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W. K. CONLEY.
STOPPER FOR VESSELS FOR CONTAINING LIQUIDS.
APPLICATION FILED AUG. 10, 1903.

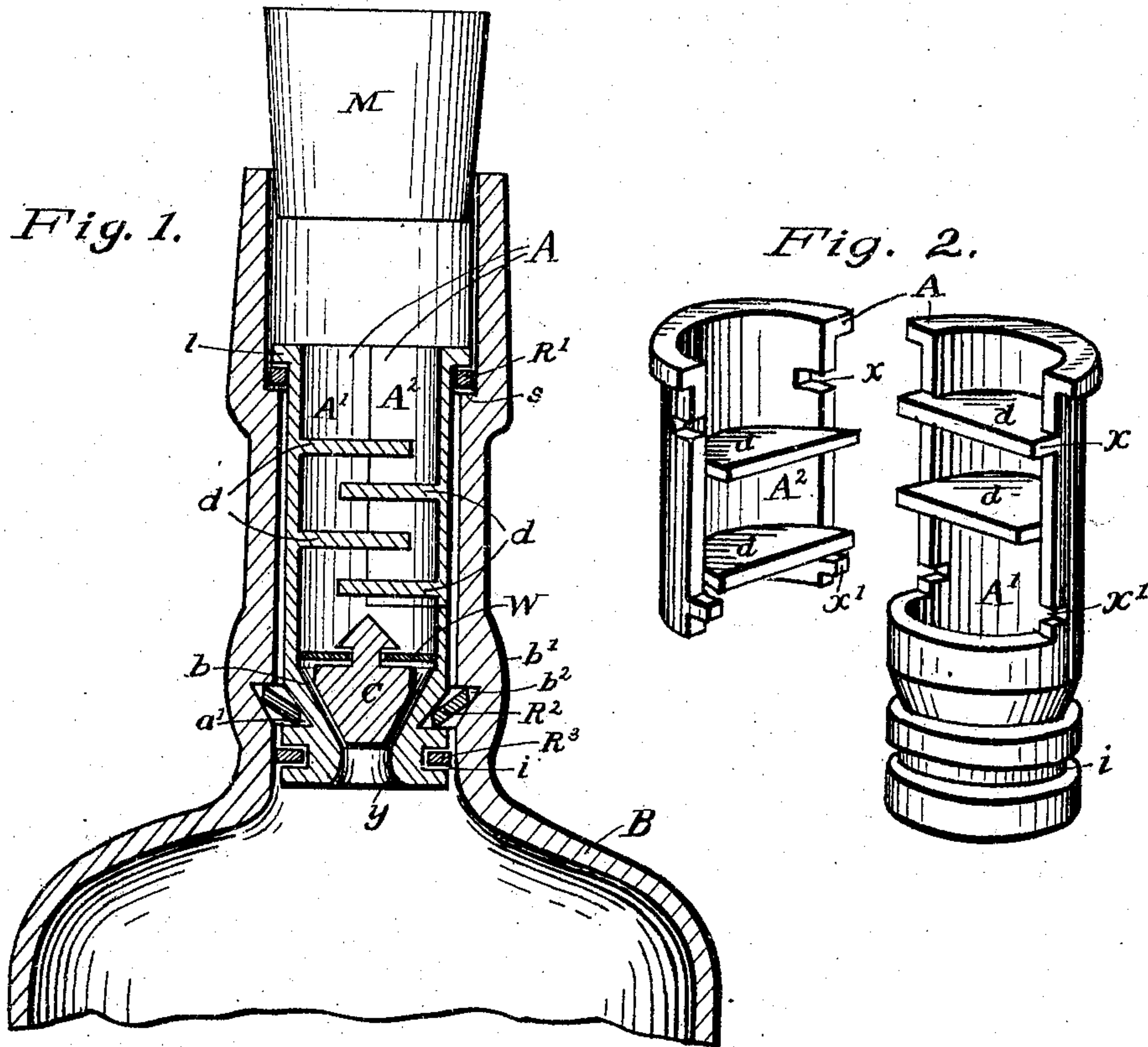
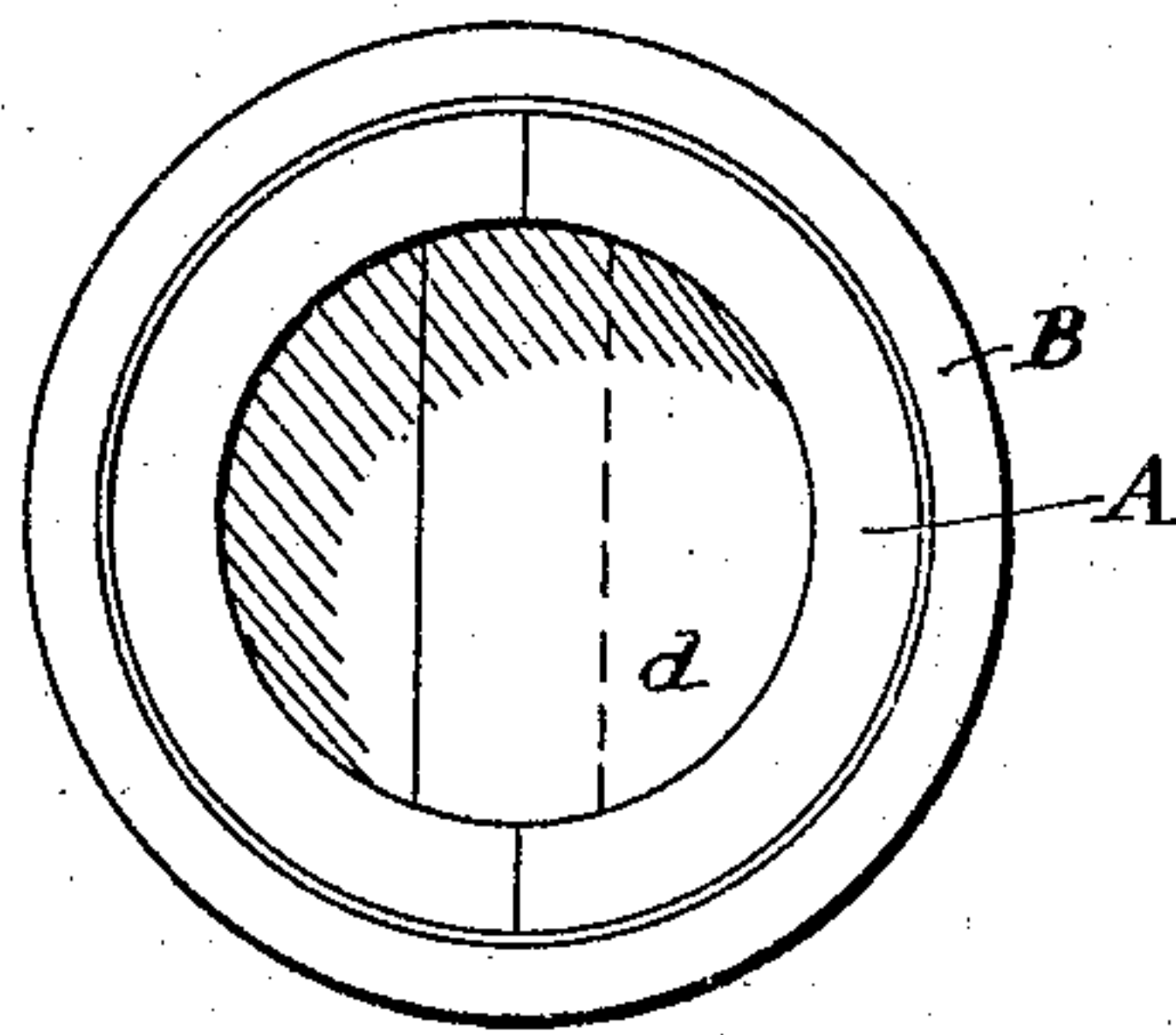


Fig. 3.



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STOPPER FOR VESSELS FOR CONTAINING LIQUIDS.

SPECIFICATION forming part of Letters Patent No. 781,132, dated January 31, 1905.

Application filed August 10, 1903. Serial No. 169,037.

To all whom it may concern:

Be it known that I, WILLIAM KNOX CONLEY, a citizen of the United States, residing at Cincinnati, in the county of Hamilton and State of Ohio, have invented new and useful Improvements in Stoppers for Vessels for Containing Liquids, of which the following is a specification.

My invention relates to a stopper to be inserted in the opening of a bottle, jug, barrel, cask, or other vessel used to contain liquids of any sort, and it is so constructed as to prevent any such containing vessel when so provided with my device from being refilled after it has been emptied of its original contents. I am aware that others have attempted to accomplish these results with various sorts of devices; but none of them provide such a mechanism as prevents refilling of the bottle or other container when a so-called "vacuum-machine" is used or even when the vessel is laid on its side and wholly or partly submerged in liquid or when jerked from one position to another when wholly or partly submerged in liquid.

My invention provides an apparatus capable of accomplishing the desired results in all cases where the aperture of the containing vessel is of such a nature as to make it possible to fit it with a device of this character, and, furthermore, it can be constructed cheaply and can be quickly and easily inserted into its proper position in a containing vessel after the same has been filled.

To this end my invention consists in a suitably-formed exterior shell constructed of a single tube, or preferably in two pieces—namely, a three-quarter and a one-quarter section—into which is fitted a cone-shaped movable stopper, the whole apparatus to be inserted after filling the vessel into a suitably-shaped aperture, as the neck of a properly-formed bottle, and securely held in place by rings or washers, of rubber or other compressible material, fitted around and seated upon suitable annular depressions upon the surface of said shell.

The general construction and the precise form and nature of the surrounding member or shell, as well as the stopper or valve, may be modified and varied without departing from the essential spirit of my invention. In the present illustration I have shown my device sufficiently elongated to be fitted into the neck of an ordinary whisky-bottle, and have not thought it necessary to show it in such a contracted form as would be necessary for use in a keg or barrel bung-hole or the like.

My invention is illustrated in the accompanying drawings, in which—

Figure 1 is a vertical elevation of my device in axial section. Fig. 2 is an elevation of the exterior portion or shell of the structure, showing the two parts in which it is made. Fig. 3 is a top view of a bottle-neck with the device fitted into it, showing the relative positions of the interior staggered partitions of the shell.

Referring now to the drawings, and more especially to Fig. 1, which exhibits my invention in a simple form, B represents the walls of a glass bottle, particularly a bottle-neck, into which has been fitted a cylindrically-shaped exterior member or shell A of a lift-valve or stopper C, around the neck of which is fitted a washer W, made of gutta-percha or other suitably impervious and flexible material. The washer W is made to fit closely around the neck of the stopper C, so as to prevent seepage either from the inner or outer side, and is made of such a size as to fit snugly against the cylindrical interior walls of the shell A, but being of soft and flexible material when the knob or top of the stopper C touches against the lower side of the lower division-shelf *d* when the containing vessel is inverted to empty it of its contents the weight of the liquid descending around the stopper C and within the shell A depresses the washer W at its outer edges and allows the liquid contents to flow out freely; but if it is attempted to force any liquid into the containing vessel from the outside through the opening in the shell A the weight of the stopper

C and the force applied to the liquid presses the stopper C tightly against the interior surface of the lower part of the walls A, and the washer W being of rubber or other soft material settles closely within any remaining crevice between the walls of the stopper C and the walls of the shell A, completely sealing the same against leakage from the outside.

Both the parts A and C are made of glass or other impervious firm material. The stopper C has in its operative part the general shape of an inverted cone, preferably with the apex and edges of base removed. The shell A, whose general shape is adapted to the shape of the aperture of the containing vessel it is intended to fit into, with the aid of the rubber washers fits into the orifice of the containing vessel.

Before proceeding to describe more fully the part A, I wish to call attention to the fact that the bottle B should be formed with a shoulder s, being the lower part of that portion of the neck of a bottle which the cork ordinarily occupies. Upon this shoulder in the bottle-neck will rest when my invention is fitted in place a rubber or other compressible washer R'. The containing vessel B is also formed with the lower part of the neck bulging in shape at a point b' contiguous to an inner recess or inverted-V-shaped shoulder made by the interior annular indentation of the walls of the containing vessel B. Into this depression b' when the shell A is fitted into place a washer R², made of rubber or other compressible material, is fitted. This prevents the shell A and the parts which it incloses from being withdrawn from the bottle without breaking the device or the containing vessel. As the shell A fits closely within the same concentric portion of the containing vessel B, there is little room between the surfaces of their respective adjacent walls, and any attempt made to withdraw the shell A from the opening of the containing vessel would force the washer R² tightly between the upper surface or shoulder of the indentation b' and the indentation in the shell A, (designated as a',) practically preventing its withdrawal unless by the breaking of my device or the containing vessel.

Referring now to Fig. 2, the shell A is shown in two pieces—approximately a three-quarter piece A' and a one-quarter piece A²—which pieces dovetail into each other before insertion into the opening of a containing vessel. These dovetails x' x prevent the pieces from sliding apart after the washer R' has been fixed in place and while my device is being put into position into the aperture of the containing vessel. While these parts A' A² are separated the stopper C, with its attendant washer W fixed in place, is lowered into position in the shell formed by the sloping walls A'. Both pieces of the shell A are provided

at one or more places on their interior walls with division-shelves d, each extending more than half the distance across the inner space of the opening formed by the placing together of the two pieces A' A². These division-shelves when so placed at regular or irregular intervals serve by their staggered relations to protect the stopper C and its accompanying washer W from interference by the insertion of a hook or other tool or device for the purpose of elevating the stopper C, so that the bottle can be refilled after having been emptied. The lowest of these division-shelves is placed a little distance above the top of the stopper C, so as to prevent said stopper from more than a slight movement up or down when pouring out the liquid contents of the vessel, for if the movement of said stopper were not restricted it might be liable to displacement, which would prevent it from dropping back into place, where it can perform its proper functions of protection.

The shell A is provided with an extending flange l, which acts as a continuous lug, upon which lug so formed my device rests upon the washer R' and compresses said washer between itself and the shoulder s when the device is fitted in place.

The shell A has near the lower part of its interior surface slanted inner walls toward the lower end adapted to receive the coneshaped stopper C, so that when said part settles into place the surface of the stopper C and the beveled walls b will be concentric throughout and, together with the washer W, will prevent the forcing of any liquid into the bottle.

The lower internal portion of the shell A is rounded off at y to allow the fluid contents of the containing vessel to escape readily by pouring.

The shell A has on its external surface near the lower part a circumferential groove z, fitted to receive a washer R³, made of rubber or other impervious compressible material.

The package is corked in the usual way, (represented in the illustration by the cork M.) The length of the part A between the flange l and the annular indentation a' is made to so correspond with the depth of the aperture of the containing vessel B between the shoulder s and the inner indentation b' as to allow the washer R² to spring into the depression b' when washer R' is compressed by forcing down the shoulder l tightly upon it.

The use of the washer R³ is to make an additional packing where the aperture of the containing vessel will be tightly sealed against the shell A, thus further preventing any seepage of the liquid contents of the containing vessel.

The tubular casing A may instead of being made laterally divided in its upper portion be made of a solid metal tube, the valve-seat-protecting partitions and any other desired inte-

rior parts being soldered or otherwise fastened into position and the annular depressions turned or pressed into the tube.

I claim as my invention and desire to secure by Letters Patent of the United States—

1. In combination with a bottle or other vessel having a neck or other orifice, a tubular casing in said neck and having a conical valve-seat, a conical valve to engage said seat; and a flexible washer fitted to the valve and having its edge closely fitting the inner wall of the casing to form substantially a liquid-tight joint said washer capable, when the bottle or vessel is inverted, of yielding under the pressure of the liquid to allow the contents to escape around the edges.

2. In combination with a bottle or other vessel having a neck or other orifice, a tubular casing in said neck and provided with interior overlapping partitions forming a tortuous liquid-passage, said casing having a conical valve-seat, a conical valve below said partitions to engage said seat said valve having a grooved neck extension, a washer fitted to the neck of the valve and extending to and forming a liquid-tight joint with the inner wall of the casing when the bottle is upright, said washer being made of flexible material whereby when the bottle is inverted and the valve-neck contacts with the adjacent partition the pressure of liquid from the inside forces the edges of the washer outwardly and allows the liquid to escape around the displaced edges of the washer.

3. The combination with a bottle and a tubular casing fitted in the neck thereof said casing having oppositely-extending, horizontal partitions forming a tortuous fluid-passage, and a conical valve-seat, of a conical valve and a flexible washer fitted thereto said washer normally forming a liquid-tight joint with the inner wall of the casing and having a movement relative thereto and to the valve when the bottle is inverted and the valve is in contact with the adjacent of said partitions whereby the pressure of the liquid depresses the edges of the washer to allow the liquid to escape.

4. In combination with a bottle or other vessel having a neck or other orifice, provided with interior shoulders facing in opposite directions, a tubular casing laterally divided in its upper portion and having a lift-valve at its lower end, an external groove and flange corresponding with the internal shoulders of the containing-neck, and compressible annular washers seated upon the casing, and engaging the shoulders of the neck, and on the external

surface of the casing a circumferential groove with a compressible washer seated therein, and upon opposite sides of the interior walls of the casing horizontal partitions staggered and overlapping, substantially as and for the purpose set forth.

5. In combination with a bottle or other vessel having a neck or other orifice, provided with interior shoulders facing in opposite directions, a tubular casing having a lift-valve at its lower end, an external groove and flange corresponding with the internal shoulders of the containing-neck, and compressible annular washers seated upon the casing and engaging the shoulders of the neck, and on the external surface of the casing a circumferential groove with a compressible washer seated therein, and upon opposite sides of the interior walls of the casing horizontal partitions staggered and overlapping, and having the tubular casing laterally divided in its upper portion, substantially as and for the purpose set forth.

6. In combination with a bottle or other vessel having a neck or other orifice, provided with interior shoulders facing in opposite directions, a tubular casing laterally divided in its upper portion and having a lift-valve at its lower end, one of said divided portions having a flange and the other divided portion having an external groove and flange corresponding with the internal shoulders of the containing-neck, and compressible annular washers seated upon the casing, and engaging the shoulders of the neck, and upon opposite sides of the interior walls of the casing horizontal partitions staggered and overlapping, substantially as and for the purpose set forth.

7. In combination with a bottle or other vessel having a neck or other orifice, provided with interior shoulders facing in opposite directions, a tubular casing having a lift-valve at its lower end, an external groove and flange corresponding with the internal shoulders of the containing-neck and compressible annular washers seated upon the casing, and engaging the shoulders of the neck, and having the tubular casing laterally divided in its upper portion, substantially as and for the purpose set forth.

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

WILLIAM KNOX CONLEY.

Witnesses:

CHAS. HERBERT JONES,
J. A. TURNER.