No. 834,184. PATENTED OCT. 23, 1906.

Y. Q. CALDWELL.

INHALER.

APPLICATION FILED AUG. 25, 1905.

Fig. 1.

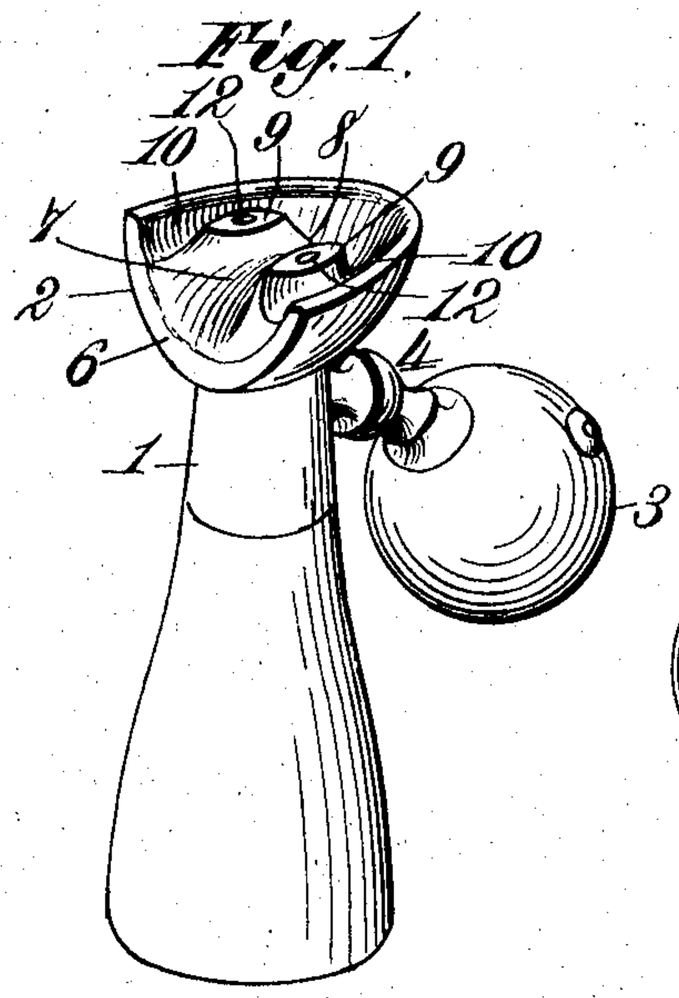


Fig. 2.

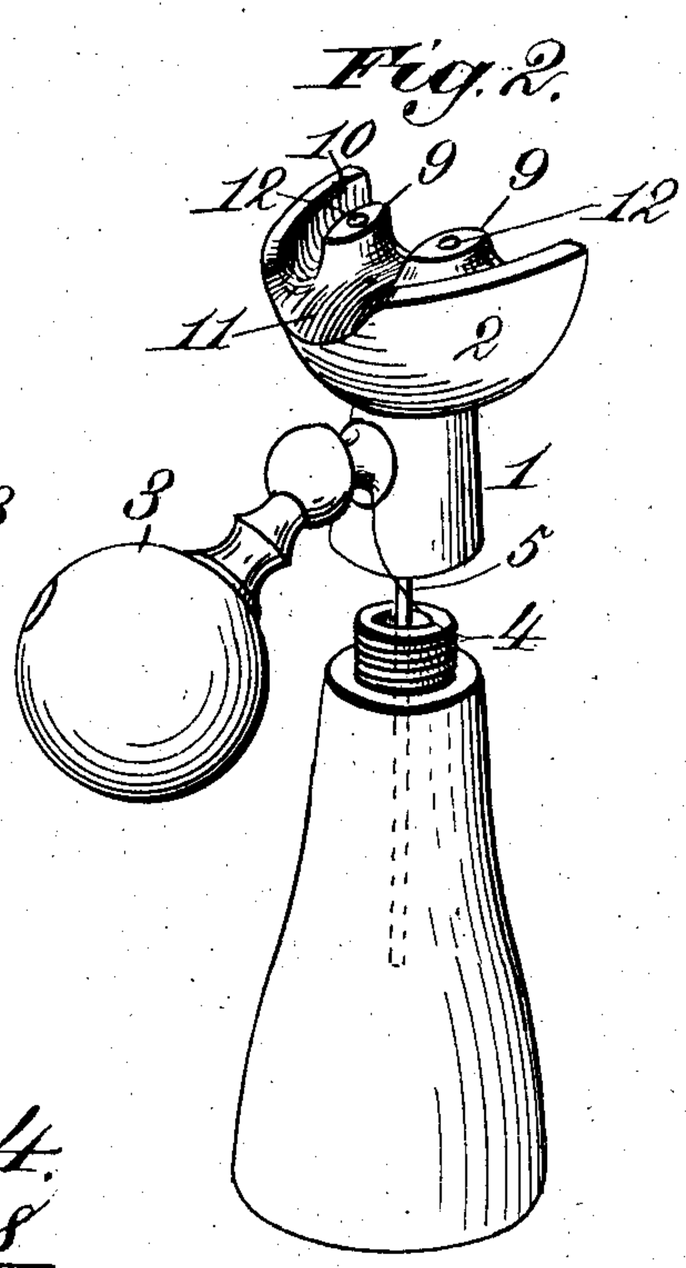


Fig. 3.

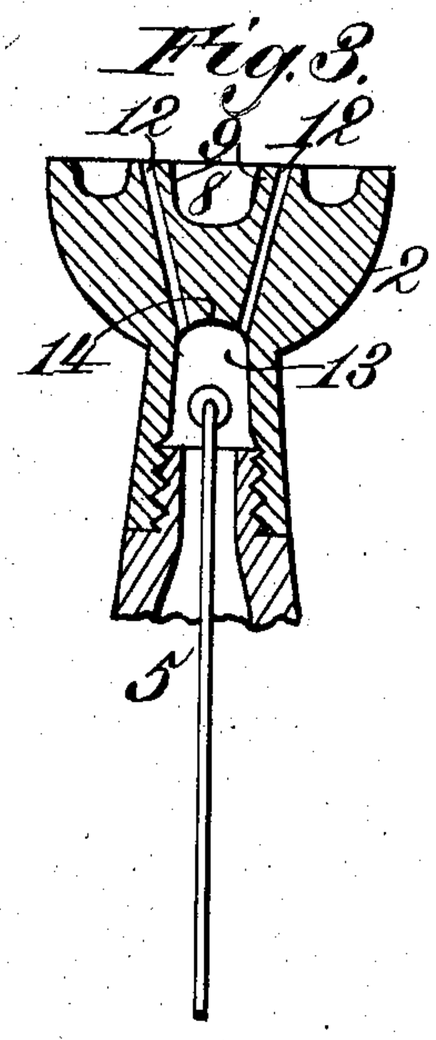


Fig. 4.

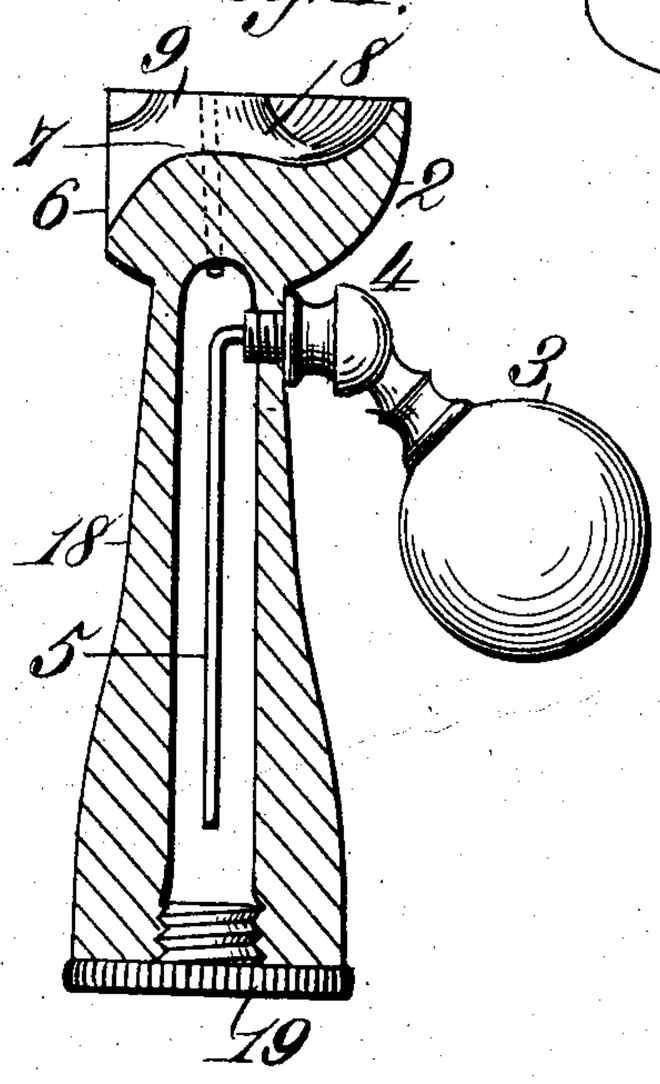


Fig. 5.

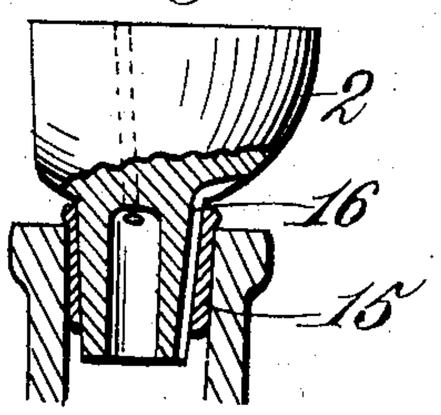
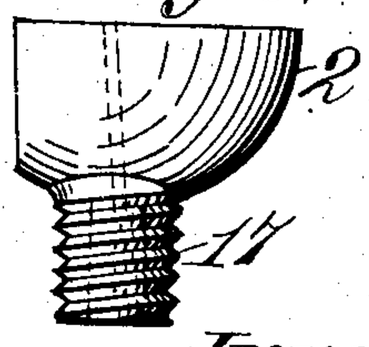


Fig. 6.



Witnesses.
Robert Everett.
J. B. Keelee

Inventor.
Yancey Q. Caldwell.
By James L. Norris.
Atty.

UNITED STATES PATENT OFFICE.

YANCEY Q. CALDWELL, OF PARIS, TENNESSEE.

INHALER.

No. 834,184. Specification of Letters Patent. Patented Oct. 23, 1906.

Application filed August 25, 1905. Serial No. 275,787.

To all whom it may concern:

Be it known that I, YANCEY Q. CALDWELL, a citizen of the United States, residing at Paris, in the county of Henry and State of Tennessee, have invented new and useful Improvements in Inhalers, of which the following is a specification.

This invention relates to an inhaler of the applicator type for the administration of liquid and powder medicaments to the nose and through the latter to the throat and is also capable of use as an atomizer or an inhalent-stopper for a bottle or other receptacle.

The advantage of the improved structure is that diseases of the nose and throat may be effectively treated by the use of liquids or powders and retain the full strength of the latter without the least modification by the surrounding air or an inward forcing into the nostrils and throat of deleterious matter that may be in circulation in the air.

Another advantage of the improved structure is that it may be used with various kinds of receptacles and is not dependent for its operation on any particular form of holder for the liquid or powder. When used as an applicator for powder, the atomizing head or member has a puffing operation which is under the control of the user and may be administered as light or as heavy as required or desired.

The preferred embodiment of the invention is illustrated in the accompanying drawings, wherein—

Figure 1 is a perspective view of the inhaler or applicator shown attached to a receptacle. Fig. 2 is a similar view of the inhaler or applicator with a slight modification in the construction to adapt it for use with projected noses. Fig. 3 is a transverse section through the applicator as shown by Fig. 1. Fig. 4 is a section in a plane at right angles to that shown by Fig. 3, taken centrally through the inhaler or applicator and embodying a still further modification. Fig. 5 is a detail section of the applicator adapted for use as an inhalent-stopper and shown applied to a portion of a bottle. Fig. 6 is a detail elevation showing the device arranged as an inhalent-stopper and provided with a screw-threaded shank for securing the same into the end of an inhaler.

Similar numerals of reference are employed to indicate corresponding parts in the several views.

The inhaler or applicator comprises, essentially, a hollow neck 1, a head 2, a compression or atomizing bulb 3, and connection 4, engaging the inner portion of the neck 1 and having a conveying-tube 5 communicating therewith and depending through the said neck any suitable distance. The head 2 is preferably semi-elliptical in shape with an inner transversely straight side 6, having a cavity 7 to conform to the contour of the upper lip directly under the nose. The top of the head has a nostril-cavity 8, with nostril plugs or bosses 9 rising therefrom, the outer sides of the plugs or bosses being separated from the side portions of the head 2 by rearwardly-projecting grooves 10, forming part of the cavity 8. In the slightly-modified form of the head 2 as shown by Fig. 2 the front extremity of the head is formed with a recess 11 at the center to adapt the applicator for use with a nose which has the tip projected abnormally.

From the foregoing it will be seen that the upper side of the head 2 may be firmly and tightly applied to the nostrils and surrounding air entirely excluded from entering the latter during the injection of the powder or liquid adapted to be administered by the improved applicator. Extending downwardly through the plugs or bosses 8 at a forward converging angle of inclination are openings or bores 12, the lower converged extremities of the said openings or bores being located at the top of the hollow neck 1, above the point of engagement with the latter of the connection 4 leading from the bulb 3. The neck 1 communicates with a chamber 13 in the base of the head 2, the said chamber having a dome-like top 14. The openings or bores 12 form the outlet means for the chamber through the plugs or bosses 9. The openings or bores 12 have two angles of inclination—in a forward or outward direction, as shown by Fig. 4, and convergingly toward the chamber 13, as shown by Fig. 3. This double inclination of the openings or bores is to accommodate the convenient application of the device to the naris and the space between the orifices of the latter and, further, to as nearly as possible have the said openings or bores at the same angle as the nostrils when the device is applied to permit the powder or other material forced through the openings to penetrate deeply into the nostrils without striking the walls of the latter, and thereby becoming deflected. If the material or powder injected through the openings or

bores strikes the walls of the nostrils at an intermediate point, such material or powder will be deposited at an intermediate point in the nostrils with materially less advantage than if the powder was injected deeply into the nostrils.

The liquid or powder that is drawn upwardly from the receptacle or device to which the applicator is applied through the operation of the bulb 3, connection 4, and tube 5 is forced into the chamber 13 and out through the openings or bores 12 into the nostrils or back into the throat, in accordance with the pressure exerted through the operation of the bulb. The downward and forward inclination of the openings or bores 12 is essential in administering either a liquid or powder far back into nasal cavities and throat, and the divergence of the said openings or bores from the top of the chamber 13 to the upper terminals of the plugs or bosses 9 is advantageous in permitting the liquid or powder to be approximately equally forced into the lower converged extremities of said openings or bores and distributed at the outlets thereof through the plugs or bosses at proper angles with respect to the nozzles.

The neck 1 may be fitted over a reduced extremity of a receptacle which is well known; but, as shown by Fig. 5, it may be inserted in the outlet extremity of a receptacle and surrounded by a gasket 15 to establish a tight fitting, as in the use thereof as an inhalent-stopper, the neck in this instance having a groove 16 cut therein and leading downwardly through the extremity of the receptacle in which the said neck is fitted to establish an air-passage, and in this application the bulb is not used. In the form of the neck as shown by Fig. 6 a screw-threaded extension 17 is provided therefor to secure the applicator in the end of an inhaler.

In the form shown by Fig. 4 the head and neck are formed integrally with a hollow body 18, having the bulb 3, connection 4, and tube 5 applied thereto. The body has a lower open end normally closed by a screw-stopper 19, with a milled edge, the liquid or powder being introduced into the body 18 through the bottom thereof.

In the operation of the applicator with powder a beneficial puffing administration of the powder may be pursued by giving the bulb a quick operation.

It is proposed to use an ordinary bulb in general atomizing structures; but it is preferable to change the connection for the bulb when the applicator is adapted to be used with powder, such change consisting in supplying a suitable valve to prevent the powder from being drawn into the bulb. This construction will be readily understood, as it is a well-known expedient in the art.

The complete applicator may be made of metal or hard rubber, and the receptacle, as usual, will be preferably composed of glass or some other analogous vitreous material. It is also intended to vary the proportions, dimensions, and minor details within the scope of the invention.

Having thus described the invention, what is claimed is—

1. An inhaler having a head with a reduced neck formed with a chamber therein at the base of said head, the head being enlarged and having the upper end shaped to closely fit the nostrils and the adjacent portion of the lip, the upper side of the head being also provided with nostril-plugs rising therefrom and having apertures extending through and communicating with the said chamber, the apertures through the plugs having a united downward and outward inclination and converging in a downward direction toward each other, and the neck provided with an opening therein for the admission of air from the exterior to act in conjunction with the chamber.

2. An inhaler having a head with a chamber at the base thereof, the head being formed with a cavity at one end and in the upper side, the upper side also being provided with apertured nostril-plugs rising therefrom, the apertures through the plugs communicating with the chamber and having a united downward and outward inclination and converged in a downward direction toward each other, and pneumatic-pressure means connected to the head and communicating with the chamber.

3. An inhaler having a hollow neck forming a chamber and adapted to communicate with a receptacle, a head supported by said neck, apertured nostril-plugs rising from the upper side of said head, the apertures of the plugs extending downwardly into the neck, and a pneumatic-pressure means connected to said neck.

4. An inhaler having a neck, a head formed with a cavity in the upper side to fit snugly over the nostrils, plugs rising from the upper recessed side of the head and having openings extending downwardly through the head at an outward inclination and converged in a downward direction toward each other and communicating with the neck, and a pneumatic-pressure means connected to and communicating with said neck.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

YANCEY Q. CALDWELL.

Witnesses:
W. N. BARHAM,
A. B. MITCHENER.