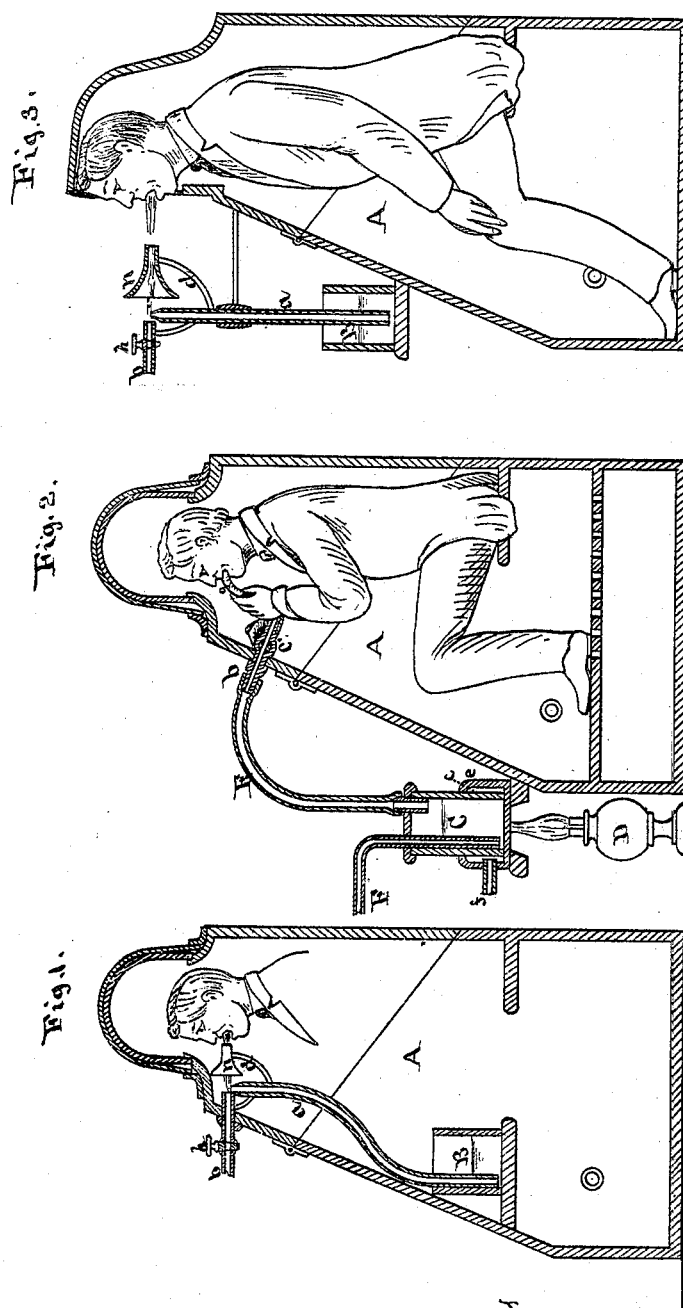


Leland & Poland,

Dehumidator.

No. 113,536.

Patented Apr. 11, 1871.



Witnesses,
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UNITED STATES PATENT OFFICE.

FREDERICK C. LELAND AND SAMUEL W. POLAND, OF LOWELL, MASS.

IMPROVEMENT IN DEPURATORS.

Specification forming part of Letters Patent No. **113,536**, dated April 11, 1871.

To all whom it may concern:

Be it known that we, FREDERICK C. LELAND and SAMUEL W. POLAND, both of Lowell, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Apparatus and Process for Treatment of Disease *in vacuo*, of which the following is a full, clear, and exact description, reference being had to the accompanying drawing, making part of this specification, in which—

Figures 1, 2, and 3 represent each a sectional elevation, the two former as applied and practiced in connection with the depurator or apparatus patented to Frink, and the latter with the Hadfield apparatus, which has an elastic open-face piece instead of a head-shield, as in the apparatus of Frink.

This invention relates to certain new combinations of old elements, whereby plain or medicated vapor or spray may be administered to the patient under treatment, partially or wholly in vacuum.

This invention also relates to the process of administering plain or medicated vapor or spray to the patient under treatment, and either partially or wholly inclosed in an air-tight case or receiver, and employing the ordinary atomizer or the common inhaler, using water or medicated liquid from which to produce the vapor or the spray.

In Fig. 1 of the drawing we have represented an ordinary atomizer arranged within the air-tight case. Here the liquid-receiver B stands upon a shelf or bracket, and the draft-tube *a* extends from near the bottom of the receiver B upward to near the center of the breathing-tube *b*, which breathing-tube takes the place of the blast-tube or blow-tube of the atomizer.

A little inside of the draft-tube and centrally with its upper end is a trumpet-mouthed spray-directing tube or mouth-piece, *n*, suitably supported, say, by a brace, *d*.

The breathing-tube or blow-tube *b* may be provided with a valve, *h*, to regulate the blast of air or steam through the pipe, either of which, or both combined, are intended to be the motor or operating agent to draw the liquid from the receiver B and blow it into spray over the top end of the draft-tube into and through the mouth-piece or spray-director *n* to

the mouth of the patient, who may hold his head at a greater or lesser distance from the end of the spray-tube, and thereby receive and inhale the spray at any reasonable temperature.

It will be understood that while the spray is being thus administered to the patient, and generally before the spray is admitted, considerable air is pumped out or drawn from the air-tight case or depurator A, so that the patient may receive or inhale the spray while in vacuum, the effect of which is much more satisfactory and beneficial to the patient than when administered by any former process.

In Fig. 3 we have represented the atomizer on the outside of the depurator known as the "Hadfield apparatus," wherein the face of the patient is exposed.

In this apparatus considerable of the air is also exhausted or drawn out from the depurator before the steam or air is admitted through the valve-furnished blow-tube *b*, and the effect produced by this combined apparatus is intended to be the same as in the apparatus first described, the principal difference being the combination of the atomizer with and upon the outside of a depurator where the face of the patient is exposed, instead of on the inside, as in that first described.

In Fig. 2 we have represented a common inhaler in combination with the depurator, as patented by Frink. In this apparatus the liquid-holder C is partly filled, either with water or with some kind of medicated liquid, and generally the latter, which may be cool or suitably heated, as the occasion may require; and the heat may be imparted by a lamp, D, placed beneath the liquid-holder, or by steam let in through a pipe, *f*, to the annular space *c* of a tank or vessel inclosing the liquid-holder, all as clearly shown in Fig. 2 of the drawing. In this apparatus the inhaling-tube E enters the top of the liquid-receiver, as usual, and extends upward on a curve, or bent back, where it joins onto the breathing-tube *b* of the depurator; or if the latter tube is of sufficient internal capacity the inhaling-tube may pass directly through it; but we prefer connecting the inhaling-tube with the breathing-tube, as this admits of the application of a stop-valve, *e*, just inside of the depurator, and conven-

ient, and operative by the patient with one hand to open or close the valve and admit or stop the inhalation at his pleasure. The other hand of the patient may hold the mouth-piece *g*, connected with the breathing-tube *b*, generally by a flexible tube.

In the use of the last-described apparatus, instead of heating the medicated or other liquid, as before described, and instead of admitting air to supply the patient with means of inhalation, a steam-pipe, or a pipe connected with a steam-furnishing apparatus, may be connected with the upper or outer end of the air-pipe *F*, and steam admitted instead of air, and the vapor furnished or medicated liquid heated in this way.

In practicing our invention as last above described, the liquid in the holder *C* may be cold in the beginning, or when first admitting or applying the steam or the heat, and gradually become heated by such applied heat or steam, and as gradually vaporizing and increasing the volume of vapor to any desired degree.

Instead of water or medicated liquid, herbs or roots or any other substance having suitable medicinal properties may be placed in the liquid-holder *C*, and soaked or saturated or otherwise suitably prepared, and the patient inhale from these instead of from the liquid.

In the use of the combined apparatus shown in Fig. 2, considerable of the air is exhausted from the depurator, and a suitable vacuum created and maintained while the patient is under treatment; and this renders the action of inhaling exceedingly easy and without any

effort; and the result is the same in the apparatus shown in either of the other figures. In fact, the medicated or other inhalations are forced into the lungs, especially in the apparatus shown in Fig. 2, and such forced inhalations or respirations will reach or penetrate and fill all, or nearly all, the air cells or tubes or air-passages of the lungs, many of which cannot be filled by ordinary breathing; and when these inhalations are suitably charged with medicinal properties well known to the medical faculty or to medical practitioners, the result will be highly beneficial to the patient.

Our said invention is designed and intended for the treatment of diseases of the throat, chest, and lungs, for catarrh in the head, and for various other difficulties, in the successful treatment of which we have been eminently successful.

We disclaim a simple inhaling or breathing tube as patented to Frink, July 26, 1870.

We claim as our invention—

1. The combination, with a depurator, of an apparatus to supply the patient *in vacuo* medicaments in the form of vapor or fluid, operating in the manner and for the purpose specified.

2. A valve combined with the inducting-tube of the depurator.

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