W. LUXMORE.

INHALING DEVICE.

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1,115,702.

Patented Nov. 3, 1914.

Fig. 1.

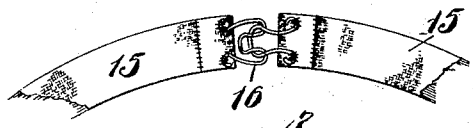


Fig. 3.

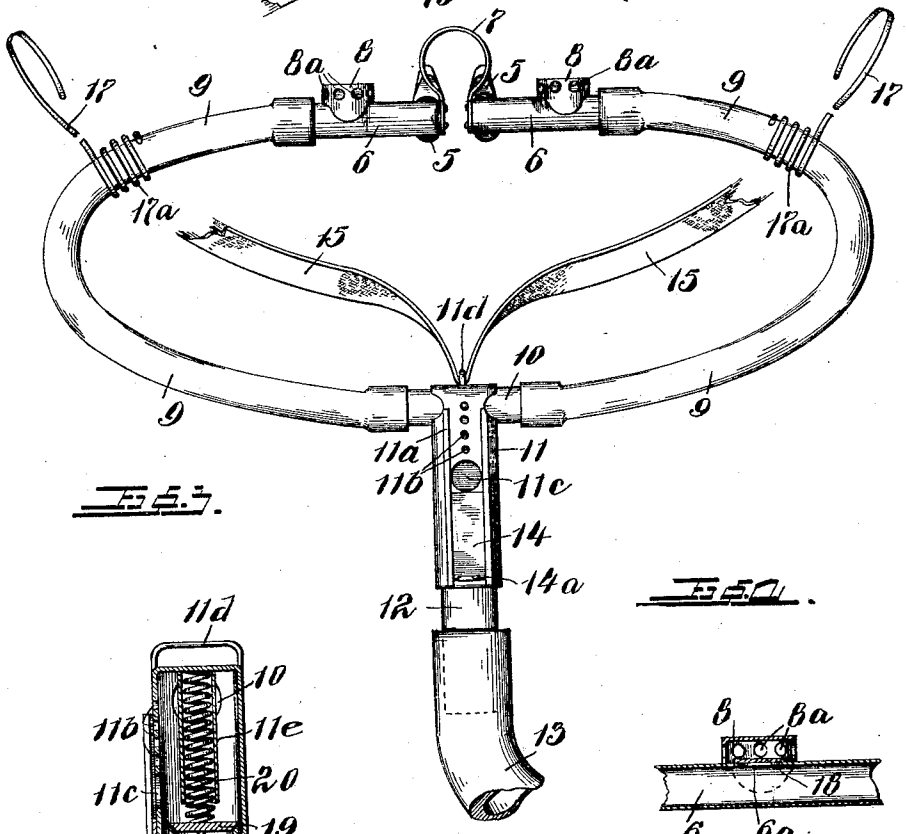
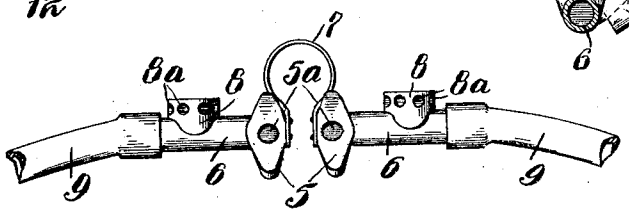
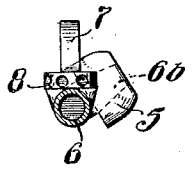


Fig. 4.

Fig. 5.

Fig. 2.





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UNITED STATES PATENT OFFICE.

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INHALING DEVICE.

1,115,702. Specification of Letters Patent. Patented Nov. 3, 1914.

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To all whom it may concern:

Be it known that I, WILLIAM LUXMORE, citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Inhaling Devices, of which the following is a specification.

This invention relates to improvements in apparatus for administering gases for anæsthesia or analgesia, and especially in connection with dental practice, though it may be used in other connections if desired.

The especial object of the improvements which form the subject matter of this application is to provide an apparatus that may be attached with the least inconvenience and discomfort to the patient, and at the same time permit the operator to have unobstructed access to the patient's mouth, and control the quantity and quality of gas or gaseous mixture administered.

A further object is to provide an apparatus of the class described, of light construction and simple arrangement all parts of which can be readily sterilized, and will therefore be entirely sanitary, and in which a single apparatus may be readily and conveniently fitted to patients of widely varying facial characteristics or contours.

A further object of my invention is to provide manually operable controlling means for the mixture of gas and air which will be directly under the eye of the operator, and can be quickly reached by him at all times.

Having the foregoing and other objects of general utility and novelty in view, I have produced the apparatus, a preferred embodiment of which is shown in the accompanying drawing, in which:—

Figure 1 is a plan view of a complete apparatus; Fig. 2 is an elevation of a portion of the apparatus which is applied directly to the nose of the patient; Fig. 3 is an enlarged longitudinal section taken through the gas mixing chamber and its controlling valve; Fig. 4 is a sectional detail of one of the exhaling valve connections, and Fig. 5 is a detail of one of the narial tips which form important features of my invention.

Referring to the details of the drawing, 6, 6, represent two short sections of metal tubing, preferably aluminum, in order to secure the desired lightness in weight, the contiguous ends of which are closed and coupled together by a flat cylindrically bent spring 7, forming a bow, the tension of which is exerted to hold the adjacent ends of the tube sections 6 against separation for a greater distance than that shown in Fig. 1, that is in close engagement with the patient's nose.

Projecting at right angles from the proximate ends of the tube sections 6 are short and slightly tapering branches 6^b over which are removably fitted the narial tips 5, which are preferably made of aluminum and are provided in their inner walls with openings 5^a (see Fig. 2) which coincide with the openings in the ends of the tube 6^b.

In practice the aluminum tips 5 will be made in various sizes and shapes externally so that they will be adapted to fill nasal orifices of different contour so that the patient will be permitted to inhale only through the openings 5^a and tube sections 6^b, and 6, while exhaling will be via the same conduits to the exhaling valves 8, as above described.

Connected with the tubes 6, at points over the openings 6^a in said tubes, are cylindrical valve chambers 8, in the side walls of which are openings 8^a. Mounted within the chambers 8 and controlling the opening 6^a are flap valves 18 which, while permitting the egress of exhalations from the tubes 6 to the valve chamber and thence to the atmosphere through the openings 8^a, will prevent any admission of atmospheric air through said openings 8^a to the tube 6, as will be clearly apparent from the details of Fig. 4.

The outer ends of the tube sections 6, are connected respectively with flexible tubes 9, which tubes in turn are connected with the respective branches of a pipe coupling 10. Extending at right angles from, and communicating with the interior of the pipe coupling 10, is a tubular mixing chamber 11, one side of which is flattened and provided with parallel ribs or flanges 11^a arranged on opposite sides of a series of small openings 11^b, and a larger opening 11^c. At the inner end of the mixing chamber 11, is a ring 11^d, and fitting within the opposite end is an extension 12, to which a flexible tube 13 is connected, said tube leading to any suitable supply of gas. The openings 11^b, 11^c, are controlled by a slide plate 14, one end of which is provided with a finger piece 14^a to facilitate the operation of said plate.

Within the mixing chamber 11, is fixe

a small tube 11ᶜ, which forms a housing for an expansion coiled spring 20, one end of which is connected with a valve 19 which is adapted to be normally seated on a ring 21 fixed in the inner end of the tube 12, as clearly shown in Fig. 3. The tension of said spring 20 is exerted to maintain the valve 19 on its seat on the ring 21 to counterbalance the pressure of gas conducted through the pipes 13 and 12 and said balance is overcome and the valve unseated by the inhalations or inspirations of the patient in the use of the apparatus, thus permitting a supply of the gaseous mixture to pass to the patient.

If the operator desires a full supply of atmospheric air to the chamber 11, he will slide the plate 14 to the position shown in Fig. 1, and will graduate the amount of air admitted by sliding the plate over the openings 11ᵇ, 11ᶜ, as will be readily understood.

A tape 15 is inserted through the loop 11ᵈ, and is provided at its ends, with a wire clasp 16 for fastening the tape around the neck of the patient when the apparatus is applied. Wire loops 17 having coils 17ᵃ surrounding and frictionally embracing the tubes 9, are provided for engaging over the ears of the patient, to support said tubes and hold them out of the way of the operator.

It will be noted that the ear loops 17 may be adjusted longitudinally along the tubes 9 so as to bring them nearer to the nose of the particular patient. It will also be noted that the support of the apparatus will be distributed upon the ear loops 17, the band or tape 15, and the narial tips 5, the latter gripping the nasal septum with the pressure caused by the spring bow 7.

Having thus described my invention what I claim as new, is:—

1. In an inhaling apparatus, a pair of rigid inhaling tubes, a resilient member connecting the proximate ends of said tubes, exhaling valve-controlled extensions on said tubes, narial tips removably attached to and extending at an angle from the proximate ends of said tubes, pipes for conducting gas to said tubes, and spring controlled means for admitting gas to said gas conducting pipes.

2. In an inhaling apparatus, a pair of inhaling tubes, a spring member connecting the proximate ends of said tubes and adapted to hold them in close engagement with the nose, exhaling means arranged upon said tubes, narial tips adjustably attached to said tubes and adapted to conform to the shape of the nares, said tips extending angularly from said tubes, common means for conducting inhaling gas and atmospheric air to said tubes, means for regulating the supply of air to said conducting means, and a yielding valve arranged in said conducting means.

3. In an inhaling apparatus, a pair of inhaling tubes, a yielding member connecting the proximate ends of said tubes and adapted to hold them in close engagement with the nose, exhaling means arranged upon and communicating with said tubes, tips extending at an angle to said tubes adjacent said yielding member and adapted to fill the nares, flexible pipes communicating with the inhaling tubes, a gas and air mixing chamber communicating with said conductor pipes and adapted to be supported below said tubes, and means on said mixing chamber for controlling the supply of air admitted thereto.

4. In an inhaling apparatus, a pair of inhaling tubes, yielding means connecting said tubes and adapted to hold them in engagement with and at an angle to the nose, inhaling tips communicating with the inner ends of said tubes and removably connected therewith, exhaling valves in said tubes, flexible gas conductor pipes communicating with the outer ends of said tubes, adjustable means adapted to engage the ears for supporting said pipes, a mixing chamber communicating with said conductor pipes, a valve mounted in said chamber, means for manually controlling the quantity of air admitted to said chamber, and means for conducting gas to said chamber.

5. In an inhaling apparatus, a pair of inhaling tubes adapted to extend at right angles to and below the nose of the user, yielding means connecting said tubes and adapted to support same from the nose of the user, narial tips removably fitted to said tubes, exhaling valves on said tubes, a mixing chamber, pipes for conducting the inhaling gas from the mixing chamber to the inhaling tubes, and means for conducting the inhaling gas to the mixing chamber, said mixing chamber, pipes and conducting means, all arranged below the inhaling tubes.

6. In an inhaling apparatus comprising inhaling tubes, a gas and air mixing chamber, pipes communicating with said tubes and chamber, and a pipe for conducting gas to said mixing chamber, means for supporting said members from the nose, ears and neck of the patient.

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

WILLIAM LUXMORE.

Witnesses:
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M. A. MILORD.

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