

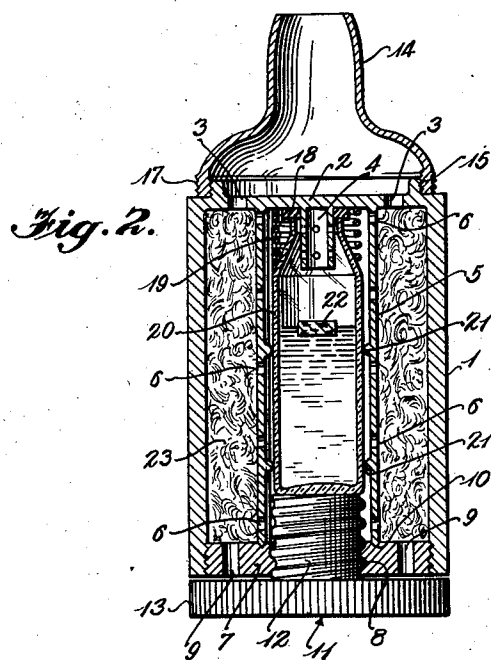
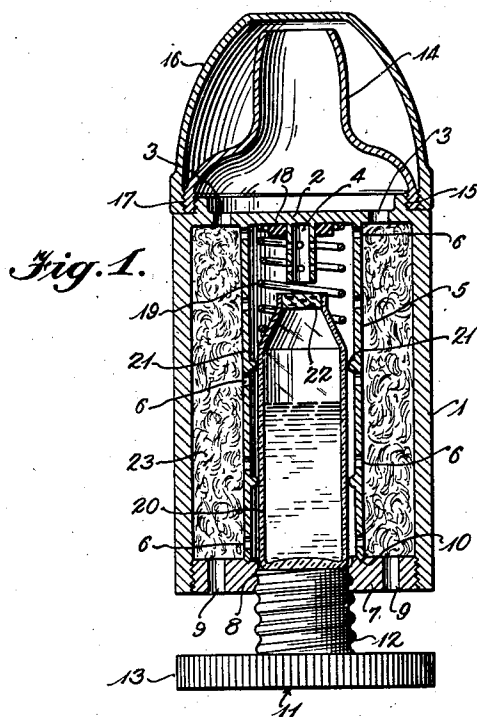
Nov. 25, 1947.

W. E. MOATS

2,431,649

INHALATOR

Filed July 14, 1945



Inventor:—
William E. Moats
by his Attorneys
Horn & Horn

UNITED STATES PATENT OFFICE

2,431,649

INHALATOR

William E. Moats, Overbrook Hills, Pa.

Application July 14, 1945, Serial No. 605,007

10 Claims. (Cl. 128—200)

1

This invention relates to a tubular pocket inhalator comprising a tubular inhalant compartment adapted to contain a vial and a tubular absorbent compartment with suitable communications to the open air and to a nasal inhaling tube.

It has been customary to sell liquid inhalants for treating inflammation of the nasal passages in the form of small vials of liquid; the liquid is intended to be dropped on a handkerchief for vaporization and inhalation, or, in some cases, it is intended to be applied directly to the nasal passages by means of a dropper. Either method of application has obvious disadvantages, especially when used for self-medication. For example, when the handkerchief method is used, a residue of inhalant remains on the handkerchief and its presence is evident from its odor wherever the handkerchief is carried. If the dropper method of application is used, gymnastic contortions are necessary in order to facilitate the proper distribution of the inhalant in the nasal passages.

It is one object of my invention to provide a convenient, cheap and efficient device for applying liquid inhalant. It is another object of my invention to provide a device of this character in which a substantial amount of inhalant may be stored for repeated use. And it is a further object of my invention to provide a device of this character which may be readily transported—e. g., in the pocket or handbag—for immediate use wherever and whenever necessary. An additional object of this invention is to provide a device of this character which may be used unobtrusively.

According to my invention, I provide a small tubular container in which are located tubular compartments. One of these compartments is adapted to contain a small vial of inhalant. The other compartment, which may be concentric with and surrounding the first compartment, is adapted to contain an absorbent for the liquid inhalant, such as, for example, cotton batting. At one end of my inhalator I provide a nasal tube of suitable shape to be partially inserted in a nostril and communicating by small ports with one end of the absorbent compartment. At the other end of the absorbent compartment I provide similar ports communicating with the outside air, so that on application of the nasal tube to a nostril and inhalation through that nostril outer air will pass into and through the absorbent compartment and thence through the nasal tube into the nasal passages.

In order to facilitate use of this inhalator I provide a simple and effective device to be de-

2

scribed below for uncorking an inhalant vial on insertion into the inhalator and for sealing and unsealing at will, the open end of the vial to permit small amounts of inhalant to flow therefrom. Small ports are provided between the inhalant compartment and the absorbent compartment so that liquid inhalant may pass to the latter. I also provide means for sealing the air inlet to the absorbent compartment and for covering and protecting the nasal tube when the inhalator is not in use.

In order that my invention may be more readily understood, one embodiment thereof is illustrated in the accompanying drawing, in which:

Fig. 1 is a vertical longitudinal section showing my device just prior to the uncorking of the vial; and

Fig. 2 is a similar cross section illustrating the position of the vial after being uncorked.

In the drawing, reference numeral 1 indicates a tubular body portion, which may be but is not necessarily cylindrical in cross section. It is closed at the top by end piece 2, which is formed integral with the cylindrical walls. This end piece is pierced with a plurality of ports 3. Also formed integral with the end piece are uncorking stud 4 and tubular wall 5, both contained in the space surrounded by wall 1. Stud 4 is advantageously made hollow and perforated, and tubular wall 5 is pierced with a series of ports 6 affording communication between the interior compartment defined by wall 5 and the annular space between walls 1 and 5.

The bottom of this body portion is permanently closed by an end plate 7 which may be screwed, or otherwise tightly fitted, into the open end of the body. End plate 7 is provided with a large central threaded opening 8 and a plurality of small inlet ports 9. On the inner surface of plate 7 I provide a groove 10 surrounding the central opening and adapted to receive the open end of tubular wall 5 and form a tight joint therewith.

A closure plug generally indicated by 11 is provided having a stud portion 12 threaded to central hole 8 of end plate 7 and a flange portion 13 of substantially the diameter of body 1.

At the other end of my inhalator I provide a nasal tube 14 permanently attached to body portion 1, for example by screw threads 15, and communicating with the body portion through ports 3. A cover 16 may also be provided for protecting the nasal tube when not in use. This cover may be threaded to the nose piece as at 17, or, alternatively, it may be hinged thereon.

Prior to assembling the inhalator I place

3

around stud 4 a rubber gasket 18 adapted to seal the uncorked end of an inhalant vial, as described below. This gasket is retained on stud 4 by friction. I also insert, in the upper end of the inner compartment, spring 19 adapted to bear at one end on plate 2 and at the other on an inhalant vial. I also fill the annular space between walls 1 and 5 with an absorbent material 23 such as cotton batting.

The inhalator is assembled by firmly screwing into place bottom end plate 7 and nasal tube 14 to prepare it for use. A stoppered vial 20, containing inhalant, of suitable size is then inserted in central inhalant compartment. The relative diameters of the vial and compartment are such as to permit easy sliding fit, but not an undue amount of play. Spacing knobs 21 on the inner surface of wall 5 are advantageously provided to insure proper fit and allow liquid to pass readily to and through ports 6.

Fig. 1 illustrates the relative positions of the parts as stud 12 has entered the end plate and made contact with vial 20. Closure plug 11 is gently screwed into the inhalator until flange 13 is brought home against the end plate. This applies longitudinal pressure to the vial, forces it upwardly against the pressure of spring 19, and causes stud 4 to push vial stopper 22 out of the neck into the vial.

The length of threaded closure stud 12 is such that when flange 13 is brought home against plate 7 the uncorked neck of vial 20 is firmly seated on rubber gasket 18, thereby sealing the vial. The relative positions of the parts when the vial is in uncorked sealed condition are shown in Fig. 2. After protecting cap 16 has been put on the inhalator, it is in safe condition to be carried in the pocket or handbag for use when desired.

When it is desired to use the inhalator, cap 16 is removed and closure 11 is unscrewed part way. Spring 19 forces vial 20 away from gasket 18. Stud 4 is made of considerably smaller diameter than the neck of vial 20 and, as noted above, is advantageously made hollow and perforated; this facilitates passage of the liquid inhalant from the vial to the absorbent. On withdrawal of the vial from gasket 18 a short distance, inhalant may be poured or sprinkled out of the vial into the surrounding compartment by inverting and shaking the inhalator. The liquid inhalant passes through ports 6 into the annular absorbent compartment between walls 1 and 5 and distributes itself throughout the absorbent 23. Inhalation of air through ports 9, absorbent 23, ports 3, and nasal tube 14 slowly evaporates the inhalant and conveys it to the nasal passages in the desired manner.

On screwing in closure plug 11 as far as possible, vial 20 is returned to sealed position, and after replacement of cap 16 the inhalator is in condition to be kept indefinitely until it is required for further use.

From the above description it will be seen that I have devised a compact, efficient and economical inhalator which is capable of carrying a substantial charge of inhalant that may be distributed on absorbent material at will and in regulated amounts for use when desired, and that my inhalator is small and rugged and capable of being carried in the pocket or handbag without breakage.

I do not intend my invention to be limited to the above described embodiment, disclosure of which is intended to be illustrative only, but my

4

invention comprises such modifications and variations as fall within the scope of the following claims.

What is claimed is:

1. A tubular pocket inhalator, comprising a tubular inhalant compartment adapted to contain a vial, a tubular absorbent compartment communicating with the inhalant compartment, a nasal tube communicating with one end of the absorbent compartment, an air inlet communicating with the other end of the absorbent compartment, and a common releasable closure for the inhalant compartment and the air inlet; the inhalant compartment being permanently closed at the end remote from the closure end, having mounted in the permanently closed end a stud adapted to uncork a vial contained in the inhalant compartment on application of longitudinal pressure to the vial, and a gasket surrounding the stud adapted to seal the uncorked end of the vial on continuation of longitudinal pressure on the vial; the common releasable closure having a projection entering the inhalant compartment adapted to bear against and exert longitudinal pressure on a vial contained therein, and a flange adapted in one position to seal the air inlet to the absorbent compartment, the length of the projection being such that when the flange is brought home against the air inlet the uncorked end of the vial is simultaneously brought home against the gasket.

2. In a pocket inhalator comprising an inhalant compartment permanently closed at one end and adapted to contain a vial of liquid inhalant, means in said inhalant compartment at the closed end thereof operable to enter and open a vial upon actuation of the latter longitudinally relative to said opening means, and a closure for the other end of the inhalant compartment arranged to engage and actuate said vial in the direction of said opening.

3. A pocket inhalator comprising an inhalant compartment permanently closed at one end and adapted to contain a vial of liquid inhalant, means in said inhalant compartment at the closed end thereof operable to enter and open a vial upon actuation of the latter longitudinally relative to said opening means, gasket means associated with the closed end of the inhalant compartment arranged for engagement by the opened vial to seal the latter, and a closure for the other end of the inhalant compartment arranged to engage and actuate said vial in the direction of said opening and gasket means.

4. A pocket inhalator comprising an inhalant compartment permanently closed at one end and adapted to contain a vial of liquid inhalant, means in said inhalant compartment at the closed end thereof operable to enter and open a vial upon actuation of the latter longitudinally relative to said opening means, gasket means associated with the closed end of the inhalant compartment arranged for engagement by the opened vial to seal the latter, a closure for the other end of the inhalant compartment arranged to engage and actuate said vial in the direction of said opening and gasket means, and a spring interposed between said vial and the closed end of the inhalant compartment tending to urge said vial away from said gasket means.

5. A pocket inhalator comprising an inhalant compartment permanently closed at one end and adapted to contain a vial of liquid inhalant, means in said inhalant compartment at the closed end thereof operable to enter and open a vial

5

upon actuation of the latter longitudinally relative to said opening means, gasket means associated with the closed end of the inhalant compartment arranged for engagement by the opened vial to seal the latter, and a closure for the other end of the inhalant compartment having a portion threaded internally of said inhalant compartment and arranged to engage and actuate said vial in the direction of said opening and gasket means.

6. A pocket inhalator comprising an inhalant compartment permanently closed at one end and adapted to contain a vial of liquid inhalant, an absorbent compartment adjacent to and communicating with said inhalant compartment, an air inlet to said absorbent compartment at the end thereof remote from the permanently closed end of said inhalant compartment and adjacent the other end thereof, a nasal tube communicating with the other end of said absorbent compartment, means in said inhalant compartment at the closed end thereof operable to enter and open a vial upon actuation of the latter longitudinally relative to said opening means, and a closure for the said other end of the inhalant compartment and said air inlet to the absorbent compartment, said closure having a portion arranged to engage and actuate said vial in the direction of said opening and gasket means and having a portion adapted to overlie and seal the air inlet to said absorbent compartment.

7. A pocket inhalator comprising an inhalant compartment permanently closed at one end and adapted to contain a vial of liquid inhalant, an absorbent compartment adjacent to and communicating with said inhalant compartment, an air inlet to said absorbent compartment at the end thereof remote from the permanently closed end of said inhalant compartment and adjacent the other end thereof, a nasal tube communicating with the other end of said absorbent compartment, means in said inhalant compartment at the closed end thereof operable to enter and open a vial upon actuation of the latter longitudinally relative to said opening means, gasket means associated with the closed end of the inhalant compartment arranged for engagement by the opened vial to seal the latter, and a closure for the said other end of the inhalant compartment and said air inlet to the absorbent compartment, said closure having a portion arranged to engage and actuate said vial in the direction of said opening and gasket means and having a portion adapted to overlie and seal the air inlet to said absorbent compartment.

8. A pocket inhalator comprising an inhalant compartment permanently closed at one end and adapted to contain a vial of liquid inhalant, an absorbent compartment adjacent to and communicating with said inhalant compartment, an air inlet to said absorbent compartment at the end thereof remote from the permanently closed end of said inhalant compartment and adjacent the other end thereof, a nasal tube communicating with the other end of said absorbent compartment, means in said inhalant compartment at the closed end thereof operable to enter and

6

open a vial upon actuation of the latter longitudinally relative to said opening means, gasket means associated with the closed end of the inhalant compartment arranged for engagement by the opened vial to seal the latter, a closure for the said other end of the inhalant compartment and said air inlet to the absorbent compartment, said closure having a portion arranged to engage and actuate said vial in the direction of said opening and gasket means and having a portion adapted to overlie and seal the air inlet to said absorbent compartment, and a spring interposed between said vial and the closed end of the inhalant compartment tending to urge said vial away from said gasket means.

9. A pocket inhalator comprising an inhalant compartment permanently closed at one end and adapted to contain a vial of liquid inhalant, an absorbent compartment adjacent to and communicating with said inhalant compartment, an air inlet to said absorbent compartment at the end thereof remote from the permanently closed end of said inhalant compartment and adjacent the other end thereof, a nasal tube communicating with the other end of said absorbent compartment, gasket means associated with the closed end of the inhalant compartment arranged for engagement by the vial to seal the latter, and a closure for the said other end of the inhalant compartment and said air inlet to the absorbent compartment, said closure having a portion arranged to engage and actuate said vial in the direction of said gasket means and having a portion adapted to overlie and seal the air inlet to said absorbent compartment.

10. A pocket inhalator comprising an inhalant compartment permanently closed at one end and adapted to contain a vial of liquid inhalant, an absorbent compartment adjacent to and communicating with said inhalant compartment, an air inlet to said absorbent compartment at the end thereof remote from the permanently closed end of said inhalant compartment and adjacent the other end thereof, a nasal tube communicating with the other end of said absorbent compartment, and a closure for the said other end of the inhalant compartment and said air inlet to the absorbent compartment, said closure having a portion threaded internally of said inhalant compartment and a flange portion adapted to overlie and seal the air inlet to said absorbent compartment.

WILLIAM E. MOATS.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
151,570	Crumb	June 2, 1874
1,703,764	Dorment	Feb. 26, 1929

FOREIGN PATENTS

Number	Country	Date
414,392	France	June 17, 1910