(No Model.)

F. A. LENOX.

BOTTLE.

No. 582,212. Patented May 11, 1897.

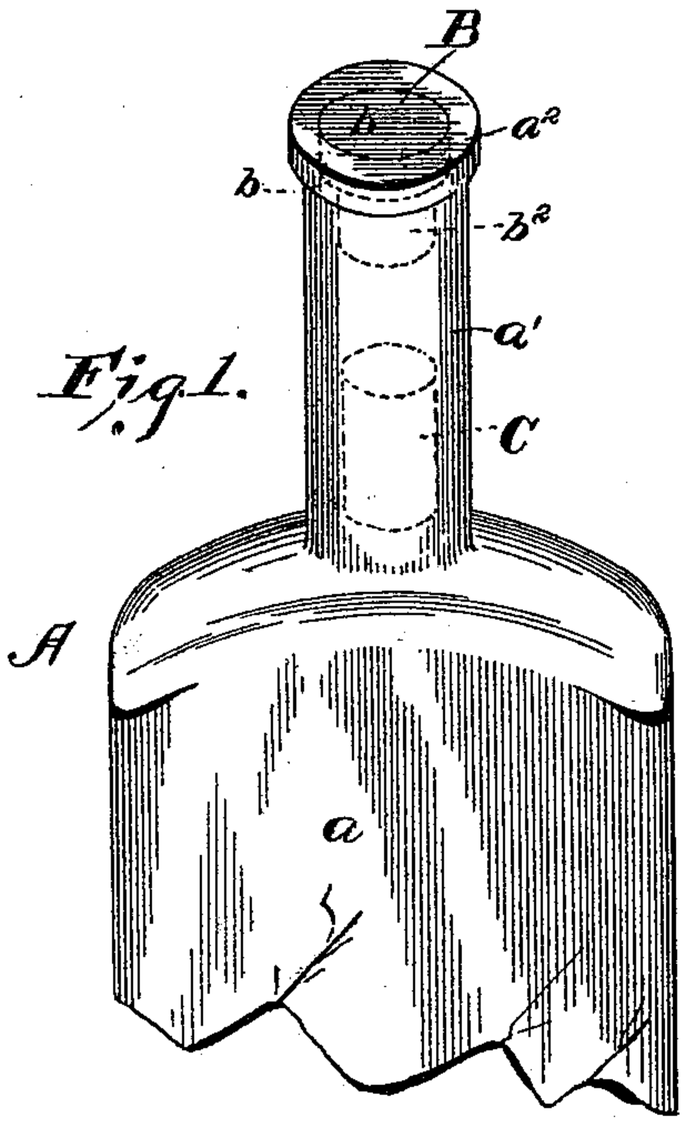

Fig. 1.

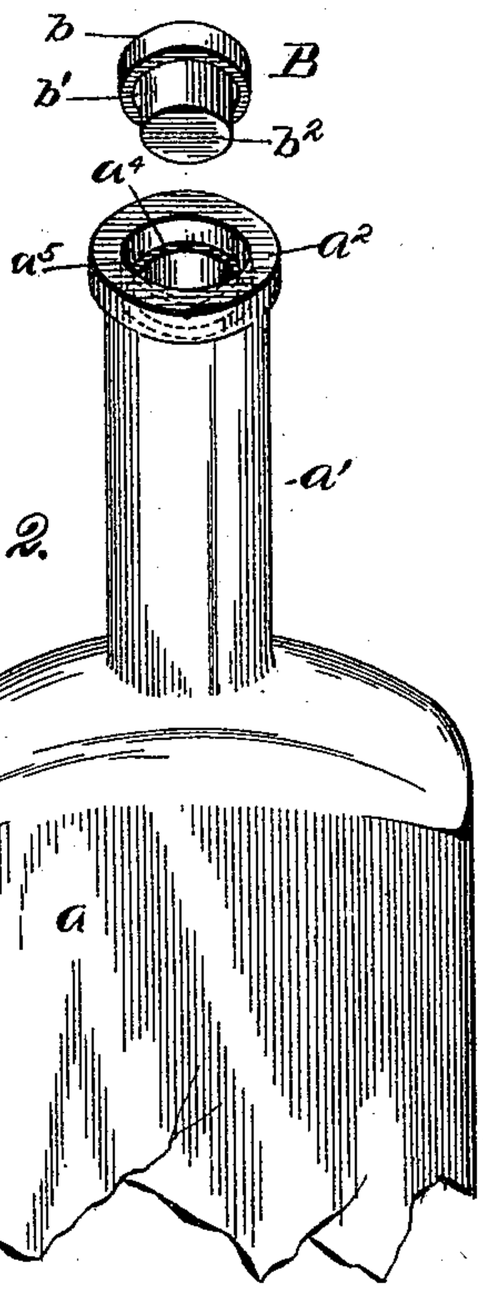

Fig. 2.

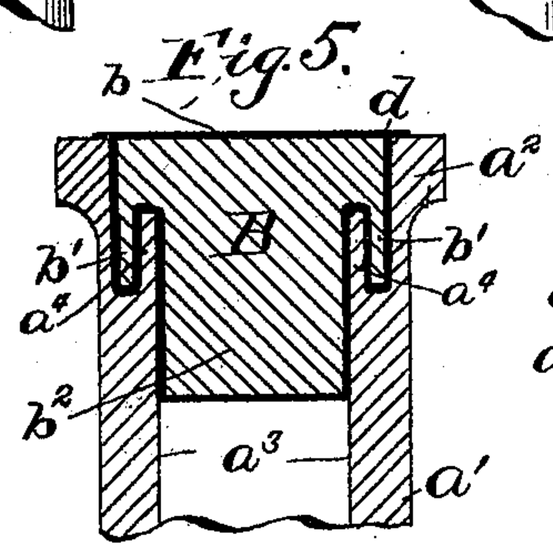

Fig. 5.

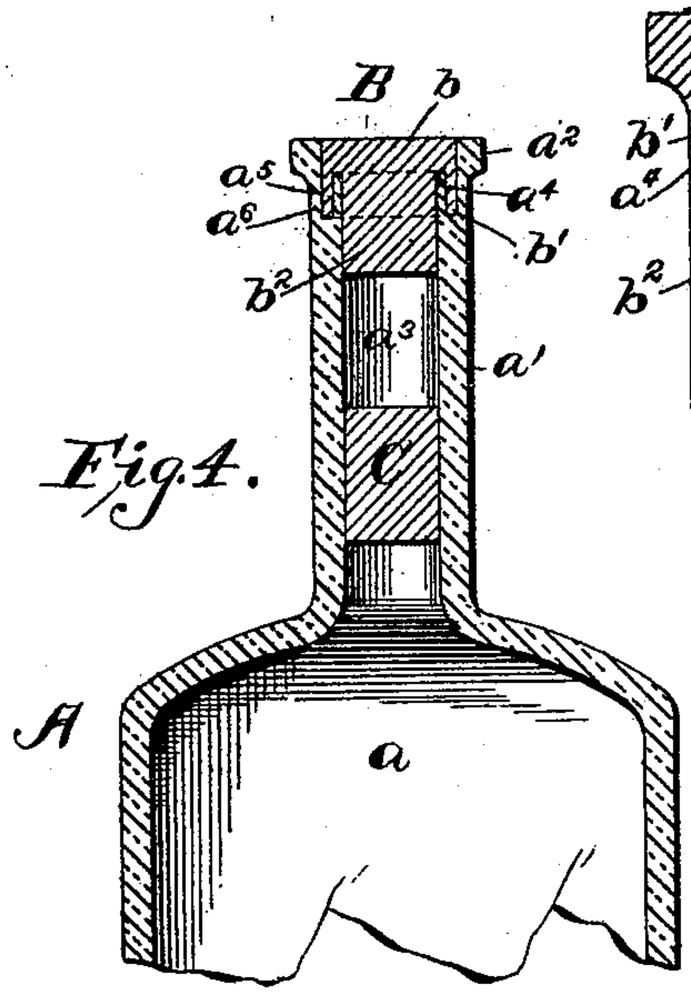

Fig. 4.

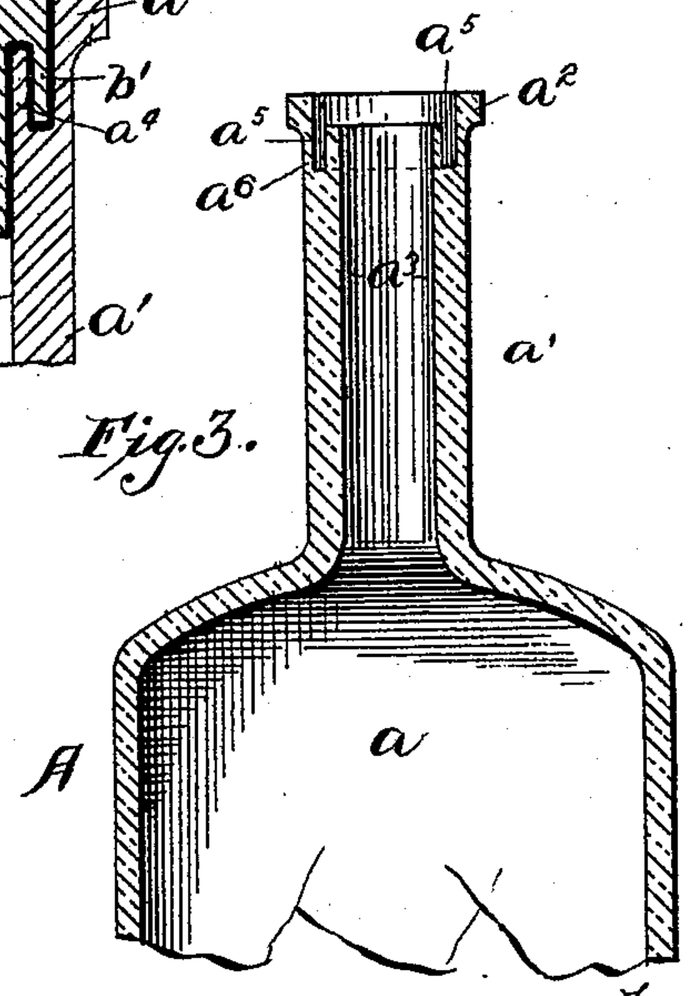

Fig. 3.

Witnesses
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UNITED STATES PATENT OFFICE.

FRED A. LENOX, OF STILLWATER, MINNESOTA.

BOTTLE.

SPECIFICATION forming part of Letters Patent No. 582,212, dated May 11, 1897.

Application filed May 29, 1896. Serial No. 593,657. (No model.)

To all whom it may concern:

Be it known that I, FRED A. LENOX, a citizen of the United States, residing at Stillwater, in the county of Washington and State of Minnesota, have invented a certain new and useful Improvement in Bottles; and I do 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 appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

My invention relates to improvements in bottles, the object of the invention being to provide means for closing the neck of a bottle, whereby the contents of the bottle cannot be removed without destroying the closing device.

Figure 1 is a perspective of a bottle having stopping devices of my improved sort. Fig. 2 is a perspective of the same, showing the top cap removed. Fig. 3 is a vertical section showing the top stopper or cap removed. Fig. 4 is a vertical section of Fig. 1. Fig. 5 is a sectional view, on an enlarged scale, of the upper end of the bottle, showing the cap in place.

In the drawings, A indicates the bottle as a whole, it having a body part a, the neck a', and the flange a^2 at the upper end of the neck.

For reasons which will be apparent from the description given below the neck a' should be elongated considerably in comparison with bottles as ordinarily made. For the ordinary sizes of bottles this neck a' should be at least three inches long. The inside wall at a^3 should be smooth and as nearly cylindrical as possible. At the top of the neck and on the inside I form an inner rim or flange a^4, the upper edge of which is somewhat below the top surface of the horizontal flanged part a^2. Between this inner rim or flange a^4 and the outer wall of the bottle there is an annular cavity or chamber a^5. The outer wall a^6 at the upper end should be suitably thick for strength during transportation or storage, in ordinary bottles a thickness of one-eighth of an inch being sufficient, and an outwardly-turned part at a^2 acting to strengthen this part of the neck. A bottle having these features of construction can be corked and stopped or sealed as follows:

The stopper consists of a glass cup or cap, (indicated as a whole by B,) it having the top cross part b, from the edge of which there extends downward a flange or ring b'. From the central part of the cross-plate b there extends down a plug-like projection b^2. The external diameter of this plug part b^2 is approximately the same as the internal diameter of the cylinder a^3, and the annulus or ring-like flange b' is of the same thickness and external and internal diameters as the chamber a^5. The upper plate portion b is of a thickness equal to the distance from the upper edge of the flange a^4 below the top surface of the part a^2. As a consequence of such construction and arrangement the stopper B not only tightly fills the interior passage, but also fills the entire space at the upper end of the neck. The external surfaces of the plug b^2 and of the flanged part b' are ground in the manner followed in forming ground-glass stoppers, so that in any event a tight joint will be attainable; but in order to hold the stopper firmly in place and to effectually seal the vessel I employ, in connection with the parts above described, a cement d of the character of water-glass. Glass of this character can be formed in any of several well-known ways with suitable material. I have found that a solution of silicate of soda is sufficient for the purposes at which I aim. It is sparingly soluble in water and only when exposed to the action of a large mass of water by shaking. When applied in a way for which I provide, the application of water for the purpose of dissolving it is practically impossible.

To obtain access to the contents of the bottle or package, it is necessary to break the neck, which can be easily done when required.

Such breakage prevents entirely the use thereafter of the bottle or package without the fact being at once apparent that it has been previously used as a package; but such breakage of course is open to the liability of the introduction of fragments of glass into the bottle or among its contents. To prevent this, I combine with the parts above described an ordinary cork stopper, such as is indicated at C. This, prior to sealing the bottle as above

described, is forced down into the neck to a point near the upper end of the body proper, *a*.

When it is desired to remove the contents of the bottle, it is done by, as aforesaid, breaking the neck, which is effected at a line above the cork stopper C. The stopper prevents the accidental entrance of fragments of glass or other foreign material, any small pieces of which can be first cleaned away and entirely removed. After that the cork can be withdrawn and the contents poured out.

As above pointed out, the outer flange at the upper end of the neck of the bottle is preferably thickened, and it will be noticed that the stopper B is entirely surrounded by the walls of the bottle-neck and thereby effectually prevented from breaking during transportation, and by examining the drawings it will be noticed that by reason of the stopper having the flange or ring b', extending concentric with the stem or plug portion b^2 and adapted to fit within a chamber formed between the two concentric flanges a^4 a^6 of the bottle-neck, I am enabled to connect the stopper B to the bottle-neck throughout its entire length by water-glass and connect the flange b' thereof to both flanges of the bottle-neck and in such manner that it is practically impossible to apply water so as to dissolve such water-glass and entirely disengage the stopper from the bottle-neck.

I am aware that prior to my invention it has been proposed to secure a cap or stopper to a bottle-neck by cement of various kinds.

In one of the constructions heretofore proposed the bottle-neck was provided with an upwardly-extending corrugated flange, and a cap or cover, having concentric depending flanges on its lower side, was fitted over said bottle-neck, the flange on the bottle extending between the flanges on the cap-piece, and secured in place by a mixture of Portland cement.

In another construction it was proposed to form an inwardly-extending bead in the bottle-neck by forming a corresponding groove in the outer surface of the bottle near its upper end and to place in said neck above said bead a cylindrical plug, said plug being connected with the adjacent side walls of the bottle-neck by cement.

My improvements, however, are clearly distinguishable from and present marked advantages over either of the constructions last referred to.

In both of said earlier constructions the bottle-neck was reduced in thickness at the lower end of the stopper and thereby the said neck was weakened to such an extent as to be liable to breakage in handling or during transportation, the cap or stopper in one case being connected only with a relatively thin flange, which it surrounded, while in the other case the presence of the groove and bead in the bottle-neck at the lower end of the stopper necessarily reduced the thickness of the walls of the bottle-neck to an undesirable extent at that point, and the cement also was liable to be readily dissolved.

By my arrangement it will be seen that the stopper is arranged entirely within the bottle-neck and is so supported therein as to make the walls of the bottle-neck of uniform thickness throughout its length; and also, as above pointed out, the water-glass which I employ for connecting the stopper and the bottle-neck is interposed between said stopper and both the inner and outer flanges of the bottle. Therefore the stopper will not become loosened and detachable from the bottle should such connecting medium over the top of the stopper and between the stopper and the outer flange a^6 be dissolved. I am also aware that it has been proposed to form a groove or grooves in the upper end of a bottle-neck, which groove or grooves were flared or inclined outwardly from their upper to their lower ends, and to combine with a bottle having such a neck a metallic cap having a series of flexible depending lips or flanges adapted to be forced outwardly into and have their ends bent upon the body portion by contact with the end walls of the groove or grooves; but such a stopper, which was intended for closing the mouths of fruit-jars and similar packing vessels, is entirely dissimilar to my present improvements.

In my construction I provide a stopper having a central solid plug and a flange formed integral with said plug and extending concentric therewith, the entire stopper being adapted to fit within the neck of a bottle; and it will be seen that it would be impossible to employ a stopper such as that set forth herein, which is preferably made of glass, in connection with a bottle-neck having grooves opening through its upper end and flaring or extending outwardly from the top to the bottom.

What I claim is—

1. The herein-described bottle having an inner flange a^4 at its upper end, and an outer wall or flange a^6, extending to a point above the top of the said inner flange, and a stopper having a plug b^2, adapted to fit the neck within the inner flange, a^4, and the ring or flange b', rigid with the plug, b^2, and adapted to fit in the chamber formed between the flanges a^4, a^6, said stopper having its top surface flush with the top of the flange a^6, when in the bottle and having its flange, b', connected to both flanges, a^4, a^6, of the bottle by water-glass, substantially as set forth.

2. The herein-described bottle having an elongated neck with an annular groove at its upper end, providing an inner flange, a^4, and an outer flange, a^6, extending concentric with the inner flange and to a point above the top of said inner flange, the upper end of said flange being thickened, as at a^2, and the stopper having the plug portion, b^2, adapted to fit within the inner flange, a^4, the top, b,

adapted to have its top surface flush with the top of the outer flange, a^6, when in place in the bottle, and an integral flange, b', extending concentric with the plug portion, b^2 and adapted to fit in the chamber between the flanges, a^4, a^6, on the bottle-neck, the said plug, b^2, being connected with the bottle-neck by water-glass and the flange, b', of the stopper being similarly connected with both of the flanges, a^4, a^6, of the bottle-neck, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

FRED A. LENOX.

Witnesses:
AGNES E. REILLY,
FRED W. GAIL.