(No Model.)

H. I. LEITH.

BOTTLE.

No. 489,967. Patented Jan. 17, 1893.

Fig. 2.

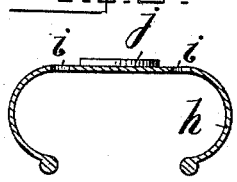


Fig. 1.

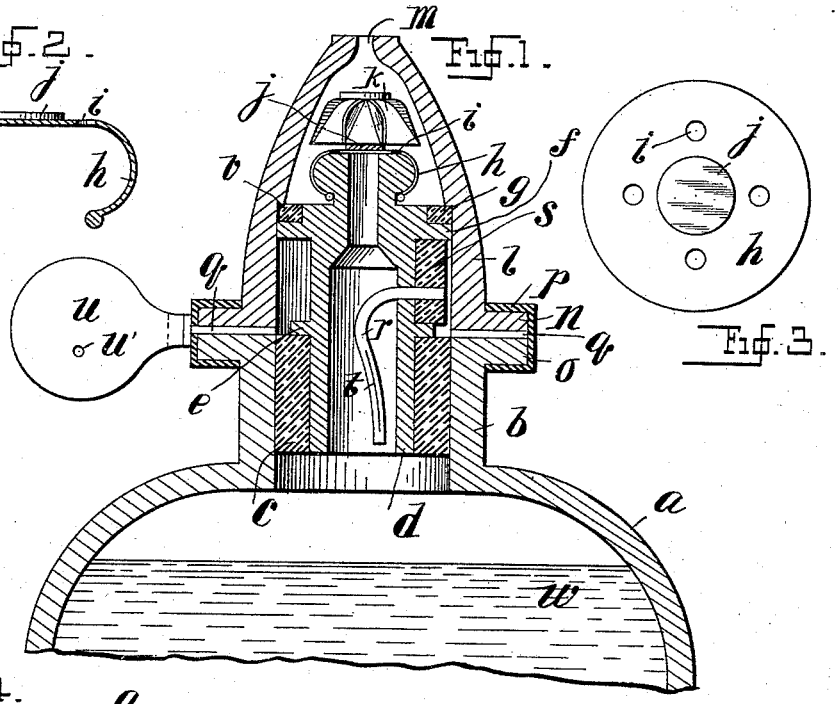


Fig. 3.

Fig. 4.

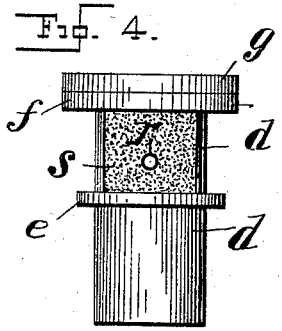


Fig. 5.

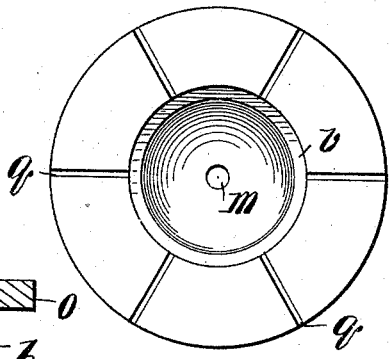


Fig. 6.

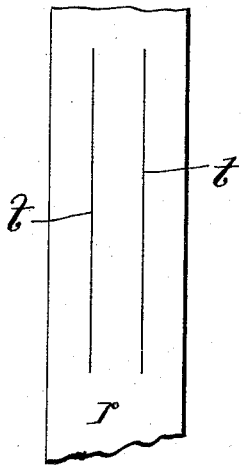
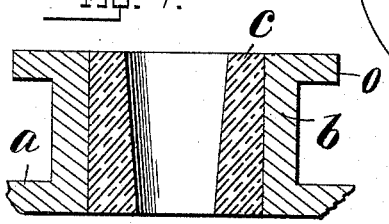


Fig. 7.



Witnesses

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HARVEY I. LEITH, OF PROVIDENCE, RHODE ISLAND.

BOTTLE.

SPECIFICATION forming part of Letters Patent No. 489,967, dated January 17, 1893.

Application filed September 21, 1892. Serial No. 446,409. (No model.)

To all whom it may concern:

Be it known that I, HARVEY I. LEITH, a citizen of the United States of America, and a resident of Providence, in the county of Providence, State of Rhode Island, have invented certain new and useful Improvements in Bottles, of which the following is a specification.

My invention relates to the construction of a bottle whose contents are guaranteed of a certain quality and which it is desired shall be opened only by a particular party, or if opened by another party, he shall be obliged to break a seal or in some manner so effect the bottle as to show that it has been tampered with. It is so constructed that it may be opened to such an extent that small quantities of liquid may be easily extracted by any one; but it is also arranged so that no one can enter liquid without showing that the bottle has been tampered with.

The invention relates to improvements upon former bottles invented by me and set forth in applications filed March 16, 1892, Serial No. 425,098, and entitled "bottles," and the other filed June 7, 1892 Serial No. 435,876, and entitled "bottles," and patents granted to me March 29, 1887, No. 360,102; and August 16, 1887, No. 368,345.

In order that the invention may be understood in all its details, the accompanying drawings are described by reference letters.

Figure 1 is a vertical section of the complete equipment of any given bottle. A few details are not in section. Fig. 2 is a section of the valve provided with the disk for making the same less flexible at the opening. Fig. 3 is a plan of the said valve. Fig. 4 is a side elevation of the means for preventing entrance of liquid through the air conduit. Fig. 5 is an inverted plan of the cap to be sealed upon the bottle. Fig. 6 is an enlarged elevation of a portion of the valve of the air conduit. Fig. 7 is a vertical section of the perforated cork and the neck of the bottle in which it fits.

The device consists of the combination with the bottle *a* and its neck *b*, of a perforated cork *c*, fitting and fastened therein; a detachable tube *d*, fitting in said cork and having a flange *e*, resting thereon, and a second higher flange *f*, upon which is fastened a ring *g*, of cork, rubber or similar yielding material; a valve *h* provided with holes *i*, directly over the upper surface of the tube *d*, whereby the same are normally closed; a disk *j*, fastened upon central portion of said valve and so large as to lap over the inner edge of the tube *b*, whose internal diameter is only about one half as great at the upper portion as it is at the lower; a protector *k* resting upon said disk and consisting simply of a tapering piece of metal or similar hard substance; a tapering cap *l* having the upper central outlet *m*, and the lower flange *n*, which is sealed to the flange *o* of the neck *b*, by a soft metal collar *p*, the cap being provided also with grooves *q*, for the admission of air to the interior of the cap; a flexible small rubber tube *r*, passing from the interior of cap *l* to the interior of the bottle *a*, through the tube *d*; a block *s* fitting within the cap around an extension of the tube *r* and just escaping contact with the cap.

The remaining details are as follows:—The tube *r* is closed at that end within the bottle, but it is slotted with longitudinal cuts *t*, which serve as valve openings. The other end of the tube is open to the interior of the cap. The seal *p* is naturally not air tight, because it is metal against glass. Air can leak between the same, through the grooves *q* into the interior of the cap *l*, through the tube *r*, through the valve opening *t* and into the bottle *a*. This is the path of the air at that time when it enters the bottle. Continuous with one of the grooves *q* is an air bulb *u* having a hole *u'*, so that by placing one's thumb over said hole the entrance of air into the bottle may be more rapid. The block *s*, if moistened, would swell and touch the side of the cap and thereby no liquid could enter the bottle through the tube *r*. The block may be made of the substance capable of swelling by absorbing water, such, for example, as white wood. If any body should try to force an adulterated liquid from the bulb *u*, into the cap and into the bottle, the block *s* would swell and stop up the tube *r*. An inner flange *v* of the cap *l* presses tightly upon the ring *g* so that the upper interior portion of the cap is closed liquid and air tight from the lower portion; therefore any liquid in the upper, or valve chest does not touch the block *s*. In order to prevent any tampering with the valve

h through the exit of the cap l, a piece of metal k, serving as a protector rests upon the disk j. If a wire were introduced through the opening m so as to injure the valve h it would be effectually stopped by the protector k.

The complete operation of the device is as follows:—Any bottle a is provided with a cork c which has such an external diameter that it will fit the particular bottle in question. It may have other external diameters for the purpose of fitting other bottles. The internal diameter is such in all cases that it will hold tightly the tube d. When a bottle is inverted the liquid w stretches the valve h, and passes through the holes i and m, while air enters the bottle, to take the place of the liquid, through the openings t in the tube r. The valve h stretches because it is made of soft rubber and because of the weight of the liquid w. It may be, that one may desire to introduce an adulterated liquid, or cheaper liquid, but it is practically impossible to do so without a visible injury to the device. The seal could be removed, and the cap also; but the ordinary purchaser of the bottle could not replace the seal, without the special tools and materials for making the seal. If he should try to introduce liquid through the grooves q, without removing the seal, the block s would swell and stop up the tube r.

The protector k is a piece of hard smooth material such as glass tapering upward, and loose within the cap l, and resting on the valve h. Its shape, otherwise is of no consequence. It is shown as having lateral ribs which prevent stoppage of the mouth m when the bottle is inverted. The protector serves to prevent tampering, with the delicate membranous valve with a wire which might be thrust through the hole m.

The slots t serve as valves and consist simply of longitudinal cuts in the soft rubber tube r. When the liquid is removed, a partial vacuum is formed and the greater external pressure of the air forces some air through the slots by opening them wider, but no liquid can pass from the bottle to the interior of the tube r.

I claim as my invention:—

1. The combination with the neck of a bottle and with a ring fitting therein, of a detachable tube d, an immovable cap inclosing the valve and located over the said tube, a seal connecting the cap to the bottle, and a conduit or air passage connecting the interior of the bottle with the outside atmosphere.

2. The combination with the neck of a bottle of a yielding ring fitting tightly therein, a dedetachable tube fitting in said ring and normally closed by a valve, a perforated cap over the valve and sealed to said bottle, and an air bulb u, having air communications with the interior of the bottle.

3. The combination with the neck of a bottle and with a ring fitting therein, of a detachable tube d, a valve upon and closing the outer end thereof, a cap over the valve, a seal connecting the cap to the bottle, a tube r having slots, within the interior of the bottle and extending through and beyond said tube, a porous block s fitted on the end of said tube r and against the neck of the bottle, and all but touching the said cap, and means for closing hermetically that portion of the interior of the cap containing the valve from that portion containing the blocks.

4. The combination of a bottle, a valve closing the mouth thereof and consisting of a perforated flexible sheet, a disk fastened upon the sheet and overlapping the edge of said mouth, a perforated cap over the valve and containing a protector which normally rests upon said disk.

5. The combination with a bottle, of a yielding ring c fastened in the neck thereof, a detachable tube d fitting in said ring, a tapering cap having a mouth m at the upper or smaller portion and a flange n at the larger end, having grooves q and resting against the flange o on the neck b of the bottle, a flange f on the upper end of the tube d, and carrying a yielding shoulder v in the cap and pressing upon said ring g, a valve h covering the mouth of tube d, a seal p connecting the cap to the flange o non-hermetically, a tube r having slots t closed at one end within the bottle, and extending through the tube d, into that portion of the interior of the cap below the flange f, a porous substance surrounding the extension of the tube r and all but in contact with the inner surface of the cap, and an air bulb u connecting with the interior of the bottle through the grooves q and tube r.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two witnesses, this 14th day of September, 1892.

HARVEY I. LEITH.

Witnesses:
EDWARD P. THOMPSON,
ROBT. C. TAYLOR.