F. J. McSPIRIT.

INHALER AND RESPIRATOR.

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Patented July 29, 1913.

1,068,800.

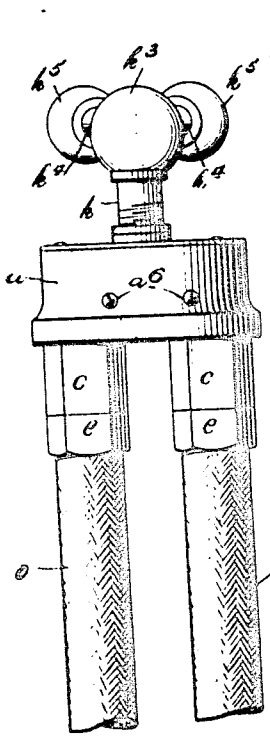


Fig. 1.

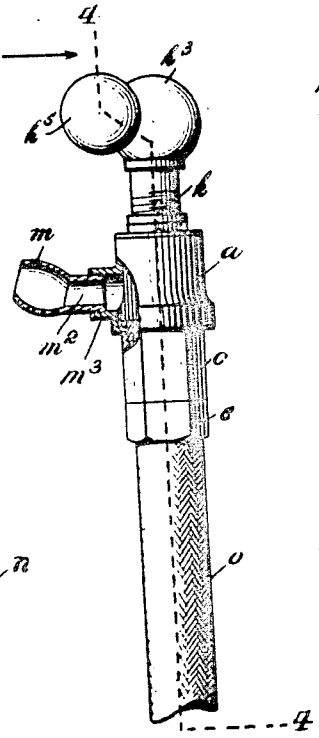


Fig. 2.

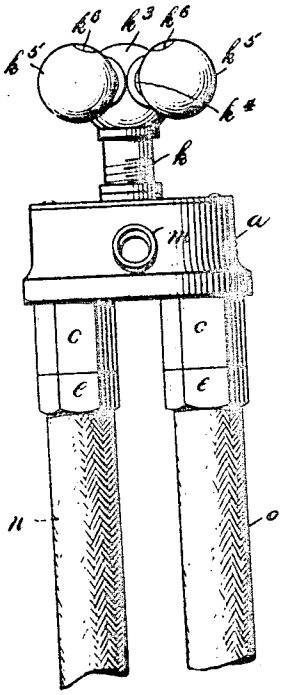


Fig. 3.

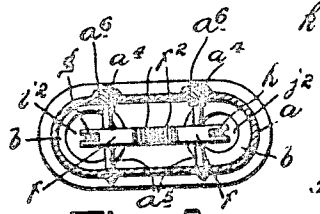


Fig. 5.

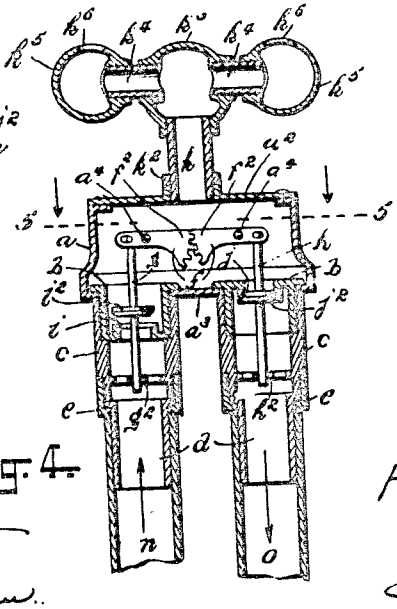


Fig. 4.

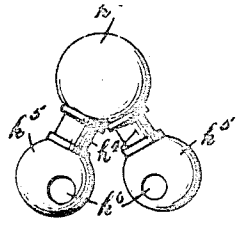


Fig. 6.

WITNESSES

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INHALER AND RESPIRATOR.

1,068,800. Specification of Letters Patent. Patented July 29, 1913.

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To all whom it may concern:

Be it known that I, FRANCIS J. McSPIRIT, a citizen of the United States, and residing at Jersey City, in the county of Hudson and State of New Jersey, have invented certain new and useful Improvements in Inhalers and Respirators, of which the following is a specification, such as will enable those skilled in the art to which it appertains to make and use the same.

This invention relates to inhalers and respirators and the object thereof is to provide a device of this class which is simple in construcuture and operation and which is adapted for use by men and women whose occupations are such as to expose them to the necessity of breathing foul air or air laden with acid, smoke, dust, grindings or any other injurious matter or substances capable of being drawn in through the nose or mouth in the operation of breathing; and with this and other objects in view, the invention consists in a device of the class specified, constructed and operated as hereinafter described and claimed.

The invention is fully disclosed in the following specification of which the accompanying drawing forms a part, in which the separate parts of my improvement are designated by suitable reference characters in each of the views, and in which:—

Figure 1 is a back view of my improved inhaler and respirator; Fig. 2 a side view thereof with part of the construction broken away or in section; Fig. 3 a front view of the device; Fig. 4 a section on the line 4—4 of Fig. 2; Fig. 5 a section on the line 5—5 of Fig. 4, and; Fig. 6 a plan view of the device.

In the construction of my improved inhaler and respirator I provide a box-shaped body portion a which is oblong in form in horizontal section and the end portions of which are preferably circular in form, and said body portion is provided with a top or cap a^2 and a bottom a^3, and passed through the opposite end portions of the bottom a^3 are two similar thimble-shaped members b the body portions of which are screw threaded, and with which are connected sleeves c the lower ends of which are provided with couplings d which are held in position by collars e screwed onto the lower ends of the sleeves c.

Mounted on pivot pins a^4 in the body a are levers f having intermeshing segmental gear heads f^2, and with the outer ends of which are connected valve rods g and h which extend downwardly through the sleeves c. The lower end portions of the valve rods g and h pass loosely through spiders g^2 and h^2 in the sleeves c, and which form guides for the lower ends of said valve rods.

The pivot pins a^4 on which the levers f are mounted are provided at one end with bearings in one side of the body a, while the other end of said pins are pivoted in adjustable screw plugs a^5 mounted in the opposite sides of said body, as clearly shown in Fig. 5, and by means of this construction and by the use of set nuts, if desired, the said pivot pins may be adjusted or held in place, as will be readily understood.

The thimble b through which the valve rod g passes is provided at its lower end with a port or passage i having an annular valve seat, and said rod g is provided above said port or passage with a valve i^2 adapted to close the same.

The thimble b through which the valve rod h passes is provided at the top thereof with a port or passage j, and said rod h is provided below said port or passage with a valve j^2 adapted to close the same.

Connected centrally with the top a^2 of the body a and communicating with said body is a tubular coupling k having a lock nut k^2, this connection being a screw threaded connection, and connected with the coupling k is a main nipple coupling k^3 which is preferably spherical in form, and connected radially with the part k^3 are two sleeve couplings k^4 with which are connected supplemental nipple couplings k^5 in the tops of which are ports or passages k^6. The front of the body a is also provided centrally thereof with a mouth nipple m having a tubular shank m^2 adapted to be screwed into a collar m^3 formed on or connected with the body a and, in practice, the device is manipulated or held so that the nipple m will enter the mouth and at the same time the top portions of the nipples k^5 may be inserted into the nostrils, the radial connections of the nipples k^5 with the part k^3 being such as to permit of this operation.

By securing the coupling k to the body a by a screw threaded connection, provision is made for the vertical adjustment of the nipples k^5 as will readily be seen. This construction enables the operator to vary the

distance vertically between these nipples and the mouth piece.

The sleeve couplings k^4 are threaded at their inner ends, and the nipples k^5 are, in the construction shown, slipped onto said couplings, and by means of this construction the said nipples k^5 may be adjusted toward and from the part k^4 and the connection of the mouth nipple m provides for a similar adjustment thereof. These adjustments are found necessary to adapt the device for use by different wearers. The distance between the mouth piece and the nasal nipples, satisfactory and confortable to one person will often have to be varied to render the device comfortable for another. So also the changes in the length of the mouth piece or the distance of the same from the body of the device must be made to make the same comfortable to the wearer.

Connected with the couplings d at the lower ends of the sleeves c are flexible tubes n and o and, in practice, the tube n is carried to a point where a supply of pure air may be obtained, and in the operation of this device fresh air enters through the tube n and this air after being breathed is discharged through the tube o, and air passed outwardly through the tube o may be discharged at any point.

The operation will be readily understood from the foregoing description when taken in connection with the accompanying drawing and the following statement thereof.

The construction and attachments of the mouth nipple and the nasal nipples are such that the said mouth nipple may be inserted into the mouth and the device held in operative position by this means alone, or any preferred bridle attaching device may be employed whereby the device may be secured to the head, and the adjustable feature of the mouth and nasal nipples facilitates the use of the device, as will be readily understood.

In the operation of breathing, the air is drawn in through the tube n and expelled through the tube o, said air passing into the lungs through the mouth and nostrils and being expelled therefrom in the usual way at regular intervals, and as the air flows in through the tube n the valve i^2 is opened and the valve j^2, closed and as the air flows out through the tube o the valve j^2 is opened and the valve i^2 closed.

With my improved inhaler and respirator constructed and operated as described, it will be apparent that the impure air of the room or space in which the user is employed cannot enter the lungs, as only pure air entering through the tube n can be breathed through the nostrils and mouth.

My improved inhaler and respirator is simple in construction and efficient in operation and may be used wherever such devices are required, and the method of using the same or the method of holding it in position for use may be varied according to the circumstances in each particular case or in any particular use to which the device is applied.

Having fully described my invention, what I claim as new and desire to secure by Letters Patent, is:—

1. The combination with the main inhaler body having an opening in the bottom thereof, of the inverted thimble valve casing having a flange at the upper end thereof, of a sleeve secured thereto, a flexible tube coupling and a collar securing the same to said sleeve.

2. In an inhaler and respirator, the combination with a main body provided with couplings for flexible tubes, inverted thimble valve casings placed in said body, valve rods passing through said casings and guided at their outer ends, said valve rods being provided with valves controlling air ports in said casings, and levers mounted within the body the inner ends of which are provided with geared sectors meshing with each other and the outer ends of which are connected with said valve rods whereby said valves are counterbalanced and operable in any position in which the main body can be held.

3. An inhaler comprising a hollow main body provided with inlet and outlet apertures, valves controlling said apertures, a tublular mouth piece connected with said main body, a pair of horizontally disposed nasal nipples supported above said mouth piece and connected with said main body and adjustable toward and from the mouth piece, said nipples being rotarily adjustable and provided with a nasal aperture located out of line with the axis of rotary adjustment thereof.

4. An inhaler, comprising a hollow main body, provided with inlet and outlet apertures, valves controlling said apertures, a vertically disposed tube secured to said main body and adjustable rotarily and vertically with respect thereto, a pair of horizontally disposed nipple supporting tubes, supported by and communicating with said tube, and disposed angularly with respect to each other, a pair of nasal nipples each having a spherical portion and a sleeve portion for frictionally engaging one of said nipple supporting tubes and having a nasal aperture in said spherical portion out of line with the axis of said sleeve portion.

5. An inhaler comprising a hollow body provided with inlet and outlet apertures, controlling valves for said passages and nasal nipples connected to the main body and adjustable rotarily, said nipples having each a nasal aperture located out of line with the axis of the rotary adjustment of the nipple, whereby the partial rotation of said nipples

varies the distance between their nasal apertures.

6. An inhaler comprising a hollow body provided with inlet and outlet apertures, controlling valves for said apertures, a pair of nasal nipples connected with said hollow body and having their axes disposed angularly to each other, said nipples being adjustable rotarily and also adjustable longitudinally, each nipple being provided with a nasal aperture located out of line with the axis of its rotary movement.

7. An inhaler, comprising a hollow body provided with inlet and outlet apertures, controlling valves for said apertures, a pair of nipple supporting tubes connected with said main body and disposed angularly to each other, a pair of nasal nipples each having a spherical portion and a sleeve portion frictionally engaged with one of the said nipple supporting tubes, to thereby permit longitudinal and rotatable adjustment, said nipples each having its spherical portion provided with a nasal aperture located out of line with respect to its sleeve portion.

In testimony that I claim the foregoing as my invention I have signed my name in presence of the subscribing witnesses this 19th day of April 1911.

FRANCIS J. McSPIRIT.

Witnesses:
C. E. MULREANY,
G. A. MANDEVILLE.

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