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APPARATUS FOR GENERATING AND ADMINISTERING GASES FOR GENERAL ANAESTHESIA.

APPLICATION FILED DEC. 23, 1905.

912,231.

Patented Feb. 9, 1909.

2 SHEETS—SHEET 1.

Fig. 1.

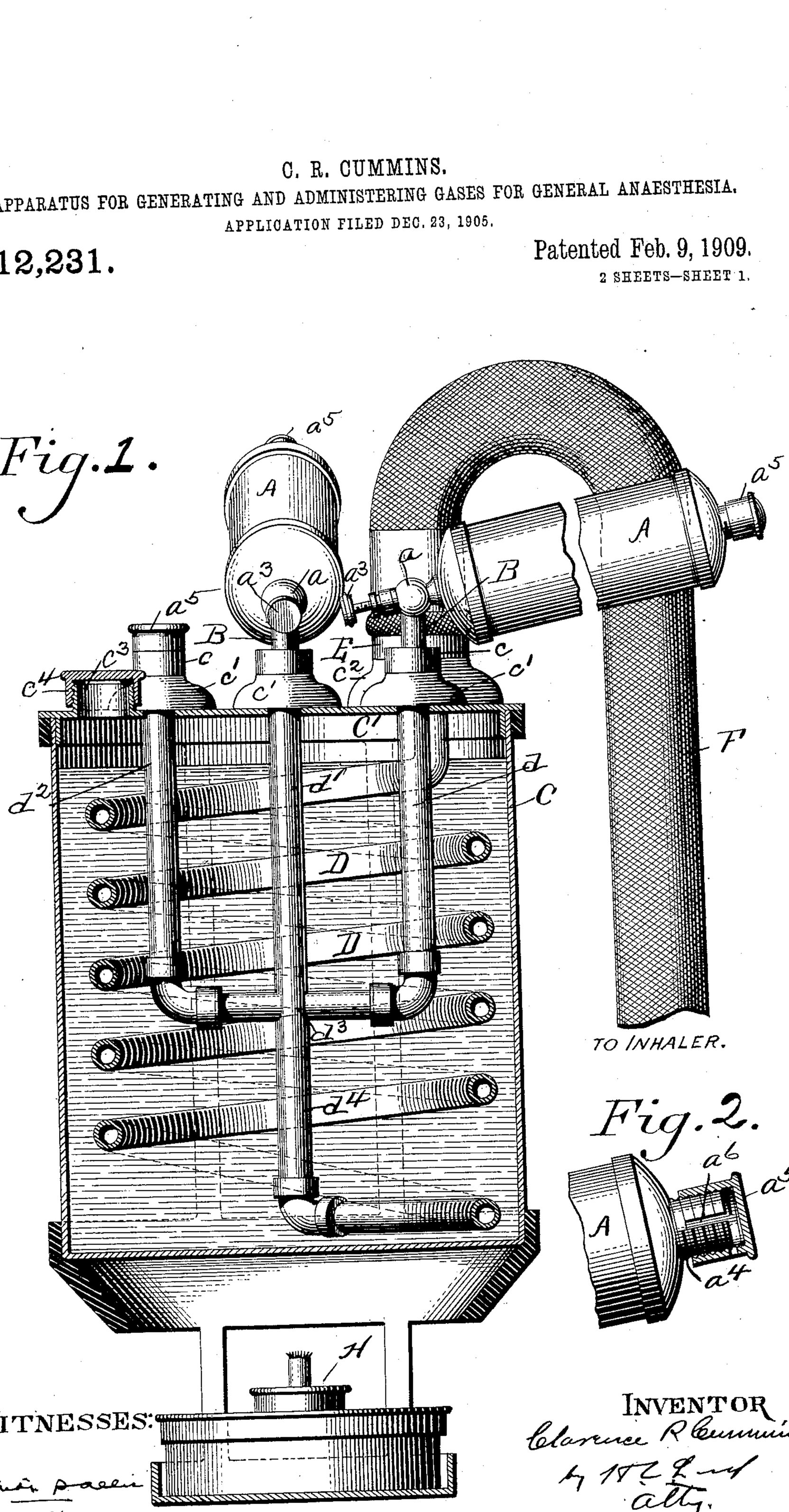

Fig. 2.

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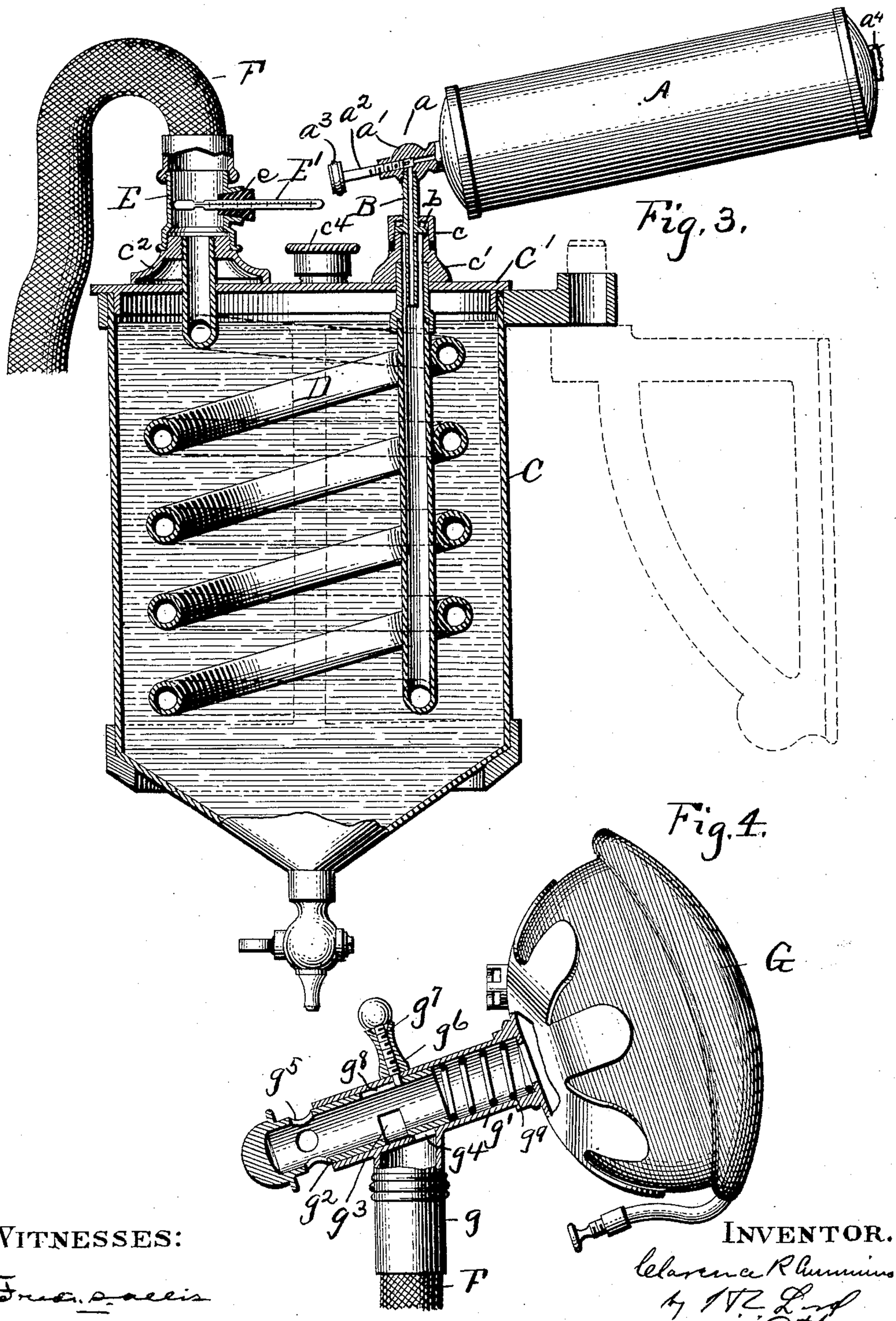

Fig. 3.

Fig. 4.

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UNITED STATES PATENT OFFICE.

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APPARATUS FOR GENERATING AND ADMINISTERING GASES FOR GENERAL ANÆSTHESIA.

No. 912,231. Specification of Letters Patent. Patented Feb. 9, 1909.

Application filed December 23, 1905. Serial No. 293,060.

To all whom it may concern:

Be it known that I, CLARENCE R. CUMMINS, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a new and useful Improvement in Apparatuses for Generating and Administering Gases for General Anæsthesia, of which the following is a specification.

This invention relates to apparatuses for generating and administering gases for general anæsthesia and consists in certain improvements in the construction thereof as will hereinafter be fully described and pointed out in the claims.

The invention is adapted for use in generating and administering gases of various natures, but is particularly adapted for generating and administering ethyl-chlorid and other low boiling point liquids.

The invention is illustrated in the accompanying drawings as follows:

Figure 1 shows a sectional view of the device. Fig. 2 an end construction of a containing tube. Fig. 3 a section similar to that of Fig. 1, some of the parts however being of an alternative construction. Fig. 4 shows a side elevation partly in section, of the inhaler.

A, marks the containers. These are usually charged at some central station and delivered containing gas producing liquids. A valve a is secured to an end of the container. It comprises the valve chamber a^1 the needle a^2 and operating handle a^3. A tube B is screwed into the chamber a^1. This tube has the shoulder b and the shoulder is arranged in a gland c. The gland is formed on the lug c^1 and this lug is secured to a cover C^1 of the heating chamber C.

In the preferred construction the lugs c^1 each with a gland c are in multiple and by means of the tube B a container may be attached to each. The tubes d, d^1, d^2, extend downwardly from these glands and these tubes are united in a fitting d^3 from which extends pipe d^4. The pipe d^4 is connected with the bottom of the coil D which extends upwardly in the chamber C and is secured in a lug c^2 on the cover C^1. The top of the coil communicates with the fitting E. The flexible tube F is removably attached to this fitting. It terminates in the extension g which is arranged on the inhaler tube g^1. The tube g^1 communicates with the inhaler G. The heating chamber C is adapted to contain a liquid which communicates the heat to the coil D. In the preferred construction means for maintaining the liquid in the chamber C are shown. In the construction shown in Fig. 3, the heated liquid is placed in the chamber C and carries with it sufficient heat to effect the result desired.

Ordinarily the gas producing liquid in the container is under pressure so that it will pass down through the valve a immediately the valve is opened. If however it contains gas producing liquid without such pressure, it is necessary to provide a vent to facilitate the downward movement of the liquid. I prefer to form the vent as shown in Figs. 1 and 2. A hollow projection a^4 is formed on the end of the container A opposite the valve a. The projection is screw threaded and has the slot a^6 extending through it. A cap a^5 is screwed onto the projection. When the cap is fully screwed down it closes the opening through the slot a^6 but when unscrewed uncovers this opening and provides the desired vent through a small hole in the side of the cap a^5.

It is sometimes desirable to administer air with the gases and have the air heated by the coil. When this is desired, one of the containers A may be left off and the air admitted through the opening in the lug c^1. A cap a^5 may be used for covering the opening or an empty container may also be used for the introduction of air and the amount may be regulated by adjusting the cap a^5. It may also be desired to mix air with the gas after it has passed through the coil D. To do this I provide means as shown in Fig. 4. In the tube g^1 the slide g^2 is arranged and is provided with an opening g^3 which may be brought into register with the opening g^4. A spring g^9 holds the slide with the opening normally out of register. The end of the slide is provided with an opening g^5. A lug g^6 is arranged on the side of the tube g^1 and in it is arranged a screw g^7. This screw extends into a slot g^8 in the slide g^2 and forms a stop which retains the slide in the tube g^1. When the slide is pushed in a short distance the opening g^3 may be brought into register with the opening g^4 and at the same time

opening g^5 remains, leading to the atmosphere. When however the slide is fully pushed in, the opening g^5 is closed but the opening g^3 is still in register with the opening g^4. For the purpose of filling the tank with liquid an opening c^3 is provided in the cover C^1, the opening being closed with the cap c^4.

At times it is desirable to ascertain the temperature of the gases before or while administering them. For this purpose I provide the thermometer E^1, the bulb of which extends into the fitting E and is secured by means of an insulating block *e*.

With this apparatus, gases may be heated and administered at any desired temperature, in this way eliminating many of the bad effects caused by the administration of gases or vapors at a low temperature.

This apparatus is especially effective in administering ethyl-chlorid, ether, chloroform and other gaseous liquids having low boiling points.

With this construction containers may be readily attached or detached and various combinations of gases may be delivered at a suitable temperature to be administered and if desirable that air be mixed with the gas, this may be readily effected.

What I claim as new is:

1. In an apparatus for generating and administering gases for general anæsthesia, the combination of a heating chamber; a combined generating and heating receptacle within the chamber; connections leading from said receptacle to without the heating chamber; a valved container removably attached to one of said connections without the heating chamber; and an inhaler tube secured to another of said connections for the purpose described.

2. In an apparatus for generating and administering gases for general anæsthesia, the combination of a heating chamber; a combined generating and heating receptacle within the chamber; the extension B having the shoulder *b* connected with said receptacle; the gland *c* in which said shoulder is arranged; the valve *a* connected with said extension; and a container connected with the valve *a*.

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

CLARENCE R. CUMMINS.

Witnesses:

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Harry H. Lewis.