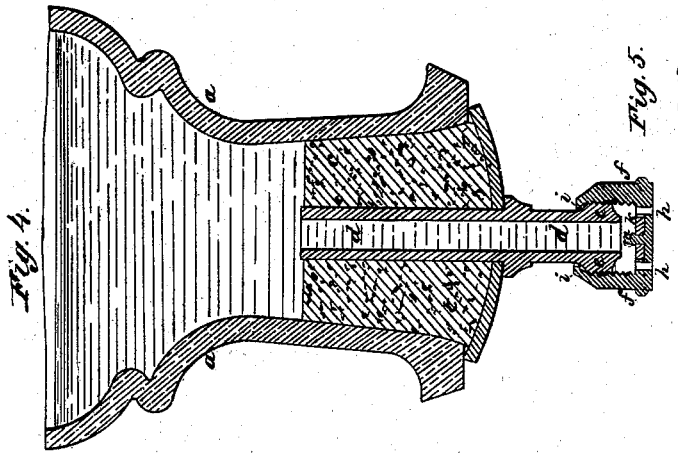
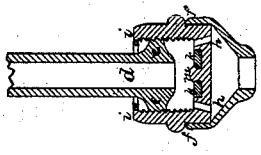
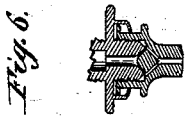
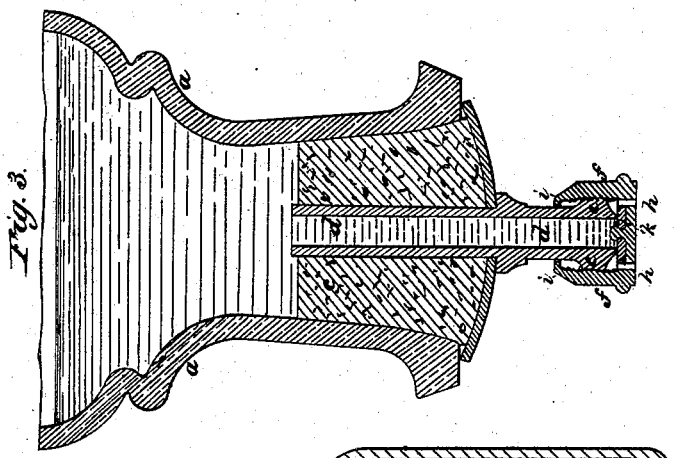
A. E. N. AGNEL.
Bottle-Stopper.

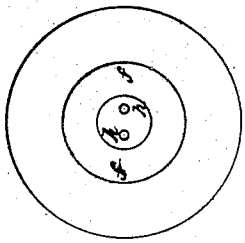
No. 205,228. Patented June 25, 1878.

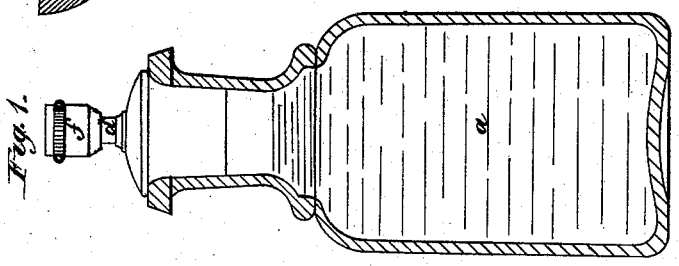












Witnesses
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UNITED STATES PATENT OFFICE.

ALEXANDRE ESPRIT NAPOLÉON AGNEL, OF PARIS, FRANCE, ASSIGNOR TO C. W. MAY, FIRNHABER & CO., OF SAME PLACE.

IMPROVEMENT IN BOTTLE-STOPPERS.

Specification forming part of Letters Patent No. **205,228**, dated June 25, 1878; application filed March 28, 1878.

To all whom it may concern:

Be it known that I, ALEXANDRE ESPRIT NAPOLÉON AGNEL, of Paris, France, have invented an Improved Apparatus for Stoppering Bottles; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed sheets of drawing, making a part of the same.

My invention is an improvement in the class of adjustable screw-caps or stoppers for bottles used for perfumery, tooth-washes, toilet-waters, medicines, &c., from which it is desirable to discharge the liquid in drops or fine jets. Such devices have usually been so constructed that the caps or stoppers proper have been made detachable from the other part. More recently, however, caps or stoppers have been permanently attached, although capable of adjustment to allow discharge of the contents of the bottles; but the construction or means whereby such permanent attachment is effected have certain defects, which it is the object of my invention to remedy.

To this end I construct my bottle-stopper as shown in Figures 1 to 4, inclusive, in accompanying drawing.

Fig. 1 represents it in side view applied to a perfumery-bottle in section. Fig. 2 is a plan view of the same. Figs. 3 and 4 are sectional elevations, showing the device enlarged, and in both closed and open position, and attached to a bottle-neck inverted. Fig. 5 shows a modification. Fig. 6 shows, in vertical section, a stopper upon which mine is an improvement.

The outer extremity of the tube *d*, which traverses the entire length of the cork *c* and forms the outlet of the bottle *a*, is enlarged, and also screw-threaded. To the head *e* thus formed the hollow cap or cover *f* is attached. Said cap is screw-threaded on its inner side, and provided with two discharge-orifices, *h*, in its flat top, and with a lip or turned flange, *i*, on its inner end. The lip is turned or spun on the cap after the latter has been screwed on the head *e*, and its chief function is to prevent detachment of the cap *f* by engagement with the circular shoulder of the tube-head *e*.

In some cases I propose to provide the cap *f* with a conical metal top or nozzle, as shown in Fig. 5, the same being secured by spinning a flange on its lower edge, which enters a circumferential groove in the cap.

By turning the cap in one direction, it is screwed down on the head *e*, as shown in Fig. 4, and thereby opens the discharge-passage more or less, to allow escape of the contents of the bottle; and by turning it in the other direction it is screwed down on the head *e*, and hermetically closes the orifice of the tubes, as shown in Fig. 3.

The cap or cover *f* has in its center, on the under side of its top portion, a washer, *k*, of leather or other suitable material, which, when the cap is screwed down, as in Fig. 3, will press on the head of the tube *d*, and thus form liquid-tight joint therewith.

The washer is placed in an annular cavity or depression; and to prevent it becoming detached, the cap is provided with a stud or projection, *m*, that pass through a central hole in the washer, and is upset after the latter has been put in place.

The special advantages my improved stopper has over others of its particular class will appear upon reference to Fig. 6, in which a perforated cap, having a small central valve, is represented permanently attached to a screw-tube by engagement of an external shoulder formed on the base of the cap with an annular lip at the base of the screw-tube.

In practical use, a drop of the liquid will occasionally leak or escape into the annular space beneath said lip, and hence the operation of the cap finally becomes impeded by stickiness, or by corrosion of the metal. The space surrounding the valve may also become obstructed, and the discharge of the liquid—which is, at best, never very free—is liable to be greatly impeded or cut off altogether.

What I claim is—

The improved stopper formed of the screw-tapped cap or cover *f*, having holes *h* and the inwardly-turned lip *i* on its inner end, the tube *d*, having the screw-threaded head *e*, forming a circular rib or shoulder, with which the said lip engages when the cap is screwed out to open the discharge-orifice, as shown and described.

ALEXANDRE ESPRIT NAPOLÉON AGNEL.

Witnesses:

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