(No Model.)

H. D. CUSHMAN.

INHALER.

No. 333,609. Patented Jan. 5, 1886.

Fig. 1.

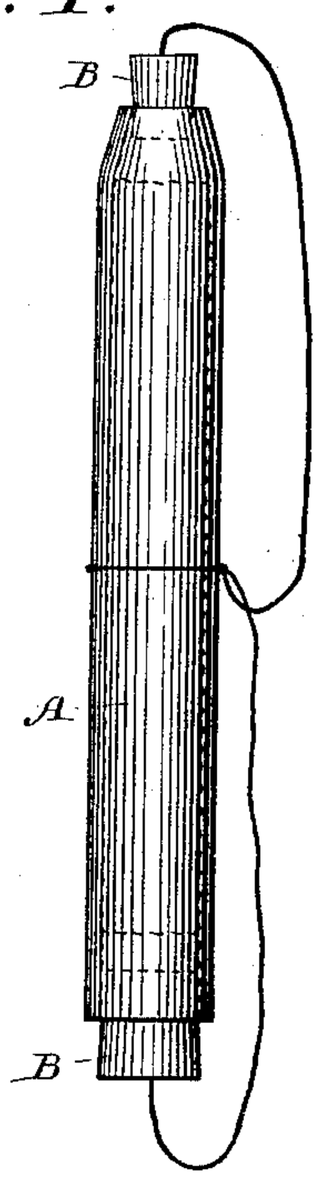


Fig. 2.

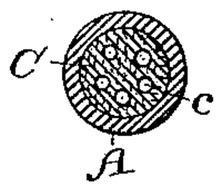


Fig. 3.

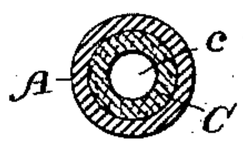


Fig. 4.

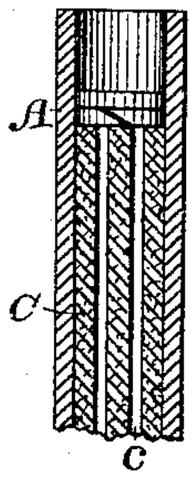
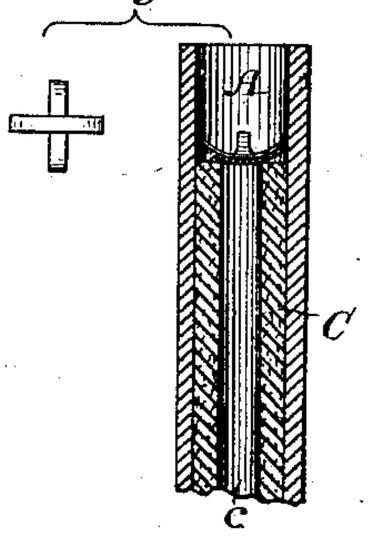


Fig. 5.



WITNESSES

Ed. A. Newman.
A. C. Newman.

INVENTOR

Henry D. Cushman

By his Attorneys

Baldwin, Hopkins & Peyton.

UNITED STATES PATENT OFFICE.

HENRY D. CUSHMAN, OF THREE RIVERS, MICHIGAN.

INHALER.

SPECIFICATION forming part of Letters Patent No. 333,609, dated January 5, 1886.

Application filed November 11, 1885. Serial No. 182,430. (No model.)

To all whom it may concern:

Be it known that I, HENRY D. CUSHMAN, of Three Rivers, in the county of St. Joseph and State of Michigan, have invented a certain new and useful Inhaler, of which the following is a specification, reference being had to the accompanying drawings.

The object of my invention is to provide an inhaler for containing menthol crystals, or the like substance, to be used as a medicament; and my improvements in such an inhaler relate to confining the menthol within the inhaling-tube in a hard body, and providing it with one or more air-holes, so that the air may always pass freely through and be impregnated and inhaled.

My present inhaler is an improvement upon that for which I filed application for Letters Patent of the United States May 26, 1885, No. 166,770, which application was allowed July 7, 1885. In my inhaler shown in that allowed application I provide for confining the menthol within the tube with its particles in loose condition, so that air may pass through the menthol and be inhaled. In order to do that, I was obliged to provide open or perforated stoppers near either end of the tube, to keep the menthol from coming out. In the present case I do away with the necessity for such open or perforated stoppers, and also render it unnecessary to employ any means for keeping the menthol in loose condition in the tube—such as zigzag wire, or the like, as described in my said allowed application—but hold the medicament in place in the tube as a solid body with an air passage or passages.

In the accompanying drawings, illustrating my improvements, Figure 1 is a side elevation. Fig. 2 is a cross-section of my improved inhaler, showing the body of menthol provided with several air-holes; and Fig. 3 is another cross-section, showing but a single air-opening in the body of menthol wihin the tube. Figs. 4 and 5 show formal modifications.

Referring to the letters upon the drawings, A indicates a tube, open at each end, which may be of any size or length, but preferably, for convenience, about four or five inches long and about half an inch in diameter. This tube may be formed of glass, hard rubber, celluloid, or any other suitable material.

B B indicate attached removable stoppers of ordinary character, and such as shown in my said allowed application.

C indicates a solid crystalline body of menthol, or other medicament, and *c* the air-openings through the menthol in the direction of the length of the tube. In order to form these air-openings, whether one or more, I insert within the tube small rods or wires, (one or more, as the case may be,) and melt the menthol and pour it into the tube around these small scores or matrixes and then withdraw them, which leaves the air-holes through the body of menthol within the tube. The body of menthol in this instance adheres to the inner surface of the tube and forms a solid mass, except the said artificial openings or air-passages formed through it; hence no end stoppers for the purpose of holding the menthol in place are necessary; but the stoppers used are merely the ordinary stoppers, to close the tube when not in use. These stoppers are not necessary to the use of the inhaler, but are preferable, to prevent evaporation when not in use.

Instead of pouring the melted menthol into the tube and forming one or more artificial air-passages in the manner just described, I may form the solid body of menthol, with its air opening or openings, in a mold, or otherwise, and then insert it in the tube and secure it there in various ways, as by an open spring-ring at one or both ends, which will bear outward against the inner surfaces of the tube and hold the solid perforate mass in place, as shown in Fig. 4; or an open stopper or stoppers—such as described in my said allowed application—might be employed; or two pieces of wire bent and crossed, as shown in Fig. 5, and operating very much like a spring-ring, might be used, as well as numerous other holding devices to keep the solid perforate mass of medicable substance in place. If desired, the perforate body could be placed in the tube, and then melted menthol, or the like, dropped in, to cool and act like solder to hold the mass in place; or the outside of the perforate body or the inside of the tube could have some adhesive substance applied to it to hold the body in place. A space, groove, or grooves around the outside of the solid body of medicament might be left or formed for air-passages.

One or both ends of the tube may be drawn

in or reduced in diameter, and in cases where one end is thus made smaller, and the perforate body is formed outside the tube and then inserted into it, and not made to adhere of itself, only one holding device would be necessary, the reduced end serving as an abutting support or stay for one end of the body of medicament. The details of means for securing the perforate body in place in the tube, however, are not of the material substance of my invention, and are only mentioned to afford manufacturers a choice of means to be employed for keeping the solid perforate body in place. I prefer the means first described.

Having thus described my improved inhaler, what I claim, and desire to secure by Letters Patent of the United States, is—

An improved inhaler, consisting of a tube open at both ends for use, (preferably having stoppers for closing it when not in use,) and having a body of solid medicament held within it, and provided with one or more artificial air-passages, substantially as and for the purpose set forth.

In testimony whereof I have hereunto subscribed my name.

HENRY D. CUSHMAN.

Witnesses:

WM. O. PEALER,

SHIRZA CUSHMAN.