

(No Model.)

B. P. BEAVER.
INHALER.

No. 601,228.

Patented Mar. 29, 1898.

FIG. 1.

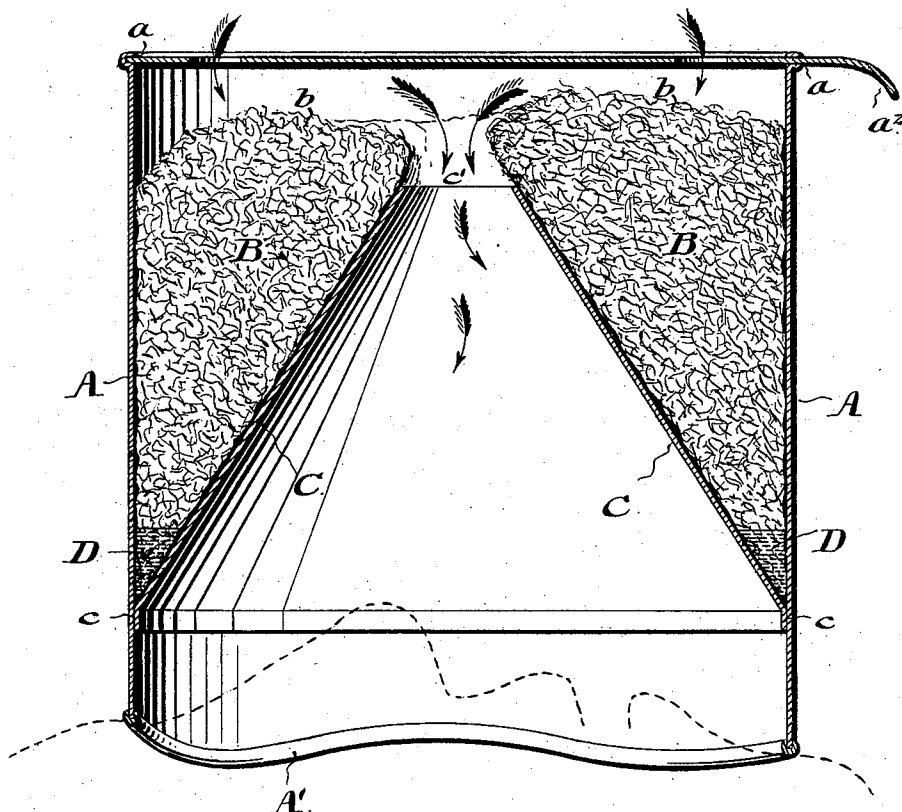
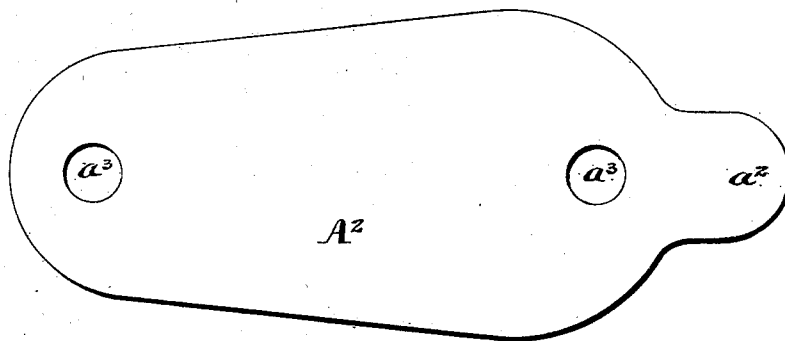


FIG. 2.



WITNESSES:

Sam. Wright
J. P. Patterson

INVENTOR:

Burd P. Beaver
By *Arthur E. Pugh*
Atty

UNITED STATES PATENT OFFICE.

BURD PATTERSON BEAVER, OF CONSHOHOCKEN, PENNSYLVANIA.

INHALER.

SPECIFICATION forming part of Letters Patent No. 601,228, dated March 29, 1898.

Application filed October 30, 1896. Serial No. 610,529. (No model.)

To all whom it may concern:

Be it known that I, BURD PATTERSON BEAVER, a citizen of the United States, residing at Conshohocken, in the county of Montgomery and State of Pennsylvania, have invented certain new and useful Improvements in Inhalers, whereof the following is a specification, reference being had to the accompanying drawings.

My invention relates to devices designed to facilitate the administration of sulfuric ether or similar volatile liquid anesthetics to subjects of surgical operations. Such devices as hitherto constructed comprise an outer shell or casing adapted to fit over the mouth and nostrils of the subject. The size of such a device is of course limited by the necessity for its proper manipulation. Said casing contains strips of bandage-linen or similar absorbent material, upon which but a small quantity of the liquid to be administered may be poured. The quantity of liquid thus introduced must be carefully gaged, for if a quantity more than sufficient to saturate said material is poured into such a device the surplus liquid drips into the mouth or nostrils of the prostrate subject. The subject is thus not only greatly weakened, after restoration to consciousness, by the nausea and vomiting resulting from the said ingress of free liquid, but must at once be partially resuscitated to prevent strangulation. On the other hand, if but the proper amount of liquid to be absorbed is placed within such a device its rapid evaporation necessitates its frequent renewal during the progress of an operation, and in either case the operation is unduly prolonged.

My present invention consists, first, in providing a deflecting diaphragm or flange in a device of the general character above set forth, said diaphragm or flange being so disposed in relation to the outer casing of the inhaler as to deflect away from the mouth or nostrils of the subject any surplus liquid dripping from the absorbent material contained in said casing; second, in adapting said inhaler to retain said free liquid in position to be vaporized and thus utilized during the progress of an operation.

By the use of my invention it is possible not only to entirely obviate the aforesaid detrimental effects upon the subject and to re-

duce the quantity of liquid expended for each operation, but also to materially shorten the time requisite for the performance of a given operation, it being possible to primarily charge the inhaler with sufficient liquid to perform an entire operation without interruption.

In the drawings I have shown a convenient embodiment of my invention, wherein—

Figure 1 is a central vertical section of an inhaler, and Fig. 2 a plan view of the perforated lid of the inhaler-casing.

A is the outer shell or casing, the lower edge A' of which is adapted to conform to the curvature of the face of the subject. Said casing A is provided with a lid of any convenient construction, the form shown being a flat metal plate A², provided with suitable slideways *a* in the casing A. The said lid may be conveniently grasped by its projecting end *a*². Openings *a*³ are conveniently provided in said lid A² to admit the proper quantity of air to the subject. Said openings *a*³ also serve as outlets for the exhalations of said subject, it being of course understood that during the administration of the anesthetic the inhaler remains upon the face of the subject, inclosing the mouth and nostrils of the latter.

Absorbent material B, preferably sponge, is provided within the casing A. The liquid-deflecting diaphragm or flange C incidentally serves to support said absorbent material B. Said diaphragm C is preferably cone-shaped, as indicated, and secured liquid-tight at its lower edge *c* to the outer casing A. The opening *c'* in the apex of said diaphragm permits the free passage of air to and from the external openings *a*³.

The device may be charged by simply pouring the quantity of liquid desired for an operation within the space between the diaphragm C and the casing A. It is obvious that any excess of liquid beyond that which the material B will hold in suspension is deflected by the diaphragm C away from the air-passage *c'*. Said liquid settles at D in readiness to be ultimately absorbed by the material B and dissipated as vapor at its upper surface *b*.

Referring to the arrows of Fig. 1, it will be seen that upon inhaling the subject must

draw the external air through openings *a*³ over the surface *b* of the saturated material B. The incoming air is thus laden with the anesthetic vapor before being inhaled.

5 I do not desire to limit myself to the precise form or embodiment of my invention which I have herein shown and described, as it is obvious that many modifications may be made therein without departing from the
10 spirit of my invention.

I therefore claim—

1. In an inhaler, a casing, a lid for one end of said casing, an annular diaphragm intermediate of said casing, an annular mass of
15 absorbent material within said casing, between said diaphragm and said lid, the opening in said annular mass being in registry with the opening in said annular diaphragm, and an opening in said lid laterally disposed
20 in relation to the registered openings aforesaid, said elements being arranged to operate in the manner hereinbefore described.

2. In an inhaler, a casing, a lid for one end of said casing, an annular conical diaphragm
25 intermediate of said casing, an annular mass

of absorbent material within said casing, between said diaphragm and said lid, the opening in said annular mass being in registry with the opening in said annular diaphragm, and an opening in said lid laterally disposed
30 in relation to the registered openings aforesaid, said elements being arranged to operate in the manner hereinbefore described.

3. In an inhaler, a casing, a lid-groove at one end of said casing, a slide-lid fitted to
35 said lid-groove, an annular diaphragm intermediate of said casing, an annular mass of absorbent material within said casing, between said diaphragm and said lid, the opening in said annular mass being in registry
40 with the opening in said annular diaphragm, and an opening in said lid laterally disposed in relation to the registered openings aforesaid, said elements being arranged to operate in the manner hereinbefore described. 45

BURD PATTERSON BEAVER.

Witnesses:

WM. WRIGHT,
D. V. BEAVER.