W. V. GOODFELLOW.

METHOD AND APPARATUS FOR ADMINISTERING ANESTHETICS.

APPLICATION FILED DEC. 3, 1917.

1,323,181. Patented Nov. 25, 1919.

Fig. 1.

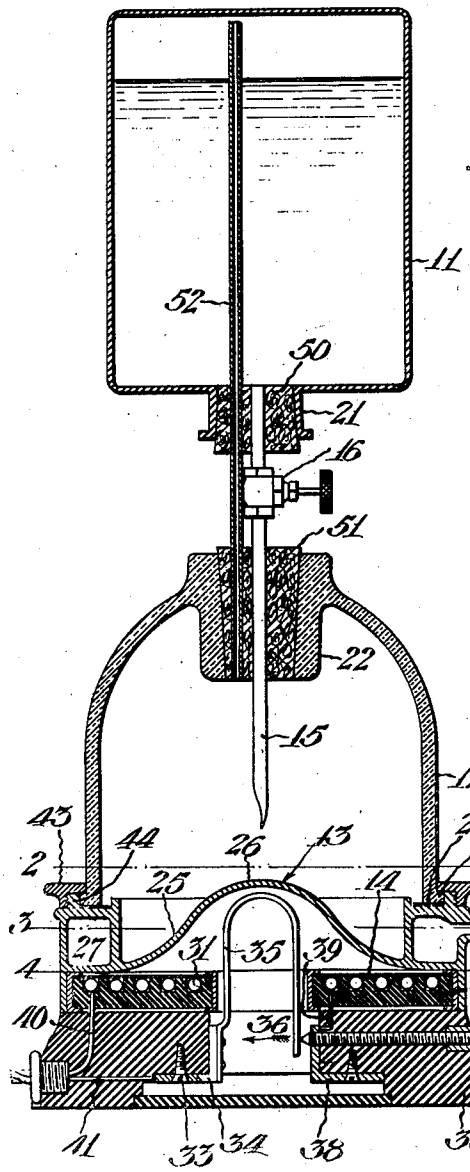


Fig. 2.

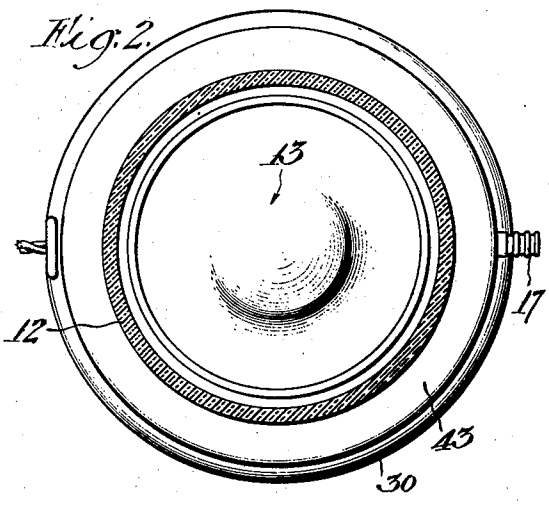


Fig. 3.

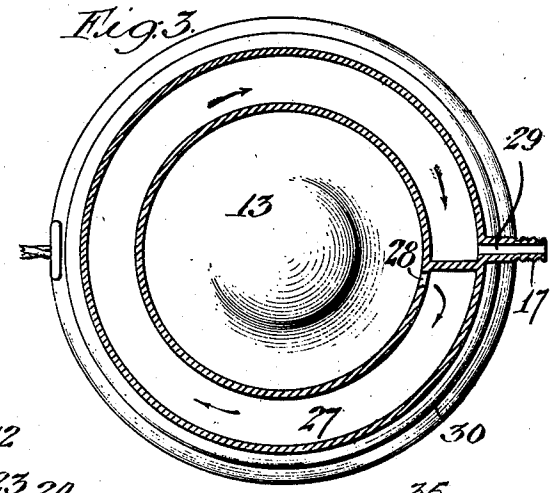
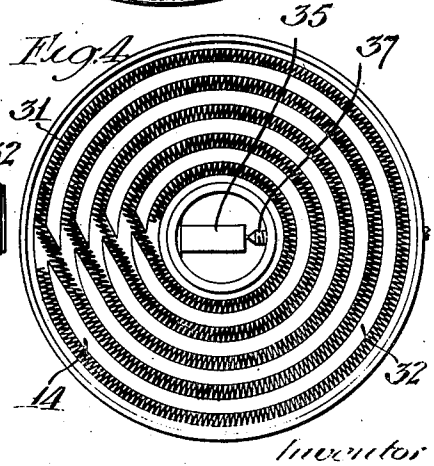


Fig. 4.



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UNITED STATES PATENT OFFICE.

WALTER V. GOODFELLOW, OF LOS ANGELES, CALIFORNIA.

METHOD AND APPARATUS FOR ADMINISTERING ANESTHETICS.

1,323,181. Specification of Letters Patent. Patented Nov. 25, 1919.

Application filed December 3, 1917. Serial No. 205,255.

To all whom it may concern:

Be it known that I, WALTER V. GOODFELLOW, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented a new and useful Method and Apparatus for Administering Anesthetics, of which the following is a specification.

My invention relates to the art of administering anesthetics.

The principal object of the invention is to provide a novel apparatus and method for such administration.

Further objects and advantages will be made evident hereinafter.

Referring to the drawings which are for illustrative purposes only,

Figure 1 is a sectional elevation showing one form of my invention.

Fig. 2 is a plan view partly in section on a plane indicated by the line 2—2 of Fig. 1.

Fig. 3 is a similar view on a plane indicated by the line 3—3 of Fig. 1; and

Fig. 4 is a similar view on a plane indicated by the line 4—4 of Fig. 1.

The invention consists essentially of a container 11, a vaporizing chamber 12, a vaporizing member 13, a heating element 14, a delivery tube 15, a valve 16, and an outlet connection 17.

The container 11 may conveniently be formed of a standard ether or chloroform can having a neck 21. The vaporizing chamber 12 may be formed of metal, in which case it must have windows set in the side or it may be preferably formed of glass as shown having an internal neck 22 and a ground base 23 having a flange 24. The vaporizing member 13 is preferably formed as a part of a metal base 25, the vaporizing member having a dome 26 which extends up under the delivery tube 15. Formed in the metal base 25 is a superheating channel 27, this channel communicating with the interior of the vaporizing chamber 12 through an opening 28 and encircling the base 25, communicating at its other end through an opening 29 with the outlet connection 17. The outlet connection 17 is of suitable size and shape to receive a rubber tube through which the anesthetic is delivered to the patient.

Mounted inside the base 25, which is mounted on top of an insulating block 30, is the heating element 14. This heating element is preferably in the form of a spiral coil of wire 31, best shown in Fig. 4, which is mounted in grooves in an asbestos or other heat resisting and insulating member 32.

Secured to the base 30 by means of a screw 33 is a clip 34 to which a strip of thermostatic metal 35 is attached. This thermostatic metal is a commercial article and is formed by rolling together two metals having widely different co-efficients of expansion, one of these metals forming one side of the strip and the other metal forming the other. The thermostatic member 35 is so arranged that as it becomes heated the end thereof moves in the direction of the arrow 36. This end is normally in contact with the end of a screw 37 passing through the member 30 threaded in a member 38 which is connected by means of a wire 39 with the inner end of the coil 31. Terminal wires are provided, passing outwardly through a bushing, one of these wires 40 being connected to the outer end of the coil 31, and, the other wire 41 being connected to the member 34. The vaporizing chamber 12 is secured to the base 25 by means of a ring 43 threaded on a lip 44 formed on the base 25.

Fitting tightly in the neck 21 of the container 11 is a stopper 50, and fitting tightly in the neck 22 of the vaporizing chamber 12 is a stopper 51. The equalizing tube 52 extends a short distance through the stopper 51 and extends through the stopper 50 to a point near the top of the container 11. The tube 15 extends through the stoppers 50 and 51 connecting the bottom of the container 11 with the space inside the vaporizer 12, the valve 16 being placed in the tube 15.

The method of operation is as follows:

The seal on the ether can 11 being broken and the stopper, which is provided commercially with such ether cans being removed, the stopper 50, which with the stopper 51 and the tubes 15 and 52 has been removed from the vaporizing chamber 12, is inserted in the neck 21, the ether can being placed on a table or other support with the neck up so that no ether is lost during this operation. The valve 16 being closed, the ether can

can then be inverted and the stopper 51 placed in the neck 22. Electrical current being supplied through the wires 40 and 41 flows from the wire 40 to the outer end of the spiral 31 and through this spiral to the inner end thereof passing from thence through the wire 39 to the screw 37. The screw 37 being normally in contact with the end of the thermostatic element 35, current flows through the element 35 and through the member 34 to the wire 41, this completing the circuit. This tends to heat the entire base 25 and the super-heating chamber 27.

A suitable tube for administering the anesthetic is then attached to the connection 17 and the anesthetic partly opens the valve 16 allowing the ether to flow through the tube 15, this ether falling in the form of small drops on the vaporizing member 25 which is heated by the heating element 14. The anesthetic therefore forms a vapor and falls by a slight pressure inside the vaporizing chamber 12. This pressure being transmitted through the equalizing tube 52 does not effect the flow of anesthetic through the tube 15. Due to the slight pressure the ether vapor is forced through the superheating channel 27 and outwardly to the patient through the connection 17. This method of administering anesthetics is very accurate in that the anesthetist can very accurately gage the amount of anesthetic used by observing and counting the drops falling from the tube 15. This method of estimating the amount of anesthetic used is more desirable as it is similar, in a measure, with the present methods in which the anesthetist drops the anesthetic liquid on the mask placed over the patient's nose and mouth.

The purpose of the thermostatic element 35 is to provide for an accurate regulation of the amount of heat supplied. Whenever the heating element 14 has raised the temperature of the base 25 a certain very definite amount, the thermostatic element opens the circuit at the end of the screw 37 thus allowing the base to cool somewhat at each time the circuit is reëstablished. If it is desired to use more heat the screw 30 is turned in a right-hand direction so that the end is forced in the direction of the arrow 36 and a greater degree of heat is required to open the circuit. If it is desired to decrease the amount of heat used the screw is turned in the opposite direction.

While in the above specification I have spoken of ether as the anesthetic used, it is to be understood that I do not wish to confine myself to this particular anesthetic as any similar material which is liquid at ordinary temperatures may be used. It is also to be understood that I do not wish to confine myself to the precise form of apparatus used, the scope of my invention being limited entirely by the annexed claims.

What I claim is:

1. A device for administering anesthetics comprising a container in which the anesthetic in liquid form is placed; a delivery tube connected into the bottom of said container; a valve in said tube by which the delivery of anesthetic through said tube is regulated; transparent walls forming a vaporizing chamber below said container into which said delivery tube projects; a vaporizing member forming a bottom for said chamber on which the anesthetic from said vaporizing chamber is allowed to fall, said bottom being formed of metal walls forming a circular superheating channel around the periphery of said bottom, a single superheating inlet opening into said channel from the vaporizing chamber, said channel having one end connected to said inlet and the other end connected to an outlet to which may be readily attached a flexible hose through which the superheated vapor may be delivered to the patient; and means for heating said vaporizing member and said superheating channel.

2. A device for administering anesthetics comprising a container in which the anesthetic in liquid form is placed; a delivery tube connected into the bottom of said container; a valve in said tube by which the delivery of anesthetic through said tube is regulated; transparent walls forming a vaporizing chamber below said container into which said delivery tube projects; a vaporizing member forming a bottom for said chamber on which the anesthetic from said vaporizing chamber is allowed to fall, said bottom being formed of metal walls forming a circular superheating channel around the periphery of said bottom, a single superheating inlet opening into said channel from the vaporizing chamber, said channel having one end connected to said inlet and the other end connected to an outlet to which may be readily attached a flexible hose through which the superheated vapor may be delivered to the patient; and an electric heating element located below and immediately adjacent to said vaporizing member and said superheating channel.

3. A device for administering anesthetics comprising a container in which the anesthetic in liquid form is placed; a delivery tube connected into the bottom of said container; a valve in said tube by which the delivery of anesthetic through said tube is regulated; transparent walls forming a vaporizing chamber below said container into which said delivery tube projects; a vaporizing member forming a bottom for said chamber on which the anesthetic from

said vaporizing chamber is allowed to fall, said bottom being formed of metal walls forming a circular superheating channel around the periphery of said bottom, a single superheating inlet opening into said channel from the vaporizing chamber, said channel having one end connected to said inlet and the other end connected to an outlet to which may be readily attached a flexible hose through which the superheated vapor may be delivered to the patient; an electric heating element located below and immediately adjacent to said vaporizing member and said superheating channel; and a thermostat for regulating the temperature of said vaporizing member regardless of the amount of anesthetic being used.

In testimony whereof, I have hereunto set my hand at Los Angeles, California, this 23rd day of November, 1917.

WALTER V. GOODFELLOW.