

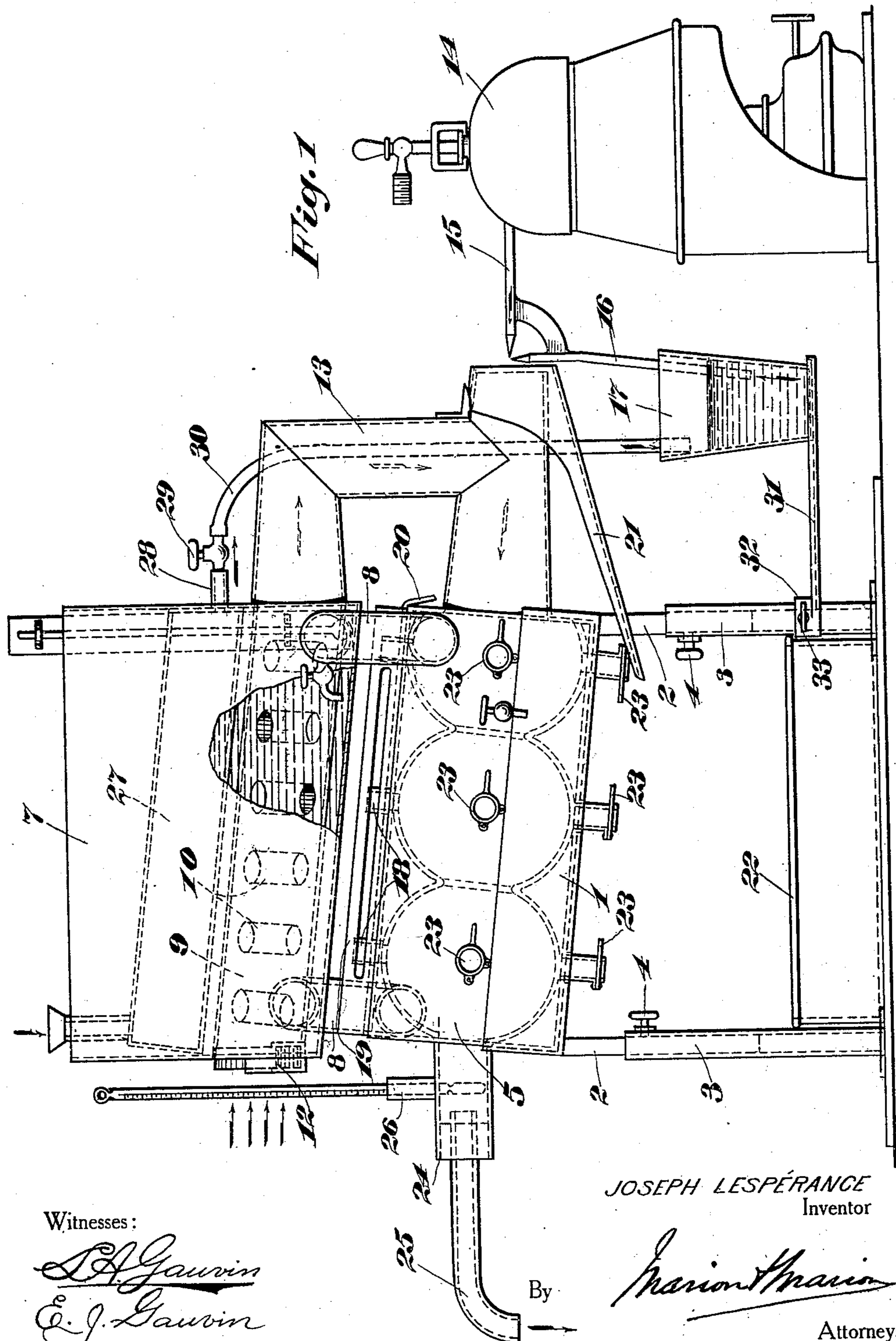
VAPOR GENERATING APPARATUS FOR MEDICAL TREATMENT.

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Patented Sept. 6, 1910.

2 SHEETS—SHEET 1.

969,485.



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Fig. 2

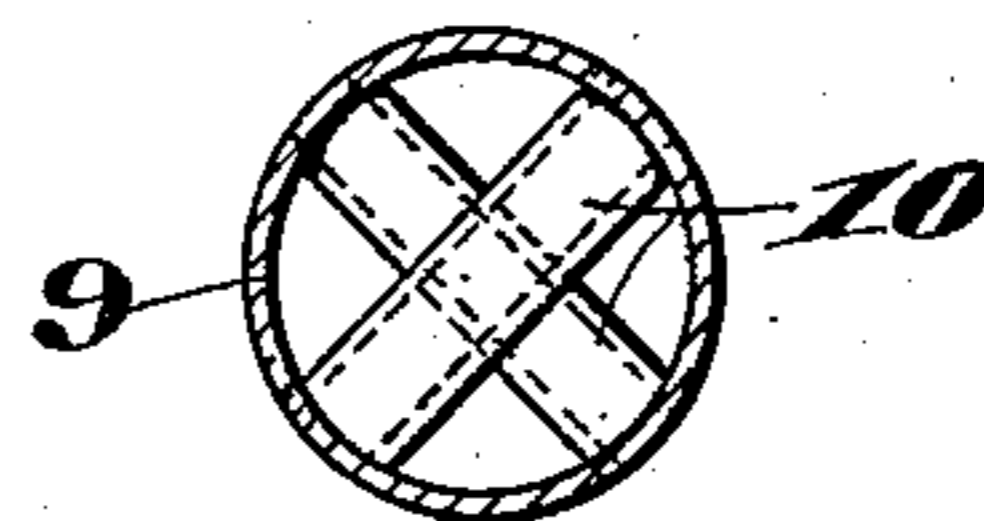


Fig. 3

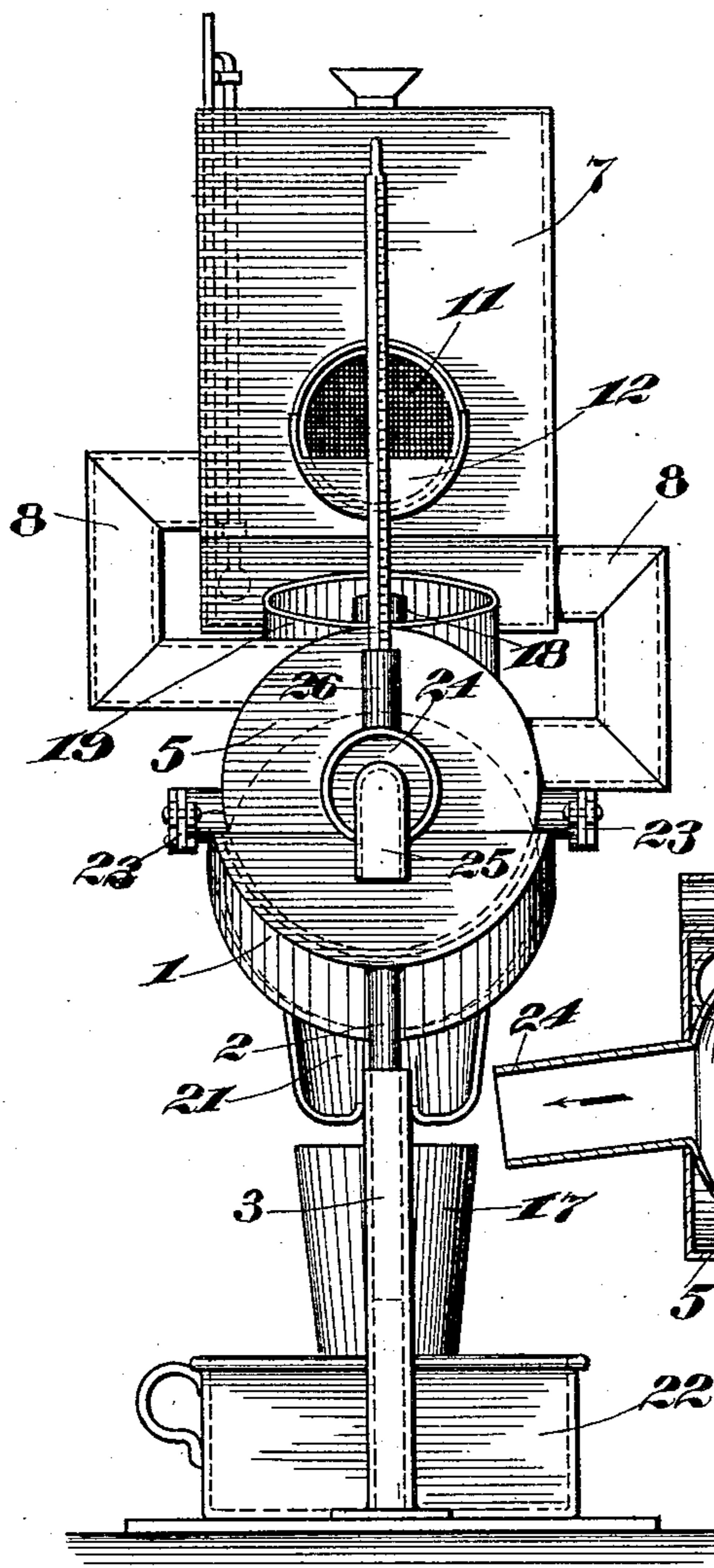


Fig. 4

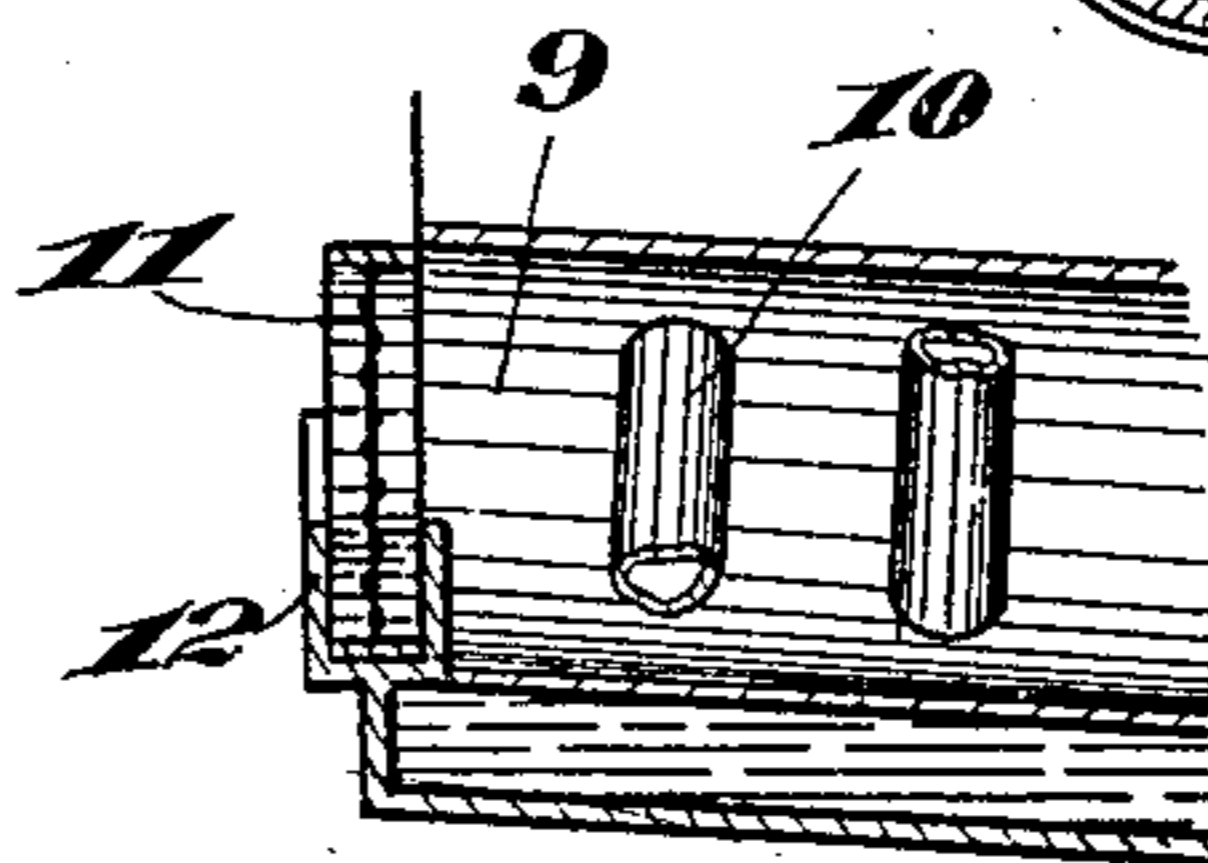
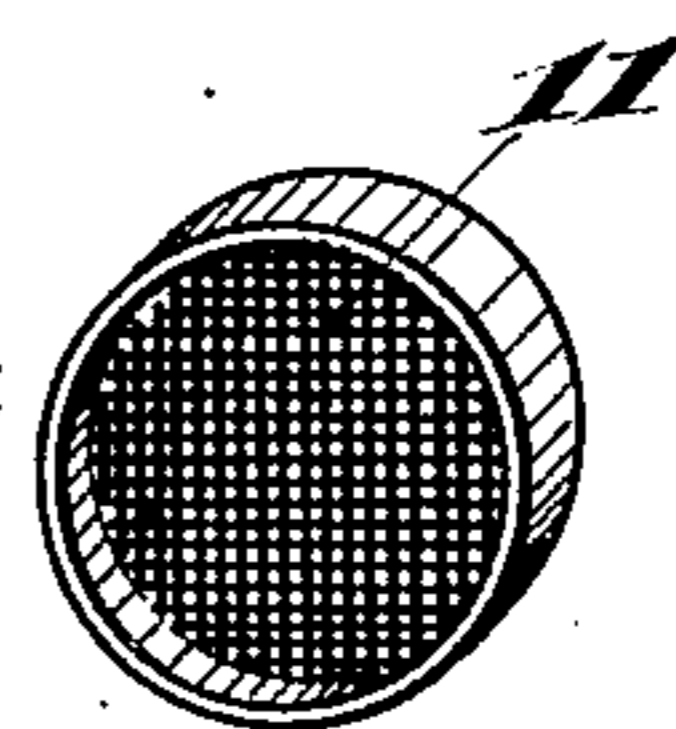


Fig. 5

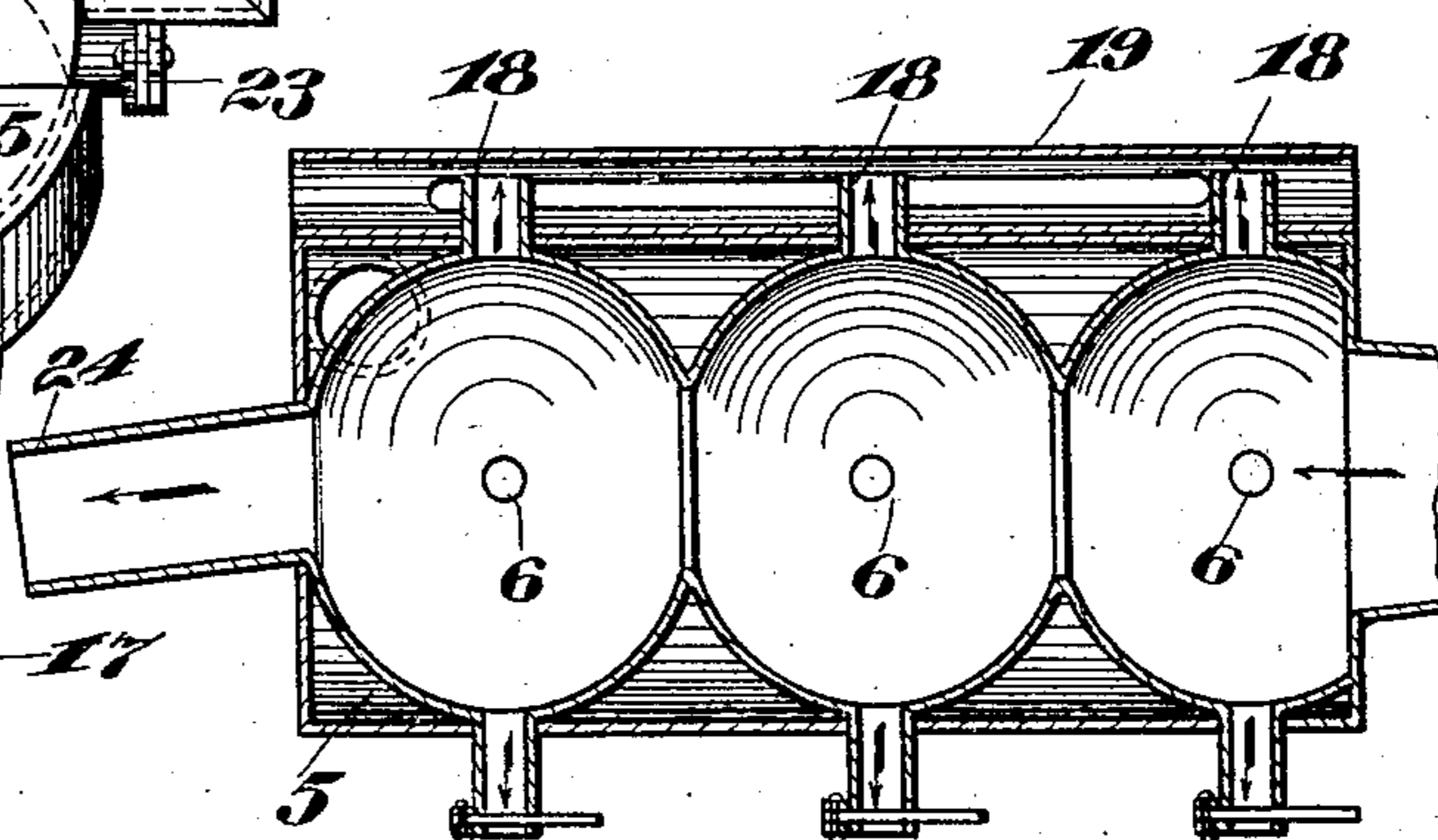


Fig. 6

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UNITED STATES PATENT OFFICE.

JOSEPH LESPÉRANCE, OF MONTREAL, QUEBEC, CANADA.

VAPOR-GENERATING APPARATUS FOR MEDICAL TREATMENT.

969,485.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, JOSEPH LESPÉRANCE, a subject of the King of Great Britain, residing at the city and district of Montreal, in the Province of Quebec, Canada, have invented certain new and useful Improvements in Vapor-Generating Apparatus for Medical Treatment; and I do hereby declare that the following is a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The invention to be hereinafter described relates to medicinal treatment apparatus, and more particularly to a vapor generating apparatus.

Broadly speaking, it comprises an upper and a lower chamber, an air conduit extending through the upper chamber, temperature regulating tubes extending through the conduit, a water compartment in the upper chamber, a medicine tank in the upper chamber, a water jacket in the lower chamber, connections between the water jacket and water compartment, a series of communicating bulbs mounted in the lower chamber, communicating connections between the interior of the lower chamber and the air conduit of the upper chamber, a medicine receptacle, an atomizer adapted to deliver fine spray from the receptacle into the interior of the lower chamber, means for admitting air to the bulbs of the lower chamber, means for delivering medicated vapor from the lower chamber, a thermometer so arranged as to indicate the temperature of the medicated vapor as it is delivered, and removable tubes adapted to be connected to the apparatus for delivering the vapors for various treatments.

In order to more clearly disclose the construction, operation and use of the invention, reference should be had to the accompanying drawings forming part of the present application.

Throughout the several figures of the drawings, like reference characters designate the same parts.

In the drawings: Figure 1 is a side elevation of the complete apparatus, partly broken away; Fig. 2 is a left-hand end view of the complete apparatus; Fig. 3 is an end view of the air conduit, removed; Fig. 4 is a perspective view of a removable screen for

the air conduit; Fig. 5 is a vertical longitudinal section of a part of the air conduit and its water jacket; and, Fig. 6 is a vertical longitudinal section through the lower chamber.

Referring to the drawings in detail, 1 indicates an inclined trough-like support provided with openings, for a purpose to be later disclosed, and adapted to receive the lower chamber. Preferably, this support is provided with rods or lugs 2 adapted to slide freely in tubular posts or uprights 3. Binding screws 4 are provided for securing the legs in various adjusted positions. Within this support 1 is removably seated the lower chamber 5, within which are arranged a series of communicating bulbs 6, the space between the bulbs and the walls of the chamber being adapted for use as a jacket. The upper chamber 7 is supported above the lower one by means of the elbow pipes 8 which connect the opposite ends of the two chambers, as shown in Figs. 1 and 2. The upper chamber is adapted to contain a temperature regulating fluid, and the pipes 8 act to conduct this fluid from the upper chamber into the jacket of the lower chamber. Extending longitudinally through the upper chamber is a tube or air conduit 9, open at its opposite ends and provided with a plurality of regulating open-ended pipes extending crosswise through the tube. The inlet end of the conduit is provided with a removable absorbent screen 11, the lower end of which is adapted to be seated in a pocket 12 containing a purifying liquid. The absorbent material of the screen, by capillary attraction, will remain damp as long as the liquid remains in the pocket. Consequently, the air passing through the screen will be continuously purified. The opposite end, or outlet of the tube, is connected to the lower chamber by means of a pipe or tube 13. The lower branch of this pipe or tube is in line with the rear opening in the lowest of the bulbs 6, as shown in Fig. 6, and is extended slightly beyond the connecting branch of the U pipe. This extension is open to receive the jet from an atomizer. The atomizer comprises a small steam generator 14, a needle jet tube 15 connected thereto, a second needle jet tube arranged in the usual manner, at an angle to the first, and communicating with a medi-

cine receptacle 17. The rush of steam through the jet tube 15 causes a suction through the tube 16, thus drawing medicine from the receptacle 17 through the tube 16 to its tip. As it issues from the tip, it is caught by the steam jet and driven forward through the successive bulbs 6. The inrushing current of steam and medicine vapor creates a suction in the U tube 13 and so draws air along with it, the air also becoming intimately mixed with the jet. The successive bulbs 6 act as eddies in which the heavier parts of the vapor drop and are separated, each bulb acting to separate the heavier parts of the jet passing there-through.

The separation of the heavier particles may be facilitated by providing each of the globular parts 6 with circumferentially arranged tubes 18. The whirling motion of the vapor in the globular sections will act centrifugally on the heavier particles, and throw them toward the inner walls of the sections. As the particles strike the walls, they will be more finely divided and partly condensed. The particles that are thrown into the ends of the tubes 18 will be expelled from the apparatus. Above the upper row of tubes is mounted a condensation plate 19, the lower end of which terminates in a tube or drip pipe 20, which leads to an apron 21 that delivers into a drip pan 22. The apron 21 is suspended from the U pipe 13 and so arranged as to catch all drip from the tube and from the atomizer. The condensed vapor collecting on the under face of the condensation plate 19 thus reaches the drip pan 22. In this way, only the lightest and most intimately mixed particles issue from the last bulb, as an exceedingly fine vapor. The other tubes of each globular section are provided with cut-offs or valves 23, and so may be regulated, as desired. When the valves 23 are open, of course, the heavier particles may be easily thrown out by centrifugal action and more or less air will enter, thus lowering the temperature of the vapor within the globular sections. Should it be desired to raise the temperature of the vapor within the globular sections, the valves 23 are closed, and the air delivered to the upper tank is heated. As it passes from the upper to the lower tank and into the jacket around the globular sections, it will heat them and raise the temperature of the vapor therein. To the upper end of the lower chamber, and in line with the openings through the globular sections, is secured a short pipe or spout 24, adapted to removably receive any one of a plurality of tubes 25 of various shapes and sizes, according to the part or the disease to be treated.

The temperature must be regulated, of course, to the proper degree. Accordingly, the pipe or spout 24 is provided with an

upright branch 26, in which a thermometer may be inserted to indicate the temperature of the vapor as it passes to the tube 25.

In order to maintain the medicine at substantially the same temperature as the vapor passing through the globular sections, a medicine tank 27 is provided in the upper chamber and so arranged as to be submerged in the fluid which passes from the upper chamber through the elbow pipes 8 to the jacket of the lower chamber. A delivery pipe 28 provided with a turn cock 29 is connected to the medicine tank for delivery of medicine therefrom. A flexible tube 30 leads from the cock 29 to the medicine receptacle 17. In this way, medicine, at the temperature of the globular sections, may be delivered into the receptacle 17 when desired. The receptacle 17 is mounted on a stand 31 provided with a sleeve 32 which may be adjustably secured to one of the posts 3 by means of a thumb screw 33.

It is thought that the operation and use of the invention will be clear from the preceding detailed description.

Changes may be made in the construction, arrangement and disposition of the several parts of the invention, without in any way departing from the field and scope of the same, and it is meant to include all such within this application, wherein only a preferred form has been disclosed.

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

1. In an apparatus of the character described, a support, a lower chamber carried thereby, an upper chamber supported by the lower chamber, pipes establishing communication between the upper and lower chambers, an air conduit mounted in the upper chamber, a plurality of communicating bulbs mounted in the lower chamber, means for delivering air from the air conduit into one of said bulbs, and an atomizing apparatus adapted to deliver a fine spray of medicinal vapor into the bulbs along with the current of air from the air conduit.

2. In an apparatus of the character described, a support, a lower chamber carried thereby, an upper chamber supported by the lower chamber, pipes establishing communication between the upper and lower chambers, an air conduit mounted in the upper chamber, a plurality of communicating bulbs mounted in the lower chamber, means for delivering air from the air conduit into one of said bulbs, an atomizing apparatus adapted to deliver a fine spray of medicinal vapor into the bulbs along with the current of air from the air conduit, a spout connected to one of the end bulbs, and means for indicating the temperature of the vapor passing therethrough.

3. In an apparatus of the character de-

scribed, a support, a lower chamber carried thereby, an upper chamber supported by the lower chamber, pipes establishing communication between the upper and lower chambers, an air conduit mounted in the upper chamber, a plurality of communicating bulbs mounted in the lower chamber, means for delivering air from the air conduit into one of said bulbs, an atomizing apparatus adapted to deliver a fine spray of medicinal vapor into the bulbs along with the current of air from the air conduit, a spout connected to one of the end bulbs, means for indicating the temperature of the vapor passing therethrough, and tubes adapted to be removably connected to said spout.

4. In an apparatus of the character described, a support, a lower chamber carried thereby, a plurality of communicating bulbs mounted therein, a jacket extending about said bulbs, an upper chamber supported by said lower chamber, pipes establishing communication between said upper chamber and the jacket in said lower chamber, an air conduit mounted in the upper chamber, means for delivering air from the air conduit into one of said bulbs, and an atomizing apparatus adapted to deliver the fine spray of medicinal vapor into the bulbs along with the current of air from the air conduit.

5. In an apparatus of the character described, a support, a lower chamber carried thereby, a plurality of communicating bulbs mounted therein, a jacket extending about said bulbs, an upper chamber supported by said lower chamber, pipes establishing communication between said upper chamber and the jacket in said lower chamber, an air conduit mounted in the upper chamber, means for purifying the air as it passes into the air conduit, means for delivering air from the air conduit into one of said bulbs, and an atomizing apparatus adapted to deliver a

fine spray of medicinal vapor into the bulbs along with the current of air from the air conduit.

6. In an apparatus of the character described, a support, a lower chamber carried thereby, a plurality of communicating bulbs mounted therein, a jacket extending about said bulbs, an upper chamber supported by said lower chamber, pipes establishing communication between said upper chamber and the jacket in said lower chamber, an air conduit mounted in the upper chamber, means for changing the temperature of the air as it passes through the conduit, means for delivering air from the air conduit into one of said bulbs, and an atomizing apparatus adapted to deliver a fine spray of medicinal vapor into the bulbs along with the air current from the air conduit.

7. In an apparatus of the character described, a support, a lower chamber carried thereby, a plurality of communicating bulbs mounted therein, a jacket extending about said bulbs, an upper chamber supported by said lower chamber, pipes establishing communication between said upper chamber and the jacket in said lower chamber, a medicine tank mounted in said upper chamber, an air conduit mounted in the upper chamber, means for delivering air from the air conduit into one of said bulbs, an atomizing apparatus adapted to deliver a fine spray of medicinal vapor into the bulbs along with a current of air from the air conduit, and means for delivering medicine from the aforesaid medicine tank to said atomizing apparatus.

In witness whereof I have hereunto set my hand in the presence of two witnesses.

JOSEPH LESPÉRANCE.

Witnesses:

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W. S. BABCOCK.