30 and still not place the instrument in an inconvenient position for the operator.

These objects, with others, will be fully developed in the following specification when taken in connection with the drawings accom-  
35 panying the same and forming a part hereof.

Figure 1 is a perspective view of my device with a dental tip thereon. Fig. 2 is a longitudinal section of Fig. 1. Fig. 3 is a perspective view of a modified form. Fig. 4 is a  
40 longitudinal section of Fig. 3. Fig. 5 is a perspective view of a rheostat with part cut away, showing the resistance-coils in position.

Like figures of reference denote corresponding parts in each of the drawings.

Referring to the drawings, 1 designates the body or heating part of my device, consisting of a central chamber or tube 2, enlarged at 4 for the purposes presently to appear. Around this chamber is formed an electric coil or heat-  
50 ing apparatus 6, which consists of layers of

asbestos 7 or other insulating material with the coils of wire 8 between the layers and the whole surrounded by a casing 10, thus providing an air-chamber of variant size formed with a single casing surrounding the same 55 and entirely free from any obstruction therein. For the purpose of aiding in regulating the temperature of the air in the chamber or tube 2 and for more convenience in the use of the instrument the outer extremity is made 60 smaller and wound with only one coil of electric wire 8 and one layer of asbestos 7. In this manner of construction the larger portion 4 of the chamber 2 will be more rapidly heated and will retain the heat for a much 65 longer period of time, and the radiation of heat at the smaller portion will not be so excessive as to inconvenience either the patient or operator.

The outer end of the tube 2 is screw-threaded 70 at 12, and upon this is screwed a cap 14, within which cap is loosely fitted a nozzle 15, provided with a shoulder 13, which prevents the nozzle from being drawn out of the cap 14 and still permits the nozzle to be turned in various di- 75 rections for dental or other purposes.

Between the shoulder 13 in the rear of the nozzle 15 and the end of the tube 2 is interposed a coil-spring 18, which keeps the shoulder 13 of the nozzle against the inner end of 80 the cap 14 and permits the nozzle to be pivotally turned. Upon the tube 2 in the rear of the chamber 4 is fastened a cap 20. Through the cap there passes a screw 24, which is connected with the wire 8 of the coil, and also 85 through the cap 20 upon the other side of the tube is another screw, 25, connected with the other end of the wire 8, forming a circuit.

One of the handles 26 for operating this device is constructed of a hollow tube 28, through 90 which passes another tube, 30, and upon either side of the central tube 30 are passed insulated electric wires 31 and 32, which are held in place by passing through the end plates 34 and 35, secured to the ends of the handle 26. To the 95 outer end of the tube 30 is attached a flexible tube 36, which is connected with a compressed-air tank. (Not shown.) Connecting the handle 26 and the tube 2 is a valve-casing 38. Within the casing 38 is a valve-seat 39 and the 100



valve 40. Attached to the valve 40 is a stem 41, which extends up through the upper portion of the casing and hinged at nearly right angles. At the top of the casing is a fulcrum 42, and around the stem 41 is a coil-spring 44. By this mode of construction when pressure is applied to the stem 41 the valve will be raised out of its seat, and when pressure is released the spring will bring the valve down into its seat. In one side of the valve-casing is an entrance-port 45, through which the air passes into the casing upon the valve. Beneath the valve-seat is an exit-port 48, which is connected with the tube 2. This exit-port is bent so as to set the handle and the valve at an angle to the body of the heater. The handle is screwed to the side of the valve-casing, and the whole is screwed to the end of the tube 2 and the wire 31 connected with the screw 24 and the wire 32 with the screw 25.

In Fig. 4 is shown a modified form convenient in certain kinds of operations. It will be noticed in this form that the handle 26 is dispensed with, and between the valve-casing 38 and the end of the tube 2 is a disk 50, and the electric wires 31 and 32 pass through the sides of the cap 20. It will also be observed that convenient arrangements are made upon the end of the nozzle whereby the nozzles of various forms may be attached thereto. The manner of operating this is substantially the same as the other form, except the operator places two of his fingers against the under side of the disk 50 and thumb upon the valve-handle 41 and can readily introduce the nozzle into the nose and throat or use it in any other convenient manner.

A convenient rheostat for use with my device preferably consists of a box 55, within which are set a number of resistance-coils 56, 57, 58, 59, and 60, connected with the electric supply. Through the top of the box are set electric posts 62 and 64 and pins 65 and 66. Near the center of the box on top is a post 68, to which a switch 69, provided with a handle 70, is pivoted. Between the pins 65 and 66 are several contact-buttons 71 72 73 74 75 76. To the switch 69 is attached a leaf-spring 80, which connects with the pin 66 and keeps the switch off from the buttons 71 and 72 for the purposes presently to appear.

The manner of operating my device is substantially as follows: The operator grasps the handle 26 and at the same time turns the switch 69 on the button 71 and holds it against the pressure of the spring 80. This turns the full current through the wires surrounding the tube 2 and almost instantly heats the air. As soon as the air is sufficiently heated he releases his hold upon the handle of the switch 69, and the spring 80 forces the switch onto the button 73, bringing two resistant-coils 56 and 57 into the circuit. The operator then turns the nozzle in the direction desired and presses the thumb upon the handle 41, which

raises the valve 40 out of the valve-seat 39 and allows the air to pass into the tube 2 and the chamber 4 and out through the nozzle. The operator then determines the amount of pressure of air he desires for the special case and adjusts the switch to the button, which will keep at the desired temperature the air at that particular pressure. When the instrument is not in use, he hangs it up by a loop 82, with the end of the tube 2 pointing upward, and in this condition it is ready for instant use at all times, even when the operation is extended at intervals over a long period of time.

It will be seen by this mode of construction that there will be a decrease in the heat from the rear to the forward end of the instrument and that there is a complete control of the temperature under whatever pressure is desired and during whatever period of use. It will be further observed that there is no need of a current transformer or controller, as by means of the rheostat the amperage may be controlled at will to prevent overheating of the instrument. It will be further seen that it is adapted to use on ordinary direct or alternating light currents.

Having now described my invention, what I claim is—

1. In a device of the character described, a single casing providing an unobstructed air-chamber within the casing, an electric coil surrounding said casing and adapted to supply and maintain varying degrees of heat to different parts of the chamber, and connections with the electric source, for the purposes shown.

2. In a device of the character described, an air-chamber of variant size, an electric coil surrounding said chamber and said coil electrically reinforced around a portion of the chamber to adapt it to supply and maintain varying degrees of heat to different parts of the chamber, and connections with the electric source, for the purposes shown.

3. In a device of the character described, an air-chamber of variant size, an electric coil with additional windings of the coil around a portion of the air-chamber, suitable connection with an electric supply, and means for controlling the electric supply.

4. In a device of the character described, an air-chamber of variant size, an electric coil around said chamber adapted to supply different degrees of heat to different parts of the chamber, a handle, connections with the electric source through the handle, an air-valve, and connections between the air-supply and the valve through the handle, for the purposes shown.

5. In a device of the character described, an air-chamber of variant size, an electric coil around said chamber, connections with the electric source, a handle, connection with the air-supply, and a nozzle loosely attached to



the air-chamber and adapted to be pivotally turned, for the purposes shown.

6. In a device of the character described, an air-chamber of variant size, an electric coil around said chamber wound with additional wire around a portion of the chamber, connection with the electric source, a handle, a valve, connection between the air-supply and the valve, and a rheostat.

7. In an air-heating apparatus, an air-chamber, an electric coil around said chamber, connections with the electric source, a valve, connection with the air-supply, and a rheostat provided with resistance-coils, a switch, and a spring attached to the switch, whereby a full current with the electric coil is automatically prevented.

8. In a device of the character described, an air-chamber of variant size, an electric coil around said chamber and reinforced electrically at different parts of the chamber, connection with the electric source, an air-valve, a connection between the air-supply and valve, and a nozzle pivotally attached to the air-chamber, for the purposes shown.

9. In a device of the character described, an air-chamber of variant size, an electric coil surrounding said chamber said coil reinforced around a portion of said chamber, connections with the electric source a nozzle pivotally secured to the air-chamber, an air-valve, connection between the air supply and valve, and a handle for operating the device.

10. In a device of the character described, an air-chamber of variant size, an electric coil surrounding said chamber and providing additional resistance around a portion of the chamber, connection with the electric source, an air-valve, connection with the air-supply, a nozzle pivotally attached to the air-chamber, and a handle for operating the apparatus.

11. An air-heating apparatus consisting of

an air-chamber of variant size, an electric coil surrounding said chamber and adapted to supply and maintain variant degrees of heat to different parts of the chamber, connections with the electric source, a nozzle pivotally attached to the air-chamber, a handle, an air-valve interposed between the handle and air-chamber, connection between the valve and air-supply through the handle, and a casing surrounding the air-chamber, as and for the purposes shown.

12. An air-heating apparatus consisting of an air-chamber, an electric coil surrounding said chamber and adapted to supply and maintain variant degrees of heat to different parts of the chamber, connections with the electric source, a nozzle pivotally attached to the air-chamber, a handle, an air-valve, connections between the air-valve and air-supply, a casing surrounding the air-chamber, and rheostat with a switch and spring attached to the switch, whereby a full current with the electric coil is automatically prevented.

13. An air-heating apparatus consisting of an unobstructed air-chamber formed by a single surrounding casing, an electric coil around said chamber said coil provided with additional windings around different parts of the air-chamber adapted to supply and maintain variant degrees of heat to different parts of the air-chamber, connection with the electric source, an air-valve, connection with the air-supply through the valve, a nozzle, and a handle for operating the apparatus.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WALTER K. SEELYE.

Witnesses:

M. M. CADY,  
M. M. O'DEA.