No. 756,354. PATENTED APR. 5, 1904.

S. O. GOLDAN.

INHALER.

APPLICATION FILED NOV. 28, 1903.

NO MODEL.

Fig. 1.

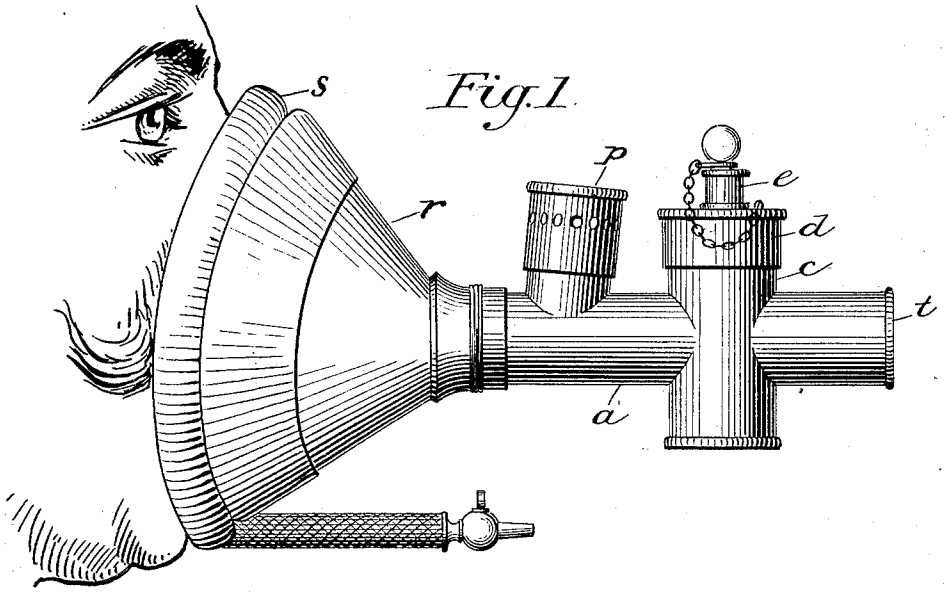
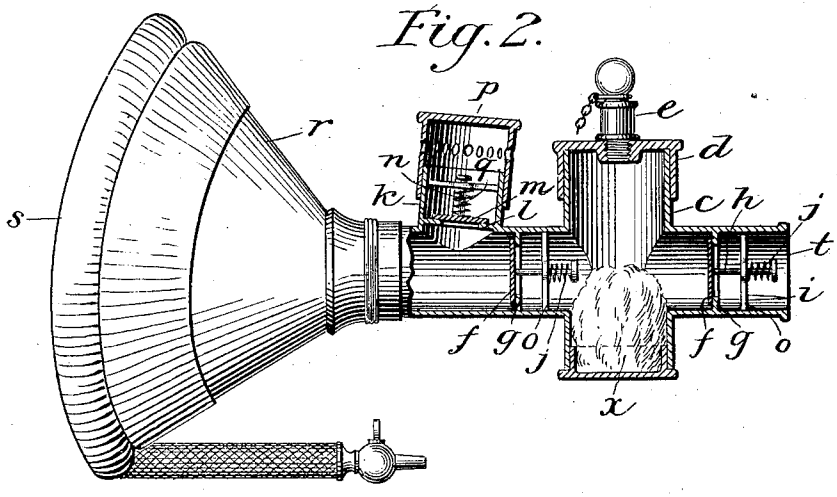


Fig. 2.



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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No. 756,354. Patented April 5, 1904.

UNITED STATES PATENT OFFICE.

SYDNEY ORMOND GOLDAN, OF NEW YORK, N. Y.

INHALER.

SPECIFICATION forming part of Letters Patent No. 756,354, dated April 5, 1904.

Application filed November 28, 1903. Serial No. 182,997. (No model.)

To all whom it may concern:

Be it known that I, SYDNEY ORMOND GOLDAN, a citizen of the United States, residing in the city, county, and State of New York, have invented certain new and useful Improvements in Inhalers; and I do hereby declare the following to be 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.

My invention relates to inhalers for administering anesthetics, and has for its object to provide a simple and efficient apparatus for inducing anesthesia narcosis by means of hypervolatile agents without restricting the normal quantity of atmospheric air required by the patient and without waste of the expensive anesthetic.

To this end the invention comprises an inhaler having an anesthetic-chamber guarded by two inspiratory valves placed one anterior to and the other posterior to said chamber and an expiratory valve between the anterior inspiratory valve and the face-piece of the inhaler, so arranged that the inspiratory valves open freely during inspiration, when the anesthetic is inhaled with a full quantity of atmospheric air by the patient, and the expirations of the patient pass through the expiratory valve without traversing the anesthetic-chamber, which is effectively sealed at this time by the two inspiratory valves, so that evaporation and ineffective blowing away of the anesthetic during the latter period—viz., expiration—is wholly obviated, and the whole efficient strength of the agent is available for producing narcosis during natural full-volumed inspirations.

The invention is illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of my inhaler, showing the manner of applying the same. Fig. 2 is a similar view showing the portions of the apparatus involving my invention in section.

Referring to the drawings, *a* indicates the body of the inhaler, which is tubular in section, consisting of a preferably thin horizontal cylinder having an open end *t* and provided with a face-piece at the opposite end, preferably consisting of a hood *r*, provided with the usual inflatable rim *s*. If desired, of course, the hood may be replaced by the regulation mouth-tube, of metal or hard rubber.

Intermediate the ends of the cylinder *a*, and forming a transverse extension thereof, is a chamber *c* to receive the anesthetic-gauze or similar material *x*. Said chamber *c* is provided with a removable cap *d*, which has a central opening in its top closed by a screw-plug *e*.

Immediately anterior and posterior, respectively, to the chamber *c* are located inspiratory valves, both of which open inwardly—viz., toward the face-piece—during the inhalation of the patient and effectively close the chamber to ingress of air at all other times. These valves may be of any desired form, but preferably comprise each a disk *f*, of thin metal, mica, rubber, or the like, which is normally seated upon an annular flange *g* by means of a light spiral spring *j*, surrounding the valve-stem *h*, which is guided and supported by a cross-bar *o*.

Mounted on the cylinder between the chamber *c* and the face-piece *r* is an expiratory valve, which may be of any desired form calculated to give free exit to exhalations, but preferably comprising a disk *m*, similar to disks *f f*, mounted in an annular rim *k*, projecting a short distance from the top of the cylinder, said disk being held to its seat about an opening *l* in the cylinder by means of a light spiral spring *n*, mounted upon the stem *q* of the valve. The said rim *k* is provided with a cap *p*, which is provided with a series of perforations to permit ready exit of exhaled air.

In using the inhaler the cap *d* is removed, and the anesthetic is poured into chamber *c* upon the absorbent gauze *x*, or when using those agents which are directed from the capillary tubes of their containers the plug *e* only is removed and the top of the container inserted in the port, the cap remining *in situ*, when the evaporation of the fluid in the container will force a fine stream of said fluid out of the tube into the chamber *c* in desired quantity. Said chamber is then properly sealed

by replacing the cap *d* or the plug *e*, as the case may be, and the face applied in the usual manner. The patient then breathes naturally, taking in at each inspiration the full normal quantity of atmospheric air, which passes freely by the inhalation-valves *f f*, traverses the chamber *c*, where it takes up the volatilized anesthetic. As soon as the inspiration ceases the valves *f f* are closed automatically by springs *j j*, as well as by the force of the next expiration, and the chamber *c* is effectively sealed to the further ingress of air, and volatilization of the anesthetic agent practically ceases until the next inspiration. When the patient exhales, the air passes into the proximal end of the cylinder, lifts valve *m*, and escapes to the air through the perforations in cap *p*. At the conclusion of each exhalation valve *m* is automatically closed by spring *g* and also by suction of inspiration.

It will thus be seen that my improved inhaler may be employed in the administration of highly-volatile anesthetic agents without the least danger of depriving the patient of the fullest quantity of atmospheric air under conditions of maximum economy of the volatile agents and that the apparatus is inexpensive, compact, durable, and may be used with best results by ordinarily-skilled practitioners without danger to the patient.

Having thus described my invention, what I claim is—

1. An inhaler comprising an open-ended tubular section, an anesthetic-receiving chamber communicating with said section intermediate the ends thereof, inhalation-valves in the tubular section anterior and posterior respectively to said anesthetic-receiving chamber, and an exhalation-valve between said chamber and the delivery end of the tubular section.

2. An inhaler comprising an open-ended tubular section, a face-piece on one end thereof, an anesthetic-receiving chamber extending transversely of said tubular section intermediate the ends thereof, inwardly-opening check-valves closing said tubular section anterior and posterior respectively to said chamber, and an outwardly-opening check-valve between the chamber and the face-piece.

3. An inhaler comprising an open-ended tubular section, an anesthetic-receiving chamber extending transversely of said tubular section intermediate the ends thereof, said receiving-chamber having a removable cap at its upper end said cap being provided with an orifice closed by a removable plug, inhalation-valves in the tubular section anterior and posterior respectively to said chamber, and an exhalation-valve in said section between said chamber and the delivery end of the tubular section.

4. An inhaler comprising an open-ended tubular section *a*, a tranverse anesthetic-receiving chamber *c* having a removable cap *d* provided with an orifice closed by a plug *e*, inhalation-valves *f*, *f* closing said section *a* anterior and posterior to said chamber *c*, and an exhalation-valve *m* mounted in a rim *k* provided with a perforated cap *p*, said valve *m* being located on the section *a* between chamber *c* and the delivery end of said section *a*.

In testimony whereof I affix my signature in presence of two witnesses.

SYDNEY ORMOND GOLDAN.

Witnesses:

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