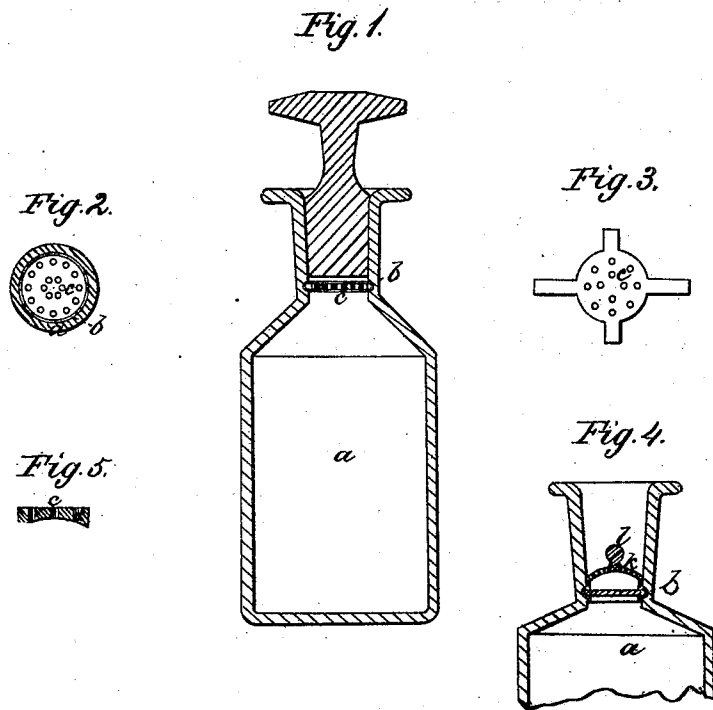


E. P. ROCHE.
Atomizer.

No. 103,374.

Patented May 24, 1870.



Witnesses:
Geo. A. Leong
Edward Griffith

Inventor:
E. P. Roche M. D.
by his Attorney,
Frederick Curtis.

UNITED STATES PATENT OFFICE.

EDWARD P. ROCHE, OF BATH, MAINE.

IMPROVED DEVICE FOR NEBULIZING PERFUMES AND VOLATILE LIQUIDS.

Specification forming part of Letters Patent No. **103,374**, dated May 24, 1870; a
May 17, 1870.

To all whom it may concern:

Be it known that I, EDWARD P. ROCHE, M. D., of Bath, in the county of Sagadahoc and State of Maine, have made an invention of a new and useful device called a "Nebulizing Diaphragm or Atomizer," having reference to perfumes, scent-bottles, &c.; and I do hereby declare the following to be a full, clear, and exact description thereof, due reference being had to the accompanying drawings, making part of this specification, and in which—

Figure 1 is a vertical section of a vial or bottle provided with my invention. Fig. 2 is a horizontal section of the same. Figs. 3, 4, and 5 are modifications of my invention.

The invention herein described, and embodying the subject-matter of this patent, I term a "nebulizing diaphragm" for the necks of bottles or vials, its purpose being, by impeding the flow of liquid, to prevent too sudden and rapid escape of the same.

My invention is intended for scent or perfume bottles, or for any bottles containing volatile fluid from which it is desired to extract a small quantity of liquid at a time.

My invention consists, mainly, in the employment within the neck of a bottle and below the place of deposit of its cork or stopper of a foraminous diaphragm or porous partition which shall obstruct to a considerable extent the flow of a liquid from said bottle, for purposes which will at once manifest themselves to intelligent persons.

In the drawings accompanying this specification, and which illustrate my invention, *a* denotes a glass bottle of ordinary manufacture, with the exception that within the lower part of its neck or filling-orifice is formed an annular circumscribing groove or channel, *b*, of small area. This groove is intended to retain or secure a perforated or gauze diaphragm, (shown at *c*,) the purpose of this diaphragm being as above stated.

Various modes may be adopted to secure the diaphragm in place within the groove *b*, but my present experience induces me to adopt a ring of india-rubber, which, being distended and passed above the periphery of the diaphragm, naturally contracts thereabouts with sufficient power to cling tightly to it, as well

as to expand into and fill the channel *b*, thus securing the diaphragm to the bottle. It would be well to roughen or serrate the periphery of the diaphragm, in order to afford a greater means of safety in securing the elastic ring to it.

In place of securing the diaphragm to the neck or throat of the bottle by means before stated, it may be formed with four or other number of oppositely-arranged bars or studs, two of which are contracted in length and extend into the channel *b*, while the other two extend below the shoulder or main band or top of the bottle, by this means securing the diaphragm in place.

In place of the foraminous diaphragm before explained a disk or partition of plaster-of-paris may be employed, through which a series of minute orifices are made, this disk of plaster being cemented firmly in place within the neck of the bottle.

The employment of the diaphragm before explained, or an equivalent device for exerting a check upon the escape of fluids from bottles, will be found to answer a very useful purpose, as its presence prevents loss of perfumes and other liquids which would oftentimes, through the inadvertence of the possessor or by accident, escape in large quantities.

Still another form of diaphragm which I have contemplated consists in forming it in the shape of a bell, *k*, spun or struck up from sheet metal, and furnished with a knob, *l*, at top, for facilitating its entrance or removal from the neck of the vial.

The outer edge of the diaphragm, when of that form, should be rolled or returned under and scored at intervals with radial slits, by which means a yielding or elastic surface is obtained sufficient to confine the diaphragm in place within the groove of the bottle when compressed therein, the roll or edge of the periphery of the diaphragm being intended to fit closely into such groove.

A diaphragm of the form last described will be found useful for receptacles of finely-powdered articles, and the use of a cork or stopper in connection with it may be dispensed with.

The interposed diaphragm while exerting a

useful action, as before stated, is entirely isolated from any connection or interference with the cork or stopper of the bottle.

I claim as my invention—

1. The application to the neck or mouth of a bottle, and below its stopper-receiving inclosure, of a foraminous diaphragm, or its equivalent device, for retarding flow of liquid from such bottle, the advantages of such a diaphragm being as hereinbefore explained.

2. Forming a score or groove in the interior of the neck of the bottle for the purpose of retaining the diaphragm in place therein, essentially as explained.

EDWARD P. ROCHE, M. D.

Witnesses:

WALTER F. BISBEE,
GEO. A. HANSCOM.