(No Model.)

B. D. WATKINS.

INHALER.

No. 457,039. Patented Aug. 4, 1891.

Fig 1

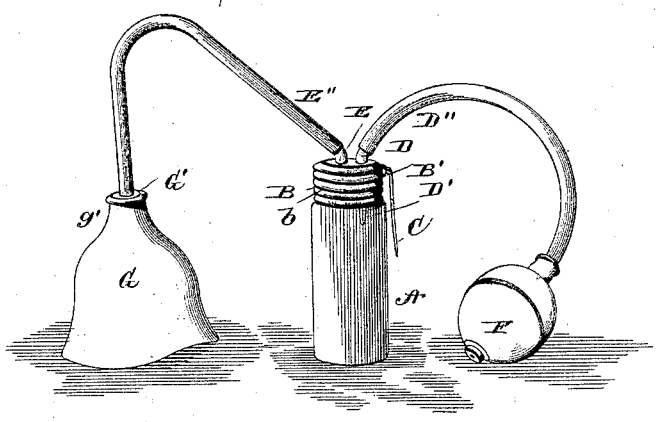


Fig 2

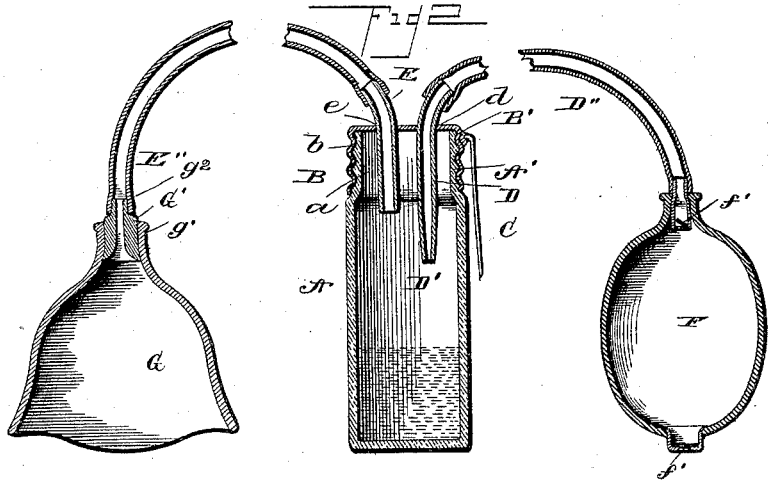


Fig 3

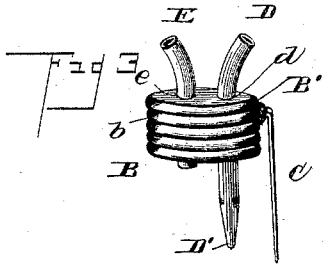
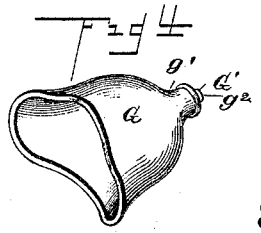


Fig 4



Witnesses.

John Imrie

W. J. Littell

Inventor

B. D. Watkins

By his Attorney

L. R. Littell

UNITED STATES PATENT OFFICE.

BENJAMIN D. WATKINS, OF NATCHEZ, MISSISSIPPI.

INHALER.

SPECIFICATION forming part of Letters Patent No. 457,039, dated August 4, 1891.

Application filed September 27, 1890. Serial No. 366,304. (No model.)

To all whom it may concern:

Be it known that I, BENJAMIN D. WATKINS, a citizen of the United States, residing at Natchez, in the county of Adams and State of Mississippi, have invented certain new and useful Improvements in Inhalers; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to certain new and useful improvements in inhalers, and has for its object to provide an inhaler with a removable cap carrying the inlet and outlet tubes and provided with a hook by means of which the inhaler may be secured to the person of the operator.

To this end the invention consists in the novel construction and arrangement of parts hereinafter fully described and afterward pointed out in the claim.

In the drawings, Figure 1 is a perspective view of an inhaler embodying my invention. Fig. 2 is a vertical longitudinal sectional view taken through the receptacle, cap, and inlet and outlet tubes. Fig. 3 is a detail perspective view of the cap and connected parts removed from the receptacle. Fig. 4 is a similar view of the hood.

Corresponding parts in the figures are denoted by the same letters of reference.

Referring to the drawings, A designates a receptacle of suitable size and shape and formed of glass or other adapted material, and within which is placed the substance to be used.

B designates a removable cap adapted to be secured over the mouth *a* of the receptacle and render the latter air-tight.

The cap B is constructed of metal, hard rubber, or other suitable material, and is, by preference, connected with the receptacle A through the medium of internal screw-threads *b*, provided upon the annular flange B′ of the cap, which are designed to mesh with corresponding screw-threads *a′*, formed upon the periphery of a cylindrical neck A′ projecting from the mouth of the receptacle. A tongue C is secured to the cap B at one side, from which it projects outwardly and thence downwardly, parallel with the side of the receptacle. By means of this tongue the receptacle can be conveniently suspended from a suitable position upon the body of the operator when the inhaler is in use, and it will also serve as a hanger for the inhaler when the latter is not employed.

D and E designate, respectively, an inlet and an outlet tube, which are passed through and secured in openings *d e* respectively provided therefor in the top portion of the cap B. The tubes D and E are formed of hard rubber, glass, or other adapted material, and project a short distance within the receptacle, the inlet or force tube D having a contracted exit end D′, insuring the formation of a weak or concentrated vapor when the inhaler is in use. The exterior portions of the tubes diverge outwardly for the purpose of convenience.

For effecting agitation of the contents of the receptacle and the consequent vaporization of the same, an air-pump F is provided connected with the exterior end of the inlet-tube D by means of flexible rubber tubing D″. The air-pump F may be of any suitable or preferred construction; but I prefer to employ for this purpose the ordinary "syringe-bulb," which consists of a flexible rubber bulb provided at its opposite ends with valves *f′ f′*.

Connected with the exterior end of the outlet-tube E by flexible rubber tubing E″ is an administering-hood G, formed of soft flexible rubber or other suitable flexible material. The hood G comprises a contracted neck *g′*, within which is inserted a plug G′ of hard rubber or other material and provided with an outwardly-projecting hollow stem g^2, over which the adjacent end of the connecting tubing is forced to attach the latter to the hood. From the neck *g′* the hood is formed flaring, preferably, as shown, and the outer edge of this flaring portion is of such contour as to adapt the hood to fit closely over the mouth of a patient and exclude the outside air. Being of soft flexible material, the hood readily adapts itself to the contour of the face and thus effectually serves the purpose just mentioned.

The operation and advantages of my invention will be readily understood by those skilled in the art to which it appertains.

Prior to the present invention inhalers have been produced in which the medicament is exuded in the form of a moist vapor or fine liquid spray, such as that produced by the common form of atomizers. These constructions are, however, open to objection by reason of the harmful effect upon the patient due to the excessive strength of the spray thus administered, and also by reason of the difficulty experienced in administering, particularly where ether or chloroform is desired to be used. To overcome these objections devices have been produced which are designed to reduce the spray by heat to a dry vapor previous to administering; but to effect this it is necessary to provide, in addition to the inhaler proper, devices for heating the spray, which render the inhaler cumbersome, expensive, and inconvenient in operation and capable for use only under certain conditions. Another objection which may be noted to both the inhalers just described is that they are designed for administering liquids solely, and are in no wise adapted to the use of dry substances.

The office of the present invention is to provide a simple inhaler which will effectually overcome the objections above noted, adapted for the administration of a dry, weak vapor without previous atomization, and which will as efficiently operate in the administration of dry substances as with liquids.

In the employment of my invention pressure is applied to the bulb, which serves to eject with force a jet of air through the contracted inner end of the inlet-pipe, which acts upon the contents of the receptacle to agitate and reduce the same to a vapor and to insure the proper admixture of atmospheric air with the latter. This vapor being in a compressed condition seeks an exit through the outlet-pipe and into the administering-hood, from which it is breathed by the patient to produce the desired result. It will be obvious that as the contents of the receptacle in its original condition do not come in contact with either the inlet or outlet pipes, when liquid is used it cannot pass in the solid state into the outlet-tube, and vaporization is thus insured before administration.

I claim as my invention—

In an inhaler, the combination of a vessel adapted to contain medicament, and a removable cap having an inlet and outlet tube and provided with a hook for suspending the inhaler, substantially as shown and described.

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

BENJAMIN D. WATKINS.

Witnesses:
S. C. SIMS,
R. D. SESSIONS.