No. 736,059. PATENTED AUG. 11, 1903.

G. L. BENNETT.

DEVICE FOR ADMINISTERING ANESTHETICS.

APPLICATION FILED OCT. 20, 1902.

NO MODEL.

Fig. 1.

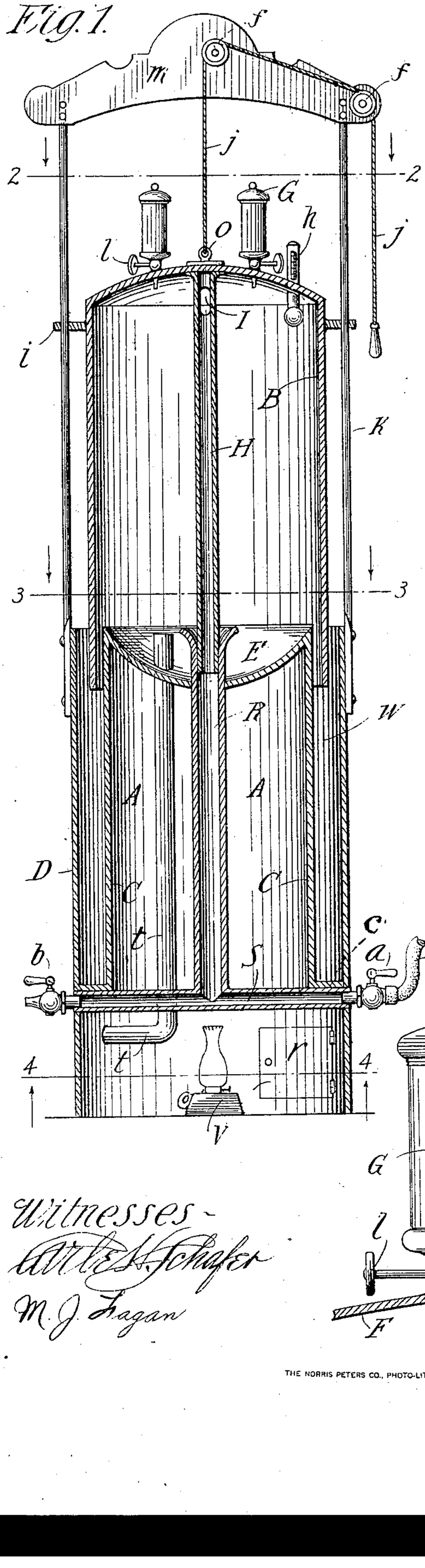

Fig. 2.

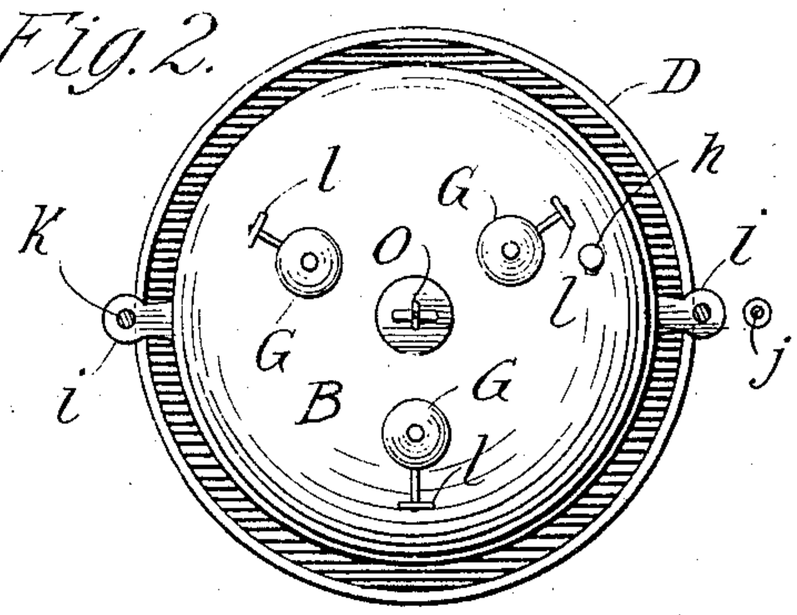

Fig. 3.

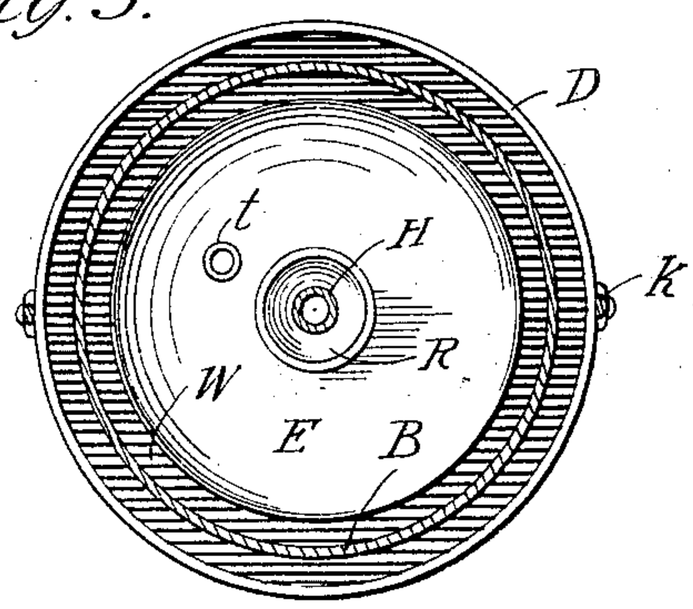

Fig. 4.

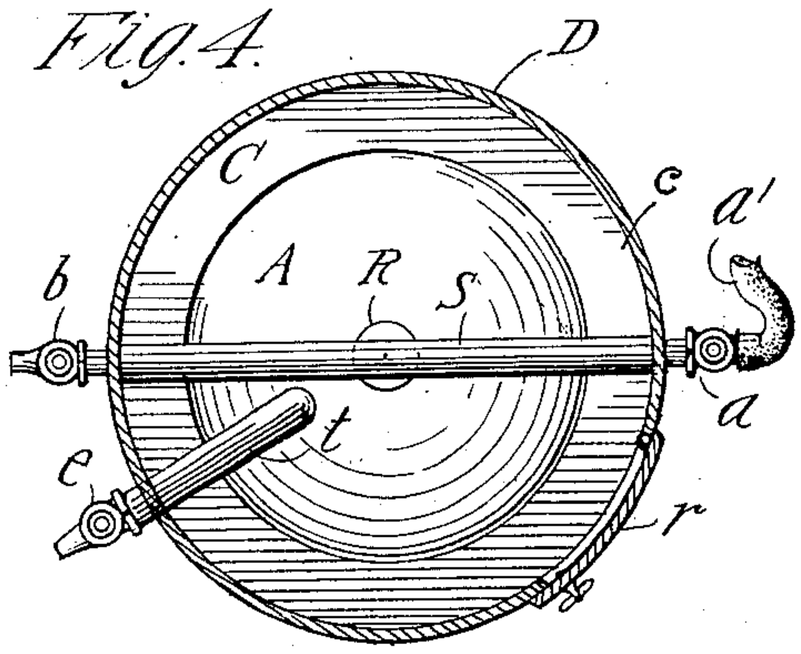

Fig. 5

Witnesses -
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No. 736,059. Patented August 11, 1903.

UNITED STATES PATENT OFFICE.

GEORGE L. BENNETT, OF CHICAGO, ILLINOIS.

DEVICE FOR ADMINISTERING ANESTHETICS.

SPECIFICATION forming part of Letters Patent No. 736,059, dated August 11, 1903.

Application filed October 20, 1902. Serial No. 128,078. (No model.)

To all whom it may concern:

Be it known that I, GEORGE L. BENNETT, a citizen of the United States, residing at Chicago, county of Cook, State of Illinois, have invented a new and useful Improvement in Devices and Processes for Administering Anesthetics, of which the following is a specification.

My invention relates to improvements in gasometers, such as are used by surgeons and dentists in their practice to induce anesthesia when performing a surgical operation. When using the older processes to produce anesthesia, there is great danger to the patient, resulting from the fact that the surgeon does not know how much anesthetic his patient is taking or what percentage it bears to the volume of air inhaled, and should the patient show signs of collapse he can only remove the hood and saturated napkin from the patient's face. This fails sometimes, for the reason that the air in the operating-room is always heavily laden with the wasted vapor of the anesthetic used, and there are cases on record where the operators themselves have been seriously affected and even rendered for a time unfit to continue the operation, and it is generally well known that not more than four per cent. of these expensive fluids are inhaled by the patient. The remainder is evaporated into air of the room, and thus lost. Hence the objects of my improvements are, first, to enable the operator to know to a certainty exactly what he is doing, what quantity of ether or chloroform or other fluid anesthetic he is administering to his patient, and what the percentage of anesthetic is to a given quantity of air; second, to prevent the escape of the vapor into the room, thus saving the wastage that ensues and the danger to the operators from anesthesia; third, to enable the operator to instantly stop the flow of vapor to the patient if signs of collapse should be present and if an antidote is required to just as quickly give it. I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a vertical section of the entire machine. Fig. 2 is a top view of the bell, taken on line 2, showing the position of the reservoirs and thermometer. Fig. 3 is a horizontal section view taken on line 3. Fig. 4 is a bottom view taken on line 4, showing the location of the various tubes and pipes, also the bottom of the water-holder. Fig. 5 is an enlarged view of one of the reservoirs.

Similar letters refer to similar parts throughout the several views.

In the construction of my gasometer I use a part of the old-fashioned device comprising a cylindrical bell floating in water. The bell B may be made from any suitable metal and of any size. On the top of said bell B, I fix three or more glass reservoirs G, having a graduated scale in ounce and dram subdivisions engraved thereon. They are provided with suitable screw-caps and cocks L to enable the operator to spill the anesthetic fluid and antidote they are intended to hold. In the center of the top an eye O is fixed, the object of which will be more fully explained below. On each side of the bell at the top edge guide-eyes J are fixed. A tube H, having two oblong openings I at the top end, is fixed in the center of the top of the bell, vertically extending downwardly the same length as the sides of the bell. The object of the openings in the top of the tube is to facilitate the escape of the anesthetic vapor. It being lighter than the air, it will rise to the top of the bell. A thermometer H is fixed to the top of the bell, the bulb being inside. The lower part of the device consists of an outer cylinder D, one-third longer than the bell, having a door *r* near the lower edge. Two guide-rods K are fixed at opposite sides at top edge, designed to engage the guide-eyes *i*, fixed to the bell B. The outer cylinder is made one-half inch larger in diameter than the bell.

The inner cylinder C is made one-half inch smaller in diameter and one inch longer than the bell. A flange *c* is turned outwardly at right angles one inch wide. It is then placed vertically inside of the outer cylinder with the flange down, its top edge level with the top of the outer cylinder, where it is fixed concentric with the outer cylinder by soldering or other means to the flange *c*, thus leaving a space *w* one inch between the two cylinders, which I will call hereinafter the "water-space." A concaved basin E is now fixed

to the top of the inner cylinder by solder, thus forming an inner chamber A. A tube S is fixed diametrically across the bottom of the water-compartment. (See Fig. 4.) The ends of the tube S are extended through the outer cylinder and fitted with cocks *b a* or valves, each end having a nipple adapted to connect a hose *a'*. One end of said tube is fitted with a larger cock than the other end and is used as an inlet or outlet for air, as the case may be, more fully explained hereinafter. An aperture is now made in the center of the bottom of the basin E, and a tube R is inserted vertically down to the tube S, where it is connected. The top of the tube R is flared outwardly slightly to facilitate the entrance of another tube telescopically, hereinafter described. The top of said tube is level with the edge of the basin. A secondary tube *t* of a smaller diameter than the tube R is inserted through the bottom of said basin one and one-half inches from the tube R and extends downward below the tube S, where it is turned at a right angle and extends horizontally through the outer cylinder, the end being provided with a cock *e*. (Shown in Fig. 4, bottom view.) A truss *m*, Fig. 1, having two pulley-sheaves *f f* connected thereto, is fixed to the top ends of guide-rods K. A cord or chain *j* is placed in the pulley and connected with the eye O, above referred to. The lamp V is placed in the space under the tube S in the air-chamber A. To operate this mechanism, first fill the water-space up to one and one-half inches of the top, place the guide-rods in the guides on the sides of the bell, insert the tube H into the flaring mouth of tube R, connect the cord to the eye, then open the outlet-cock and lower the bell down till the guides rest on the edge of outer cylinder, then fill the reservoirs one with ether and one with chloroform and one with ammonia, then by opening the cock under the reservoir containing fluid required spill into the basin the necessary quantity of anesthetic decided to be used, then raise the bell up to the top by pulling on the cord. As the bell moves up the air will pass up through the central tubes and into the bell through the oblong apertures in the sides of the telescoping tube near the top of the bell. Then close the outlet-cock, and the bell will remain up, resting on air. If it is thought necessary to hasten evaporation of the anesthetic, place a lighted lamp in space beneath the basin. The thermometer will indicate the temperature. As most of the anesthetic fluids boil at a low temperature, not much heat is required to vaporize them. After allowing the bell to stand for five to ten minutes connect a hose *a'*, attached to an air-inhaler, with outlet-cock *a*, then place the patient either in an upright or reclining position with the inhaling-cap over his mouth and nostrils, open the valve, and permit the gas to flow to him, exercising the same vigilance as when operating with other processes. If the weight of the bell causes a pressure too great and the etherized air flows faster or is stronger than the patient can inhale, fasten the cord so the bell cannot descend and open the cock *e* on the secondary tube to admit a supply of fresh air equal to the quantity inhaled by the patient. As there is a known amount of anesthetic fluid in the basin, he cannot take an overdose. If the patient does not become insensible with the first dram, spill another into the basin. Should the patient show signs of collapse, shut the inhaling-tube and open the outlet-cock, press down the bell, discharging the etherized air, spill into the basin the antidote, raise the bell, and allow the resuscitating air to flow to him. If oxygen is thought to be necessary, connect it with the secondary tube and let it in under pressure.

It is obvious that no etherized air can escape into the room except that which the patient may exhale as he breathes. In practice it has been found that one dram of anesthetic to five gallons of air heated to 98° will be sufficient to produce anesthesia in a large percentage of cases. However, the operator can exercise his judgment, since he knows to a certainty just what amount of anesthetics he has in the bell, a knowledge he has not when working the older process.

There is another purpose for which this device may be applied, and I do not claim it as a part of my invention, but disclose it to enable dentists and others to apply it in their arts—namely, by fixing a small hose to the outlet connected to a Bunsen blowpipe it can be used for soldering purposes, or an atomizer can be attached, or heated air can be blown into tooth-cavities for the purpose of drying them.

Having described my invention and the process operating it, and as a part of the mechanism is not new, I do not claim it, broadly.

What I do claim, and wish to secure by Letters Patent, is—

1. The combination in a gasometer of the reservoirs fixed to the crown of a floating bell and means for discharging the contents of said reservoirs into said bell, substantially as set forth.

2. The combination in a gasometer of the outer cylinder having guide-rods fixed vertically to its sides, said rods provided with a truss at the upper ends, the door placed near the bottom, the inner cylinder, having a flange on its lower end fixed vertically and concentrically within said outer cylinder, forming a space between said outer and inner cylinders substantially as set forth.

3. The combination in a gasometer of a concave basin fixed to the top of an inner cylinder, the tube R provided with a flaring

mouth, fixed vertically in the center of said basin, extending downwardly to the bottom of said inner cylinder, the transverse tube S fixed to the outer cylinder provided with cocks at each end, the vertical tube R connected centrally with said tube S, the secondary tube *t* fixed eccentrically and vertically in said basin, extending downward and outward through the outer cylinder, said tube provided with a cock, substantially as described.

GEORGE L. BENNETT.

Witnesses:
ADDISON EVANS,
M. E. GREGG.