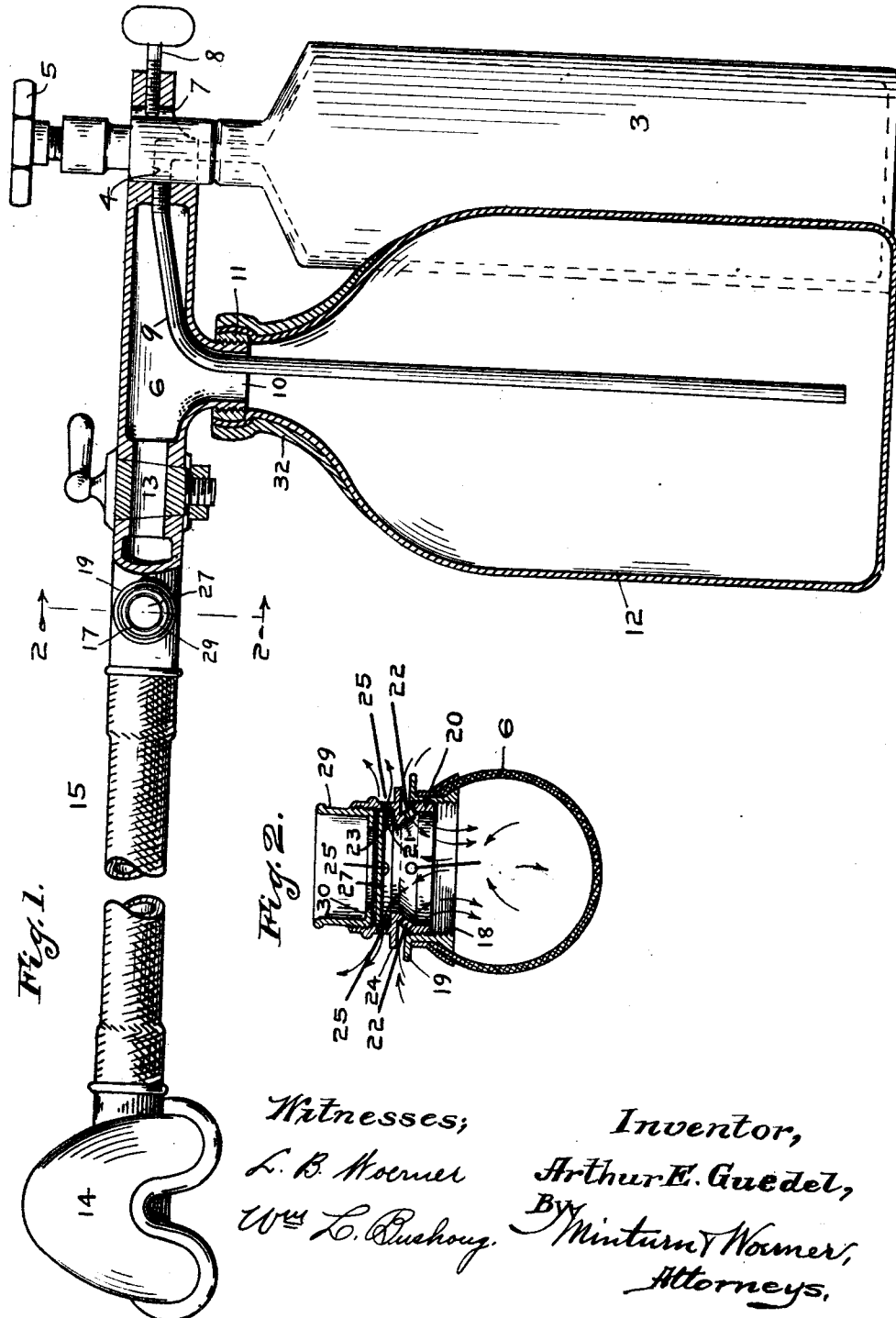


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OBSTETRICAL ANESTHETIC MACHINE.
APPLICATION FILED SEPT. 12, 1911.

1,045,140.

Patented Nov. 26, 1912.



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UNITED STATES PATENT OFFICE.

ARTHUR ERNEST GUEDEL, OF INDIANAPOLIS, INDIANA.

OBSTETRICAL ANESTHETIC-MACHINE.

1,045,140.

Specification of Letters Patent.

Patented Nov. 26, 1912.

Application filed September 12, 1911. Serial No. 648,959.

To all whom it may concern:

Be it known that I, ARTHUR E. GUEDEL, a citizen of the United States, residing at Indianapolis, in the county of Marion and State of Indiana, have invented certain new and useful Improvements in Obstetrical Anesthetic-Machines, of which the following is a specification.

This invention relates to an apparatus for administering an anesthetic in obstetrical cases, and the object is to provide portable means for supplying a gas, like nitrous oxid, in such convenient form that the patient may self-administer it to relieve the labor-pains as she feels them coming on.

A further object is to so warm the gas before it reaches the patient that there will be no disagreeable sensation attending its use, and to simplify and improve the various details of construction in a manner which will hereinafter be fully described and pointed out in the appended claims.

I accomplish the objects of my invention by the mechanism illustrated in the accompanying drawing in which—

Figure 1 is a view in side elevation and partial section of my invention, and Fig. 2 is a cross section on a larger scale on the line 2—2 of Fig. 1.

Like characters of reference indicate like parts in the two views.

3 is a strong metal tank which is charged under pressure with nitrous oxid gas. A discharge from the tank through a passage shown by dotted lines at 4, in Fig. 1, is regulated by a suitable valve which is controlled by the hand-wheel 5. 6 is a metal pipe having an end hood 7 with a transverse opening to receive the neck of the tank 3 with a loose fit. A set screw 8 presses the neck of the tank against the opposite wall of the hood-opening, and passing through this wall into pipe 6 is a metal tube 9, of much smaller diameter, into which the passage 4 from the tank 3 discharges. The pipe 6 has an externally screw-threaded lateral extension 10, which screws into a metal ring 11, in the neck of a rubber bag 12. The tube 9 is bent to enter the bag 12 through the pipe extension 10. It extends nearly to the bottom of the bag and discharges into it.

13 is a cock in the pipe 6 by which the quantity of gas discharged through the pipe

may be regulated or entirely cut off, as desired.

14 is a mantle or hood of any usual and suitable shape and material (usually rubber), to fit over the nose of the patient while taking an anesthetic. It is connected with the pipe 6 by means of a flexible tube 15, of sufficient length to reach the face of the patient while the tank 3 and the bag 12 are lying upon the bed at or near her feet.

Mounted in pipe 6 between the cock 13 and the place of attachment of tube 15, is an air valve 17, the construction of which is best seen in Fig. 2. An opening through the side of the pipe 6 is provided with an externally screw-threaded metal sleeve 18, preferably having an external annular flange 19. Screwing into the sleeve 18 is a second sleeve 20 having inwardly oblique walls 21 for a portion of its length beginning just outside of its threaded portion. Through this oblique wall 21 is a series of air holes 22. Above the oblique portion 21 the walls of sleeve 20 extend at right angles to the latter into intersection with said oblique walls, forming a shoulder 23, and there will preferably be an outward extension to form a flange 24, parallel with flange 19. The quantity of air admitted through holes 22 will be determined by the space between flanges 24 and 19, and that will be regulated by screwing the sleeve 20 in and out of sleeve 18.

The walls of sleeve 20, above shoulder 23, have air-holes 25, and loosely seated on shoulder 23 within the sleeve is a disk 27 preferably of thin metal. The outer end of sleeve 20 is internally screw-threaded to receive a third sleeve 29, having an internal flange 30 at its inner end to limit the outward movement of the disk. The range of movement of the disk may be varied by screwing the third sleeve 29 in or out.

The holes 22 form openings through which air is both inspired and expired, and the holes 25 are openings through which expiration only of air occurs. The inspiratory openings are for the purpose of regulating the quantity of air inspired with the anesthetic agent. They act also as expiratory openings but are insufficient for this purpose when acting alone. The percentage of air inspired with the anesthetic agent, regulates definitely the depth and

duration of the anesthesia secured, and the amount expired through the valve is always greater than the amount inspired through the valve.

5 The valve 17 is placed remote from the hood to avoid interference with the valve-mechanism by the condensation of vapors from the breath of the patient, and beyond the reach of the patient, but where it will
10 be within easy reach of the medical attendant or his assistant.

As the bag 12 is made out of flexible material, as rubber, and is laid flat on the bed when in use, it is liable to so collapse at the
15 neck as to interfere with the flowing gas and to prevent this I provide the reinforcement 32 of semi-flexible rubber or other material to maintain the requisite extension of the parts.

20 By extending the tube 9 nearly to the bottom of bag 12 the rapidly expanding gas from tank 3 is made to travel to the bottom of bag 12 and back again, and is made to expand in the bag, whereby it is warmed
25 and its refrigerating power is reduced before it is breathed by the patient. I have found in practice that without this extended tube 9 the gas will be breathed by the patient without having entered the bag and
30 will produce a cold sensation which will be disagreeable to her.

The operation of my invention will be apparent from what has been said without
35 further description. The patient will hold the hood 14 in her hand, then will be instructed to place it over her nose when she feels a labor pain coming. This she will do and will be able to administer her own anesthetic as she feels that she needs it.

Having thus fully described my invention 40 what I claim as new and wish to secure by Letters Patent of the United States, is—

1. In a valve for an apparatus for administering anesthetics, an internally-threaded sleeve, a second sleeve screwing into said
45 first sleeve and having both inspiratory and expiratory openings, each of said sleeves having outside flanges which are moved with relation to each other by rotating the second sleeve to regulate the size of the air
50 passage between the two sleeves, and means to automatically close the expiratory openings during the inspiratory periods.

2. In a valve for an apparatus for administering anesthetics, an internally-threaded
55 sleeve, a second sleeve screwing into said first sleeve and having both inspiratory and expiratory openings, each of said sleeves having outside flanges which are moved with relation to each other by rotating the
60 second sleeve to regulate the size of the air passage between the two sleeves, said second sleeve being internally threaded and having an inside flange below its internal threads, the expiratory openings in said second
65 sleeve being located between said internal threads and internal flange, a third sleeve screwing into the second sleeve, and a valve plate between the third sleeve and the internal
70 flange of the second sleeve.

In witness whereof, I have hereunto set my hand and seal at Indianapolis, Indiana, this 31st day of August, A. D. one thousand nine hundred and eleven.

ARTHUR ERNEST GÜEDEL. [L. s.]

Witnesses:

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."