

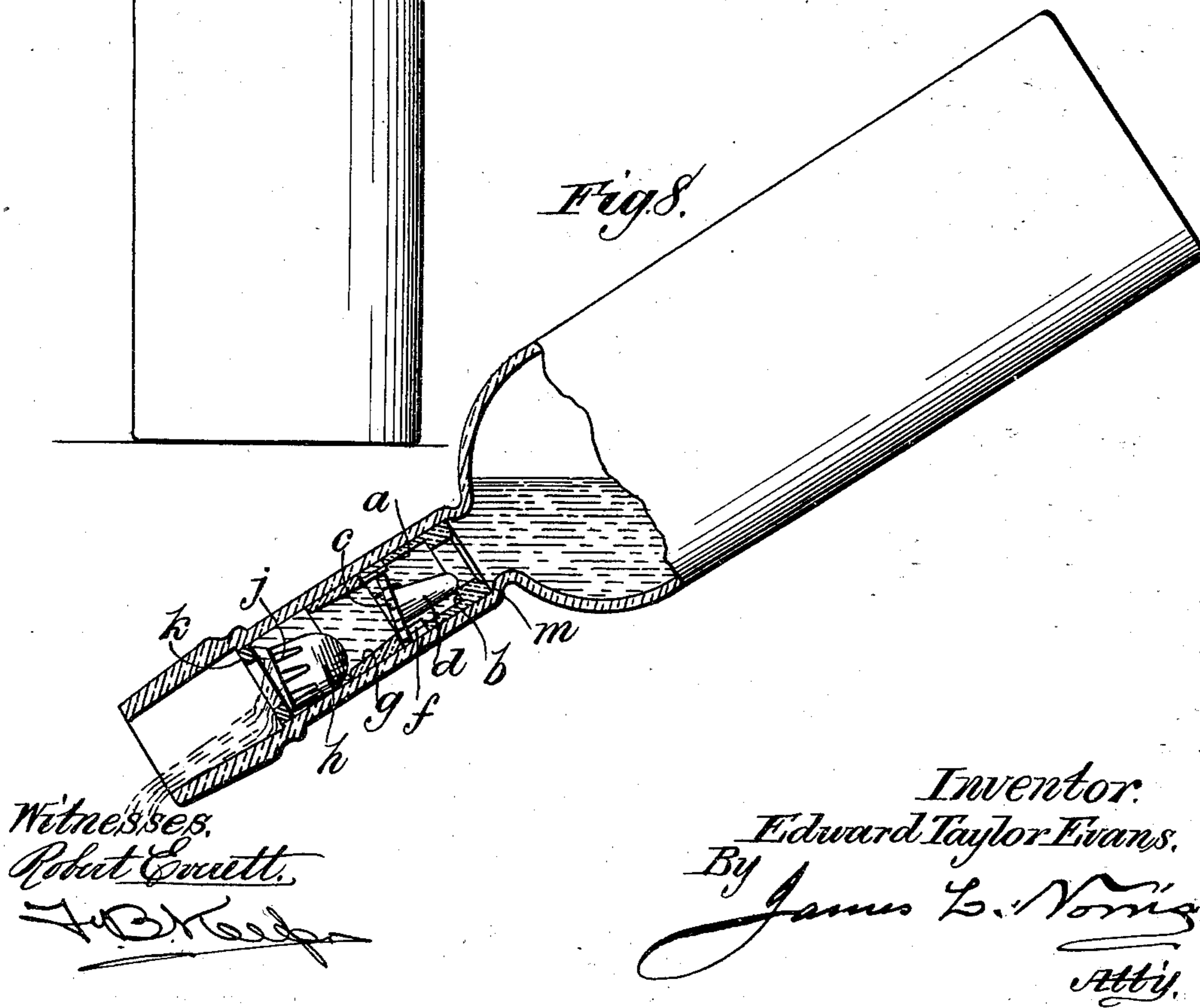
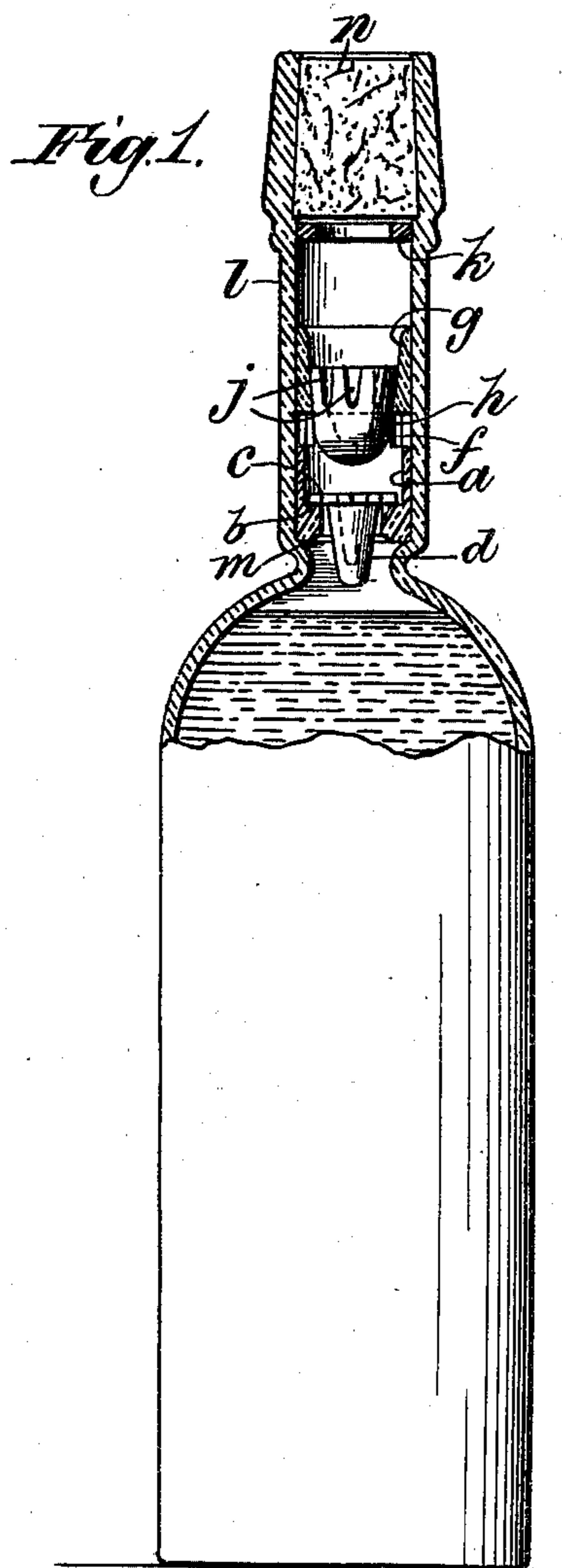
No. 671,880.

Patented Apr. 9, 1901.

E. T. EVANS.
NON-REFILLABLE BOTTLE.

(Application filed Dec. 26, 1900.)

(No Model.)



Witnesses,
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UNITED STATES PATENT OFFICE.

EDWARD TAYLOR EVANS, OF UPPER CLAPTON, ENGLAND.

NON-REFILLABLE BOTTLE.

SPECIFICATION forming part of Letters Patent No. 671,880, dated April 9, 1901.

Application filed December 26, 1900. Serial No. 41,149. (No model.)

To all whom it may concern:

Be it known that I, EDWARD TAYLOR EVANS, jeweler, a subject of the Queen of Great Britain, residing at 131 Northwold road, Upper Clapton, in the county of Middlesex, England, have invented certain new and useful Improvements in or Relating to Non-Refillable Bottles and the Like, of which the following is a specification.

My invention relates to bottles and the like, and has for its object to provide an improved construction of bottle or an improved attachment of an inexpensive character for bottles whereby the latter are made practically non-refillable.

In carrying out my said invention I provide the bottle-neck with two or more valves of special construction arranged in line one above the other in combination with valve-seats, preferably made separately from the bottle-neck and secured in the neck by an adhesive substance.

My said invention is illustrated in the accompanying drawings, wherein—

Figure 1 is an elevation, partly in vertical central section, of a bottle furnished with two valves. Fig. 2 is a plan; and Fig. 3 is a vertical central section, of the upper valve shown detached. Fig. 4 is a vertical central section of the seat-ring for the upper valve. Fig. 5 is a plan, and Fig. 6 is a vertical central section, of the lower valve shown detached; and Fig. 7 is a vertical central section of the seat-ring for the lower valve. Fig. 8 illustrates the action of the valves when pouring liquid from the bottle.

Like letters of reference denote corresponding parts throughout the drawings.

a is a short cylindrical tube made, preferably, of glass or porcelain and adapted to fit closely within the neck l of the bottle and to rest upon the contracted part m of the bottle-neck. The said tube a is formed with an internal shoulder b , which constitutes a valve-seat, upon which rests a flat disk-like valve c , also preferably made of porcelain or glass. Said valve is constructed with a dependent stem d , preferably of taper formation and hollow, as clearly shown in Fig. 6. Above the tube a is another tube g , fitting closely within the bottle-neck and resting upon the tube a , the upper edge of which is notched or

serrated at f , as shown, to provide more room for the passage of the liquid when emptying the bottle. The interior of the tube g is made conical and forms the seat for a conical valve h , which fits within said tube. The sides of the conical valve are grooved at j for a purpose hereinafter described, and the said valve is also preferably made with a conical depression, as indicated in Fig. 3. The tubes a and g are secured within the bottle-neck by means of a suitable adhesive substance on their peripheries. At a suitable distance above the upper tube g is fixed a ring k , also secured in the bottle-neck by means of an adhesive substance and having an aperture which is smaller than the diameter of the valve h , so that the latter cannot fall out of the bottle when pouring the liquid therefrom. The tubes a and g , together with their valves and also the ring k , are inserted and secured in the bottle-neck after the bottle has been filled, and the mouth of the bottle is then sealed by a cork n in the usual manner. In lieu of the ring k I may employ a cross-bar or other suitable means to prevent the upper valve from falling out.

The action of the valves when emptying the bottle is indicated in Fig. 8, which shows how the liquid can pass out. The periphery of the lower valve c is made star-shaped, as indicated in Fig. 5, so that the latter will not stop the flow of liquid when resting against the lower edge of the rim g , as otherwise it would do. The grooves j in the upper valve h also answer the same purpose and prevent the said valve h from closing the orifice through the ring k when such is used.

When restoring the bottle to its upright position, the liquid enters the hollow stems or depressions of the valves and assists in closing the valves.

Although I prefer to employ a taper valve at the top, as shown, I in some cases employ a valve having a flange similar to the lower valve. The lower valve can also be made taper or conical like the upper valve. By reason of the provision of two valves arranged as described it is practically impossible to insert a wire or other object to lift the lowermost valve, so that liquid cannot be introduced into the bottle after the valves have been placed in position. If desired, more

than two valves may be provided for greater security.

According to a modification of my invention I construct the tubes α and g integral with the bottle-neck in the manufacture of the bottle. In such cases special tools are required, and the valves are inserted successively during the manufacture of the bottle-neck. With this construction of bottle it is necessary to provide a special filling-orifice, which can be conveniently arranged in the bottom of the bottle, the same being stoppered and sealed after filling the bottle in such a manner that the stopper cannot afterward be withdrawn.

Although I have shown and described my improvements as applied to a bottle having a straight cylindrical neck, the same can also be applied to bottles having taper or conical necks.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is—

1. In a non-refillable bottle, the combination with the neck thereof, of a lower tube secured therein, having a serrated upper edge, and further provided with an internal shoulder, a disk valve supported by said shoulder and provided with a downwardly-extending tapering stem, an upper tube mounted in the said neck upon the serrated upper edge of the lower tube and provided with a conical inner face forming a valve-seat, and a conical valve supported by said seat and formed with a series of grooves in its periphery.

2. In a non-refillable bottle, the combination with the neck thereof, of a lower tube secured therein and having a serrated upper

edge, a disk valve supported by the said lower tube and provided with a depending stem, an upper tube mounted in the said neck upon the serrated upper edge of the lower tube and provided with a conical inner face forming a valve-seat, a valve supported by said inner face of the said upper tube and formed with a series of grooves in its periphery, and a ring mounted in the neck above the said upper tube.

3. In a non-refillable bottle, the combination with the neck thereof, of a star-shaped disk valve mounted in the said neck and provided with a tapering, depending stem, means for supporting the said disk valve, a conical valve mounted above the disk valve and provided with a series of grooves in its periphery, and a tube mounted in the said neck and provided with a conical inner face forming a valve-seat for supporting the said conical valve.

4. In a non-refillable bottle, the combination with the neck thereof, of a disk valve mounted in said neck and provided with a hollow depending tapering stem, means for supporting the said valve, a hollow conical valve mounted above the disk valve and provided with a series of grooves in its periphery, and a tube having a conical inner face forming a valve-seat for supporting the said hollow conical valve.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

EDWARD TAYLOR EVANS.

Witnesses:

JOHN HUGH EVANS,
JOHN EDWARD NEWTON.