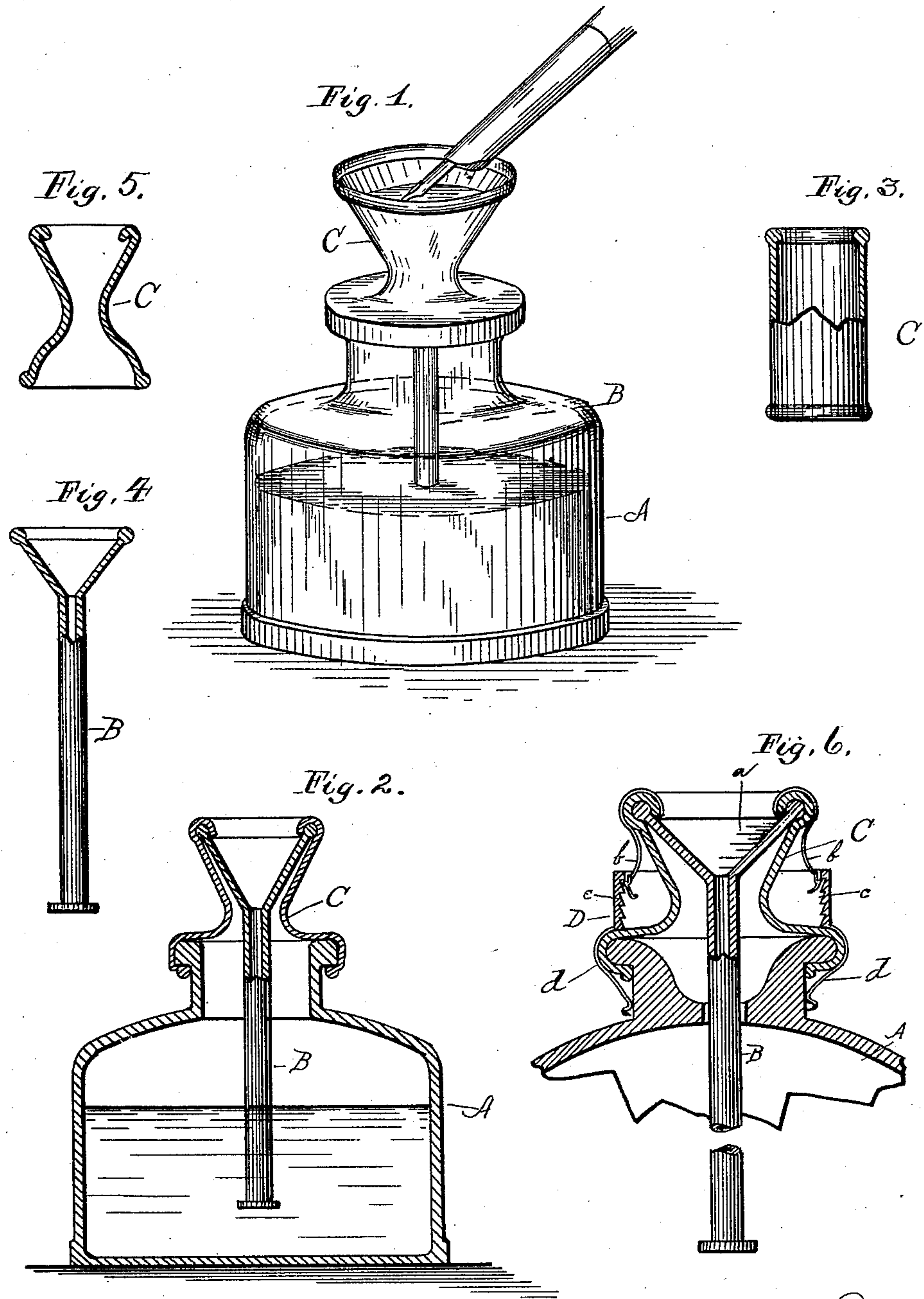


(No Model.)

A. E. DAIN.
BOTTLE STOPPER.

No. 420,676.

Patented Feb. 4, 1890.



WITNESSES:
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UNITED STATES PATENT OFFICE.

ALBERT E. DAIN, OF PITTSBURG, PENNSYLVANIA, ASSIGNOR OF THREE-FIFTHS TO JOHN Q. EVERSON AND JOHN H. RONEY, OF SAME PLACE.

BOTTLE-STOPPER.

SPECIFICATION forming part of Letters Patent No. 420,676, dated February 4, 1890.

Application filed September 16, 1889. Serial No. 324,108. (No model.)

To all whom it may concern:

Be it known that I, ALBERT E. DAIN, a citizen of the United States, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Bottle-Stoppers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification, in which—

Figure 1 indicates a perspective of an ink-bottle provided with my improved stopper. Fig. 2 indicates a vertical central section of same and of the internal tube, partly in section. Fig. 3 indicates an elevation, partly in section, of the gum thimble. Fig. 4 indicates an elevation, partly in section, of the tube. Fig. 5 indicates a vertical central section of the gum thimble with its center contracted. Fig. 6 indicates the neck of a medicine-bottle, in section, provided with my improved stopper, also in section, and the internal tube, partly in section, its funnel-shaped mouth being provided with a graduated scale for the measurement of liquids therein.

The object of my invention is to produce a bottle-stopper especially adapted to the use of ink and medicine bottles, which will permit the escape of the liquid only at such times as it is desirable to use the same, as herein described. This I have obtained by the device, which I call an "atmospheric stopper," hereinafter more fully described, which consists, essentially, of an elastic thimble, the ends, respectively, of which, when drawn over and secured to the neck of a bottle and the upper outer periphery of a tube, respectively, which projects through the same into the bottle, forms an elastic air-tight cap thereon, by depressing which forces the ink or other liquid into the funnel-shaped mouth of said tube, and by removing the pressure permits the ink or other liquid to recede into the bottle, thereby preventing, when my improved stopper is applied to an ink-bottle, the great waste occasioned by evaporation and drying when the ink is constantly exposed.

Among the many advantages of my improvement are its great simplicity and cheapness, its adaptability to any form of ink or medicine bottle at present in use, its prevention of waste and accumulation of dirt in the ink when applied to an ink-bottle, and its adaptability to measuring medicine by compressing the elastic sufficient to cause the liquid to rise a given height in the funnel-shaped mouth of the vertical tube, which is provided with a graduated scale to indicate the quantity therein.

I will now more specifically describe my invention, reference being had to the accompanying drawings, forming part hereof, in which—

A is a bottle of any desirable or ordinary shape, preferably with the neck narrowed, but of somewhat greater diameter than the outside diameter of the vertical tube B projecting therein, as shown in Fig. 6, in order to prevent said tube wobbling in the same. Said tube may be constructed of any suitable material—such as glass, indurated rubber, &c.—its lower end being provided with a flange and its upper end projecting out of the neck of the bottle, being substantially funnel-shaped, as shown in Figs. 1, 2, 4, and 6. Said tube is supported in said bottle by the thimble C, which is formed of rubber or other elastic substance, the upper end of which elastic thimble is stretched or drawn around the outer periphery of the rigid upper or funnel-shaped end of said tube, being provided with a bead, as shown in Figs. 3 and 5, for the purpose of being more securely attached thereon, and its lower end is drawn down over the upper end of said tube (conforming substantially to the shape thereof) and stretched or drawn around the neck or top of the bottle, thereby forming an elastic air-tight cap or stopper thereon adapted, when depressed by dipping or thrusting a pen in or otherwise depressing the upper funnel-shaped end of the vertical tube projecting in said bottle, to compress the air in the same, thereby causing the ink or other liquid to ascend said tube. When the pen is withdrawn or other cause of compression removed, the cap or thimble expands, removes the compression on the liquid in the bottle, permit-

ting the same to recede from said tube into the bottle again.

The elastic thimble C is contracted at a point intermediate of its length to form an upright neck between the ends of the thimble, and said ends of the thimble are attached, respectively, to the mouth of the ink-well or other vessel and to the rigid flared end of the internal tube, which flared end of the tube serves to hold the end of the thimble into which the pen or other implement is thrust in a distended position, the thimble holding itself in place on the ink-well or other vessel and on the flared mouth of the internal tube by its own elasticity. From an inspection of the drawings it will be observed that the thimble extends inwardly from the point where it is applied to the ink-well or other vessel to the neck thereof, which rises vertically for a suitable distance above the ink well or vessel, and the thimble has sufficient inherent elasticity to hold itself and the internal tube, which is connected thereto, in an upright position. The internal tube does not touch or come in contact with the inner surface of the elastic thimble or the neck thereof, except at the extreme upper edge of the thimble, at which point the thimble and flared mouth of the internal tube are attached or connected together in the manner hereinbefore described, and by arranging the internal tube in this manner and forming said thimble with the upright vertical neck a comparatively large air-chamber is formed within the thimble and an increased surface on the thimble is secured, whereby the thimble is adapted, when depressed, to displace a larger amount of air, which is important, as it renders the device very sensitive.

I have found by practical experience that a bottle-stopper constructed as herein described will elevate the fluid in the tube by a very slight depression of the thimble—as, for instance, when a pen is dipped in the open flaring mouth of the tube the thimble is forced down by the comparatively easy thrust or impact of the pen thereon, which is very desirable when the device is applied to ink-wells. If desirable, said gum thimble, instead of being perfectly cylindrical, may be formed with its center contracted, as shown in Fig. 5.

In Fig. 6 is shown a medicine-bottle provided with my improved stopper, the funnel-shaped end of the tube being provided with a graduated scale *a*, for the purpose of measuring liquid therein.

b and *b* are downwardly-projecting flexible springs, the upper ends of which are suitably secured to either side of said funnel, and the lower ends being provided with a catch-like projection adapted to engage the teeth *c* and *c*, formed on the inner surface of the annulus or ring D, which is provided with depending

arms *d*, said arms being fitted beneath the flange or ledge on the mouth or neck of a bottle, ink-well, or other vessel, and which serves to securely hold the ring or annulus on the vessel, as shown in said figure, for the purpose of preventing the tube ascending until the liquid in said funnel is removed. Pressing the springs *b* and *b* disengages the catch and teeth and permits the tube to ascend.

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

1. In a bottle-stopper, substantially as described, the combination of an internal vertical tube having a flared rigid mouth at its upper extremity, and a rubber thimble provided with an upright contracted neck which is flared and fits over the upper extremity or edge of the flared mouth of the tube, said thimble being elastic, but sufficiently rigid to hold itself and the tube which is connected thereto in an upright position on the neck or mouth of a bottle or other vessel to which the thimble is applied, as and for the purpose described.

2. In a bottle-stopper, substantially as described, the combination of an elastic thimble having a contracted upright neck, an internal tube suspended from the neck of the thimble, and mechanism, substantially as described, carried by the thimble for positively holding the thimble and tube in a depressed position against the elasticity of the thimble, as and for the purpose described.

3. In a bottle-stopper, substantially as described, the combination of an elastic thimble having a contracted upright neck, an internal tube suspended from the neck of the thimble, and yielding locking devices carried by the thimble and adapted to engage suitable projections or teeth on a fixed part of the vessel to which the stopper is applied, as and for the purpose described.

4. In a bottle-stopper, substantially as described, the combination of an elastic thimble having a contracted upright neck, an internal tube suspended from the neck of said thimble, a stationary ring or annulus arranged below the neck of the thimble and having the serrations or teeth, and the yielding locking-arms carried by the thimble and adapted to engage the serrations on the annulus when the thimble is depressed, as and for the purpose described.

In testimony that I claim the foregoing I hereunto affix my signature this 13th day of September, A. D. 1889.

ALBERT E. DAIN. [L. S.]

In presence of—

H. H. SALLADE,

GEO. B. FERGUSON.