

H. I. LEITH.
BOTTLE.

Patented Jan. 17, 1893.



Edward P. Thompson

UNITED STATES PATENT OFFICE.

HARVEY I. LEITH, OF PROVIDENCE, RHODE ISLAND.

BOTTLE.

SPECIFICATION forming part of Letters Patent No. 489,966, dated January 17, 1893.

Application filed June 7, 1892. Serial No. 435,876. (No model.)

To all whom it may concern:

Be it known that I, HARVEY I. LEITH, a citizen of the United States, and a resident of Providence, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Bottles, (Case No. 2,) 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 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 application filed March 16, 1892 Serial No. 425,098, and entitled "bottles," and in 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 upper portion of a bottle where the elements of the invention are located. Fig. 2, is a plan of part of the device of which that seen in Fig. 1, is a section, modified. Fig. 3, is a vertical section of a modification, which relates to the air conduit. Fig. 4 is a vertical section of so much of the neck of the bottle as to exhibit the construction of a still further modification of the air conduit. Fig. 5, is a similar view of another modification. Fig. 6, is an exterior view of a modification of that construction which is shown in Fig. 5. Figs. 7, 8, and 9, are respectively plan, vertical, section and partial vertical section of different modifications of the valve employed as an element of the invention. Fig. 10 shows a detail additional feature. Fig. 11 is a section of means whereby any bottle may be equipped with my invention. Fig. 12, shows a section

of means of assisting the weight of the water in operating the valve.

a is the neck of a bottle *b*; and *c* is the mouth.

d is a valve covering the mouth *c*.

e is an air conduit.

f is a cap placed over the neck and resting on the shoulder of the bottle, and having a mouth *g*.

h is a yielding or rubber ring mounted upon and surrounding the neck and holding the cap *f* by friction as the cap fits tightly thereon, and rests on a shoulder *a''* on the neck *a*. The neck *a* has an annular projection *a'* upon which the ring *h* bears.

f' is a flange on the lower end of the cap *f*, opposite the projection *a'*. Between the said projection *a'* and the flange *f'* is a mass of sealing wax upon which may be stamped the maker's name or such words as "contents guaranteed genuine." The tube *e* in Fig. 1 extends from the interior of the cap *f*, along a groove in the top of the neck at the dotted line, and then into the interior of the neck *a*, and terminates on the lower side of the valve *d*, which closes it in the normal condition.

The valve *d* in Fig. 1 is provided with holes *i* above the neck of the bottle and normally closed thereby. The tube *e* in Fig. 1 is a capillary tube.

In Fig. 2, the conical deflector *j* having legs *j'* resting upon the valve over the neck *a* in Fig. 1, is provided so that if one puts a fine wire through the mouth *g* which is capillary, it will be steered away and hindered from punching a hole in the valve.

In Fig. 3, the conduit *e'* is held in the neck *a* and passes through the same from the mouth of the bottle to the inclosed space *c'* of the cap *f* between a projecting flange *b''* and ring *h*. There is also a hole *E* between the flange *b''* and the soft metal seal *l* compressed around the flange *f'* and down under the flange *b''*. This may be stamped with words or any characters or signs if desired.

In Fig. 5, the air conduit is a hole through the neck, of small size, to take the place of the tube *e'* inserted through a larger hole.

In Fig. 4, the tube *e'* is extended into the

mouth *c* and up to where it terminates against the valve *d*, which normally closes said tube.

In Fig. 6, the conduits or holes *e''* are greatly multiplied in number to facilitate entrance of air rapidly.

In Fig. 7 the valve *d* is hinged at one side at *D*, instead of being a cap which is stretched over the neck as in Fig. 1.

In Fig. 8, the valve has bulged out slotted portions *m*. The slots are normally closed.

In Fig. 9 the deflector is a ball *J*, resting in a rubber ring *d'* which is fixed to the neck of the bottle around the mouth *c*.

The functions and operations are as follows:—To use the bottle for the purpose of obtaining the liquid *n* therefrom it is inverted and shaken. It flows through the holes *i* into the cap and thence through the mouth *g*. The weight of the liquid against the valve *d* moves the said valve from the tube *e* and air enters from the outside atmosphere, into the cap, then through the tube *e* and then into the bottle *b*, to take the place of the liquid which has been poured out. On the other hand, no one could introduce liquid without breaking the seal or visibly injuring the bottle. If one tried to force liquid into the bottle through the mouth *g*, the consequent pressure would press the valve tightly upon the lower mouth of the tube *e*, so that no air could enter said tube. The same would be true as regards the construction shown in Fig. 4. In the device in Fig. 3, the air can enter through the passages *f'* and *e'*, as the water passes out of the mouth *g*.

The ball *J* serves not only as a deflector, but as a weight to hold the valve closed, and thereby prevent leakage of the liquid from the cap to the bottle, so that liquid cannot be introduced from the exterior of the bottle by this principle of leakage.

In Fig. 10, a string *A* is fastened in the conduit *e'* and held water tight therein by means of wax. When the bottle is to be used for the first time the thread is pulled out in this way the bottle is completely sealed from the time of manufacture until use.

In Fig. 11, a perforated cork *B* is applied to bottles having an irregular or defective mouth, and the valve *i* is applied to it, which may be nicely finished with a ground surface, upon which the valve is to rest.

In Fig. 12, the mouth *c* is tapered down-

ward and contains a ball, whose weight, when the bottle is inverted, assists the weight of the water in opening the valve.

It is evident that in Fig. 1 the tube *e* need not actually touch the valve *i* in its normal position but nearly so. I found that it works satisfactorily at as much as one-sixteenth of an inch distant.

I claim as my invention:—

1. The combination of a bottle having a neck which contains the usual mouth, a perforated cap *f* placed over the mouth and resting upon the shoulder of the bottle; a ring *a'*, surrounding the foot of the cap, and secured to the bottle a sealing material applied to the bottle between the said ring and the said cap, ring *h* dividing the interior of the cap into two compartments, a flange *a''* around the neck of the bottle and under the ring *h*, and resting against the same; a perforated membrane stretched over the neck *a*, the perforations being directly over the neck or lip in such a manner as to be closed thereby; a tube *e* extending from the interior of the cap to the interior of the bottle and terminating against said membrane; or nearly so, a deflector consisting for example, of a cone *j* secured upon the upper side of the said membrane and located below the perforation in the cap *f*, and provided with legs resting upon the neck *a*.

2. The combination of a bottle, a valve upon and closing mouth thereof, a cap located over the neck and mouth of the bottle and sealed to the bottle and provided with an outlet *g*, and an air conduit extending from the exterior of the cap to the interior of the bottle and terminating with its end against the said valve or nearly so within the bottle.

3. The combination of a bottle, a perforated cap covering the mouth thereof and sealed thereto, a membranous valve covering the mouth of the bottle and a deflector over the membrane and resting upon the neck of the bottle.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two witnesses, this 27th day of May, 1892.

HARVEY I. LEITH.

Witnesses:

EDWARD P. THOMPSON,
LEOCADIA M. LENNAN.