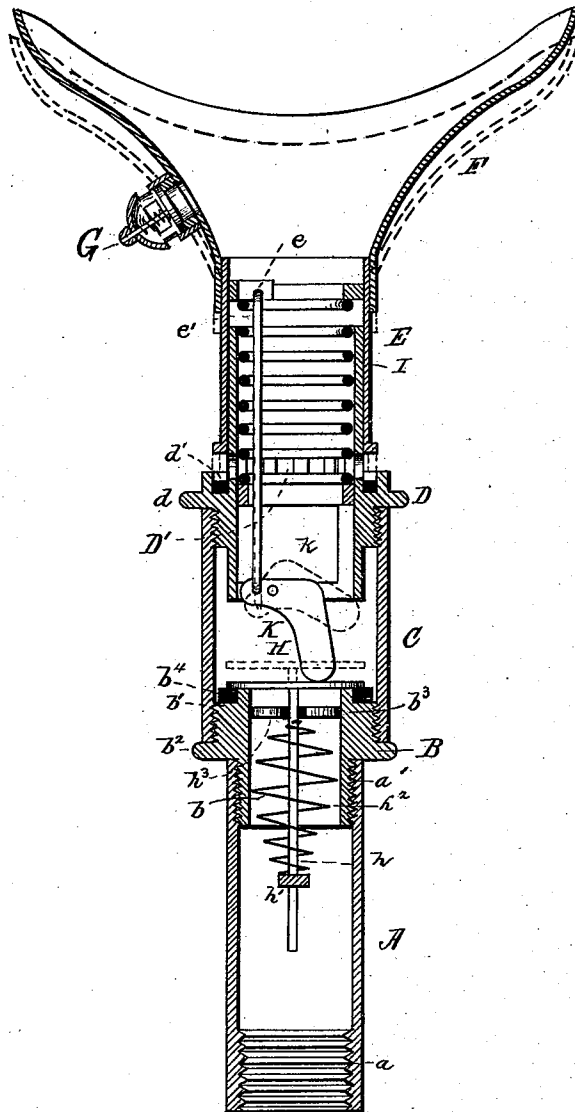


(No Model.)

B. M. WILKERSON.
INHALER.

No. 378,033.

Patented Feb. 14, 1888.



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INHALER.

SPECIFICATION forming part of Letters Patent No. 378,033, dated February 14, 1888.

Application filed October 19, 1883. Serial No. 109,470. (No model.)

To all whom it may concern:

Be it known that I, BASIL M. WILKERSON, of Baltimore city, in the State of Maryland, have invented certain new and useful Improvements in Inhalers, of which the following is a specification, reference being had to the accompanying drawing, forming part hereof, in which my invention is shown in central longitudinal section, the full lines showing the device in its normal position and the dotted lines showing it in a position assumed by the parts when the inhaler is pressed against the patient's lips.

My invention relates to the class of automatically-operated inhalers for administering anaesthetics—such as nitrous-oxide gas—in surgical and dental operations. Its objects are to improve the construction of various parts of such inhalers; and it consists in the organizations and combinations of devices particularly recited in the claims at the close of this specification, some of which may be used without the others.

Referring to the drawing by letter, A is a section of metallic tubing, provided on each end with an interior screw-thread, (marked, respectively, *a a'*.) The screw-thread is for the purpose of attachment to a flexible or other tube leading to a gas-bag or gasometer, and the thread *a'* is for the purpose of engaging with a tubular section, B, having two exterior threads, *b b'*, a projecting circumferential flange or shoulder, *b²*, and a rabbet or groove, *b³*. The screw-thread *b* engages with screw-thread *a'* of the tube-section A. The thread *b'* engages with an interior thread in a tubular section, C, and both of these tubular sections A and C, when screwed into position on the block B, abut against the projecting flange *b²*, the section C having an interior screw-thread at its opposite end to engage an exterior screw-thread on a tubular section, D, which is provided with a circumferential flange, *d*, and a groove to receive a packing, *d'*. The upper end of this tubular section D extends into another tubular section, E, which in its turn extends into and is rigidly attached to a flaring mouth-section, F. This mouth-section is provided with an outlet-valve, G. The tubular block B supports within the rabbet *b³* a packing-ring, *b⁴*, upon which rests a valve plate or disk, H, hav-

ing a stem, *h*, headed at *h'* and surrounded by a light spiral spring, *h²*. This valve-stem passes through a perforated plate or diaphragm, *h³*, which acts as a guide therefor and as a bearing for the upper end of the spiral spring *h²*, whose lower end bears against the head *h'* of the valve-stem. Within the section E is a lug, *e*, to which is attached a rod, *e'*, extending downward through the sections E and D, and attached at its lower end to the short arm of an elbow-lever, K, pivoted at its angle at *k* in the lower end of the section D. The long arm of this elbow-lever extends downward within the section C, and is rounded off at its lower extremity. A spiral spring, L, is located within the section D, and extending upward therefrom engages with the lug *e* in section E. The section D is provided with a series of holes or perforations, *D'*, as shown.

The operation of my device may be described as follows: The section A being attached to a flexible or other tube leading to the gas-bag or gasometer, the parts of the device being in position shown in the full lines, the flaring mouth-piece is placed against the lips of the patient. The inhalations and exhalations of the patient will now pass freely through the sections E and D and be drawn in or pass out through the perforations *D'*, being prevented from passing the valve H, for the reason that said valve is closed and locked by the elbow-lever K. The operator now instructs the patient as to the proper manner of inhaling the gas, and having induced the proper motion for this purpose he presses the inhaler firmly against the lips of the patient, grasping the sections A or C while so doing. This pressure causes the section D to slide into section E, which latter section then will cover up the perforations *D'*, and its lower end will rest against the packing *d'*, thus securing a tight joint. The resistance of rod *e'* when the section D passes into section E causes the elbow-lever K to move on its pivot until it assumes the position shown in dotted lines, when the valve H will be held against the packing *b'* by the tension of the light spring *h²* alone. The patient now inhales the gas, drawing it through the various sections of tubing into his mouth or lungs, the slight resistance offered by the spring *h²* allowing the valve H to leave its

seat and packing, and thus permit the free passage of the gas. Upon exhaling, the valve H is tightly closed both by the spring h^2 and the exhalations of the gas and air by the patient, in consequence of which the escape-valve G will open outwardly and permit the exhalation to pass therethrough. The administration being completed, the inhaler is removed from the lips of the patient, when, by the action of the spring L, the section E is forced outward on the section D, carrying with it the rod e' and closing the elbow-lever K upon the valve H, as shown in full lines in the drawing, thus leaving the apparatus in condition for another operation, and by reason of the valve H being thus automatically closed and locked no gas can possibly escape.

The advantages of this construction are manifold and evident. The valve H is unlocked by the simple pressure of the mouth-piece against the patient's lips, which operation can be easily performed by the use of one hand only of the operator. This valve is also automatically closed and locked when the device is removed from the mouth of the patient. It is consequently unnecessary for the operator to bestow any further attention upon the mouth-piece, and he is at liberty to proceed with the operation at once. It will also be noticed that I have made an important improvement in inhalers, in devising the construction of a tubular pipe portion having a feed-opening or series of openings movable in a sliding section which fits it, and which, by being moved back and forth, opens or closes said feed-openings in the periphery of said pipe portion, its sim-

plicity and direct efficient operation being its chief value, and a spring being also fitted to hold said pipe portion and sliding section in a normal position with respect to each other. 40

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In an inhaler, a tubular pipe portion fitted with a feed or inlet opening, and a sliding pipe-section fitted to slide on said pipe portion and open and close said feed-opening, substantially as described. 45

2. In an inhaler, a tubular pipe portion fitted with a feed or inlet opening or openings in its periphery, a sliding pipe-section fitted to slide on said pipe portion and open and close said feed-opening, and a spring to maintain said sections in a normal position with respect to each other and return them thereto when the operating pressure is released, substantially as described. 55

3. An inhaler provided with an exhalation-passage, a separate air-inlet passage, and a third passage to be opened upon the closing of said air-passage to admit of breathing the anæsthetic, substantially as described. 60

4. The combination, in an inhaler, of a pipe portion, one section of which slides upon another, a gas-valve, and a cam operated by sliding one of said sections upon the other to lock and release said gas-valve, substantially as described. 65

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