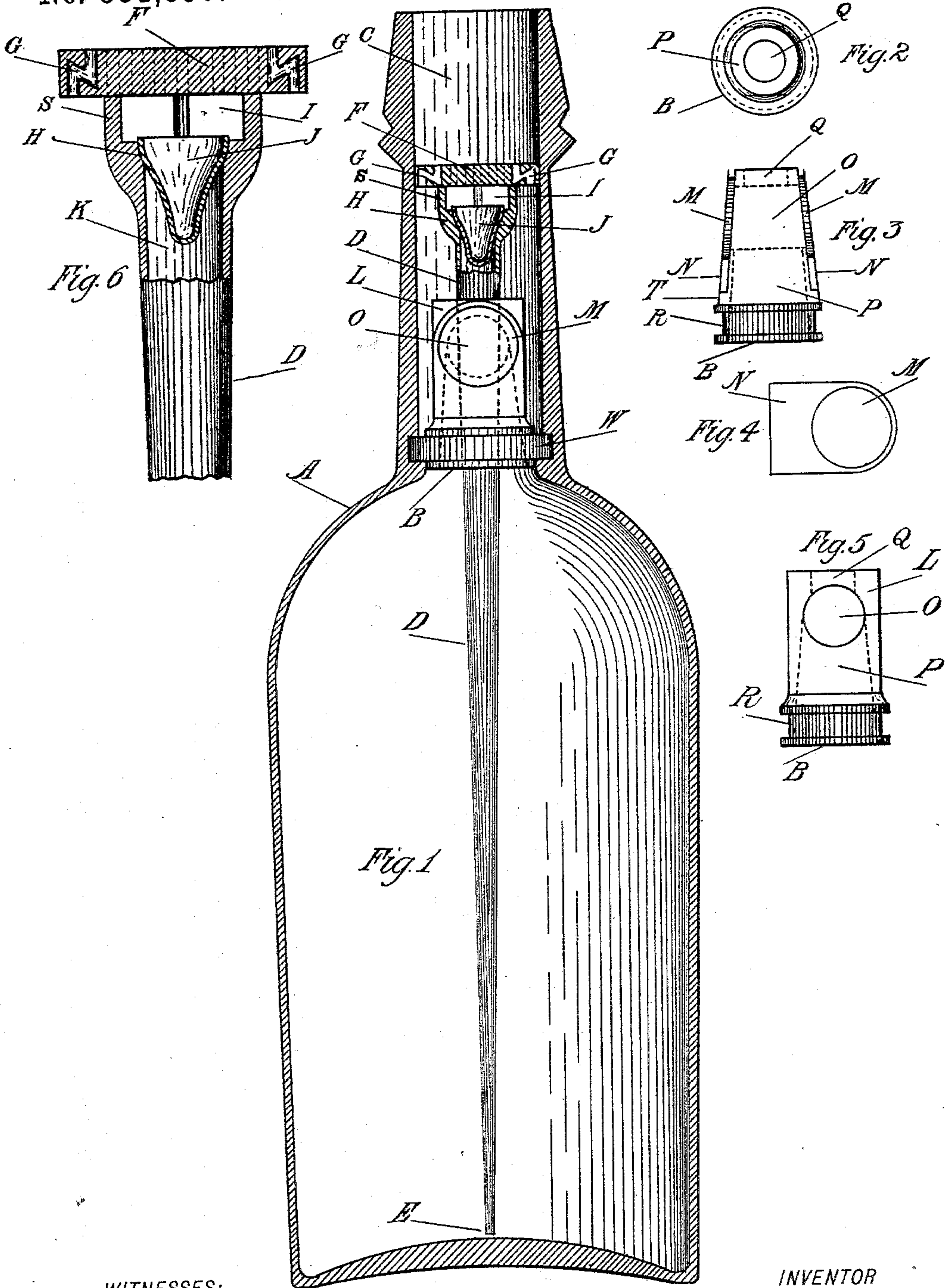


(No Model.)

F. S. PERRIN.
BOTTLE STOPPER.

No. 551,336.

Patented Dec. 10, 1895.



WITNESSES:

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FREDERIC STANTON PERRIN, OF NEW YORK, N. Y.

BOTTLE-STOPPER.

SPECIFICATION forming part of Letters Patent No. 551,336, dated December 10, 1895.

Application filed February 6, 1895. Serial No. 537,470. (No model.)

To all whom it may concern:

Be it known that I, FREDERIC STANTON PERRIN, a citizen of the United States, residing at the city of New York, in the county of New York and State of New York, have invented a new and useful Bottle-Stopper, of which the following is a specification.

My invention relates to stoppers that are to be used in bottles, jugs, demijohns, or any vessel for holding liquids, which, while permitting the free discharge of their contents, prevents the refilling thereof without destroying the effectiveness of the stopper, which is to be attached within the vessel.

The object of my invention is to provide a device of this character which may be readily applied to any vessel by inserting it in the open mouth thereof, from which it shall be incapable of removal, and shall, by its presence, prevent the vessel from being refilled, although the contents may at any time be obtained by pouring them out of the vessel in the ordinary manner. It is my object, also, to provide a stopper which may be made wholly of glass, china or similar material of a vitreous nature, when necessary, or wholly or partially of mineral, vegetable or animal matter, where it is better adapted, by which the exit-passage therein is opened by the weight of the liquor and closed by the tension of the material used, be it mineral, vegetable, animal or a combination thereof.

Many devices for closing vessels containing liquors have been proposed with a view of preventing the refilling of the same; but, in fact, it has been always possible, with certain precautions, to introduce liquor. It is sufficient for this purpose to incline the vessel within the liquor and with movements to and fro to force the liquid within, or it may be introduced by pressure. It is these defects which I have overcome by my invention, and to accomplish my object my invention consists in the features of construction and the combination or arrangement of devices hereinafter described and claimed, reference being made to the accompanying drawings, which form part of this specification, in which—

Figure 1 is a sectional view of an ordinary bottle containing my improved stopper. Fig. 2 is an underneath view of the plug; Fig. 3,

a side view; Fig. 4, a view of the valve and its tension-spring, and Fig. 5 a front view of the plug. Fig. 6 is an enlarged partial sectional view of the air-tube, its cup-valve and the guard-cap.

Similar letters of reference indicate similar parts throughout the several views.

Referring to the drawings, Fig. 1, A represents a section of a bottle, flask or other similar receptacle, having in its neck C the plug B provided with the apertures O, P and Q. (Better shown in Figs. 2, 3, and 5.) The sides L of the plug are ground off flat about the aperture O and have valves M pressing against the plug and covering the apertures. The valves M, small pieces of rubber, glass or any non-corrosive substance, are cemented to the flat strip N of mica or any flexible material, and this strip is cemented to the plug M at the shoulder T in such a manner that the tension of the strips press the valves against their seats and constitute liquor-tight covers for the aperture O. The plug B is rigidly fastened to the neck C either by cement or the cork bushing W in the shoulder R, and through its central aperture passes the tapering air-tube D, which is fastened to the sides of the aperture Q. The air-tube D extends within the bottle from its bottom to a short distance below the top of the neck and beyond the top of plug B. Its lower end has a very small opening E which increases in size as it extends upward to K. At its top the air-tube is enlarged to form a valve-seat H for the cup-valve J, and this enlargement is prolonged into two or more posts S to sustain the perforated disk or cap F, and prevent the cup-valve J from moving too far from its seat within the open space I. The disk F is perforated with as many zigzag holes G as possible to allow the liquor to flow out freely and also allow the air to enter the air-tube D at the opening I, and yet prevent the introduction of instruments to tamper with the valves. This disk F is cemented to the sides of the neck C, and rests upon the small posts S at a sufficient distance above the cup-valve J to allow the valve to move freely from its seat H, within the space I, when the bottle is inverted. It not only acts as a shield to the valves M and J but as a stop for the movement of the cup-valve J.

After the bottle is filled with its original contents the plug B is inserted in the neck and firmly secured thereto by any suitable means, then the air-tube D is inserted through
 5 the top aperture of the plug until its tapering sides fill this aperture entirely, where it is retained by cement, or any other means, and made air-tight. Then the cup-valve J is placed upon its seat H, and the perforated
 10 disk F is forced down into the neck below where the sealing-cork will extend until it rests upon the studs or posts S extending upward from the enlargement of the air-tube at K and is cemented to the neck of the bottle
 15 in any suitable manner.

In order to be able to pour out the contents at will it is only necessary to tilt the bottle up and allow the liquor within the air-tube D to run down against the cup-valve J and
 20 force it away from its seat H and at the same time the liquor within the bottle will enter the aperture P of the plug B around the air-tube D and by its weight force open the valves M and pass out into the neck C through the
 25 zigzag holes G in the disk F. As the liquor is passing through the lower zigzag holes G, the air is entering the upper holes and passing through the open space I into the air-tube D, to replace the discharged liquor.

30 If it is attempted to refill the bottle by the vacuum process or otherwise the first effect will be to force the valves tighter against their seats, and should an attempt be made by moving the bottle to and fro, within a tub
 35 of liquor, the liquor will enter the cup-valve J and cause it to move against its seat H. Before this valve J reaches its seat H, it might be supposed that liquor will enter the air-tube D and rush into the bottle, but on account of
 40 the small aperture at the lower end E of the air-tube, no liquor can be introduced by such movements, owing to the air-pressure inside of the bottle.

The cup-valve J and the small aperture E at the bottom of the tube D completely prevent the entrance of any liquor into the bottle through the air-tube D.

By placing the valves M upon the sides of the plug B, at L, I utilize a greater amount
 50 of space within the neck and secure larger apertures O and P, in the plug, to allow the free passage of the liquor about the air-tube D in the aperture P and also obtain more room for the valve-supports N, that their action
 55 may be more elastic and offer the least obstruction to the liquor while passing from the bottle, and also prevent the movement of the valve M when shaking the bottle to introduce liquor.

60 It will be understood that I can have one valve or more upon the plug B, and I may place the air-tube D without the aperture P, but I prefer to place it within, as shown in Fig. 1, as it is more symmetrical and presents
 65 a better appearance.

In practice the air-tube D and the plug B may be made in one piece of glass or porce-

lain, and secured to the neck of the bottle at W by any suitable means to hold it firmly. Then the cap or guard F can be placed in its
 70 proper position and secured to the posts S or to the side of the neck by cement or otherwise. An important point to be noticed is that relating to the tapering of the air-tube D. When the bottle is full of liquor the air-tube is also
 75 filled to the level of the liquor in the bottle, and as the bottle is tilted to pour out its contents the liquor within the air-tube has an increasing area to run through as its flow toward the exit H. When this liquor has
 80 reached the cup-valve J, what air that may be in the bottle has passed up to the elevated bottom of the bottle and surrounds the aperture E, and immediately the cup-valve J leaves its seat H, by the action of gravity aided
 85 by the pressure of the liquor upon its sides. At the same time the first few drops of liquor that pass through the valves M form a partial vacuum within the bottle, and this causes air to rush through the air-tube over the top
 90 of the flowing liquor.

Owing to the increasing area of the tube the flowing liquor does not have time to fill the orifice and choke up the inlet before the air
 95 rushes in and clears the tube of the small quantity of liquor that may adhere to the sides of the small aperture E, and opens the way for a continued supply of air to replace the discharged liquor. Not only does this tapering tube aid the air-supply, but the small
 100 aperture E at its lower end most effectually prevents the sudden introduction of liquor, and its larger aperture offers a more suitable valve-seat for the cup-valve J. Another important point is that of extending the air-tube
 105 some distance beyond the valve-plug B. By so doing I prevent the cup-valve J from being flooded by the liquor flowing through the valve M. If it were not for this it would be impossible for air to enter through the air-
 110 tube D, and no liquor would flow from the bottle.

It will be seen that by inverting the bottle the contents will readily pass through the stopper, as heretofore described; but that it
 115 will be impossible after the bottle has been once emptied to refill the same without breaking the bottle or destroying the guard cap or disk F.

I am aware that modifications may be made
 120 in the device without departing from the spirit or scope of the invention.

Having thus described my invention, I claim—

1. A stopper for bottles, flasks and like receptacles, for preventing the refilling, consisting of a hollow plug with apertures upon its sides connecting with the central cavity, valves pressed against the apertures by strips of mica or similar non-corrosive pliable material, a tapering air-conduit extending from
 125 near the bottom of the bottle through or beyond the plug, with a cup-valve seated in its upper or greater orifice, and a zigzag perfo-

rated disk attached in the neck of the bottle, above the cup-valve, limiting the movements of said valve and preventing the introduction of instruments to tamper with the stopper and said valves; substantially as described.

2. A stopper for bottles, flasks, and like receptacles, for preventing the refilling, consisting of a plug, held tightly in the neck, having a central cavity extending partially through it; apertures connecting with the central cavity and opening upon the longitudinal outside surfaces of the plug; one or more non-corrosive valves pressed against the outside surfaces by the tension of the material supporting the valves, and covering the apertures; a prolongation of the central cavity through the plug; a tapering air-conduit, extending from the bottom of the receptacle and passing through the central cavity and its prolongation, beyond the plug and its valves, and fitting tight within the prolonged cavity; a cup-shaped valve seated in the top or larger orifice of the air-conduit; and a disk with zigzag perforations secured in the neck above the orifice of the air-conduit to limit the movements of the cup-shaped valve, and to prevent the tampering with the valves; all substantially as described.

3. The combination with a bottle, of a stopper held in its neck provided with one or more valve-seats on its outer sides, one or more valves upon the seats and adapted to close against the same by the tension of the material supporting the valves, of a tapering air-

tube extending from above the stopper to the bottom of the bottle, or nearly so, having a valve-seat in its upper or enlarged orifice and a very small aperture at its lower extremity to admit air within the bottle; and a zigzag perforated disk attached within the neck of the bottle above the air-tube to prevent tampering with the valves and limit the movements of the air-tube valve; to prevent refilling the bottle; all substantially as described.

4. In a means for preventing the refilling of bottles and other containers, the combination of one or more tension-valves adapted to close openings in the sides of a hollow plug tightly secured within the neck of the bottle, with a tapering tubular air-conduit carrying a cup-shaped gravity valve in its larger orifice above the hollow plug, and extending into the bottle to within a short distance of its bottom, and a plate with zigzag perforations rigidly secured within the neck of the bottle, above the gravity valve, to limit the valve's movements and prevent the introduction of instruments for opening the valves, while permitting the pouring out of the contents of the bottle; as described.

In witness whereof I have hereunto attached my signature, in the presence of two subscribing witnesses, this 4th day of February, 1895.

FREDERIC STANTON PERRIN.

Witnesses:

GEORGE W. WHITEMORE,
WALTER H. FREEMAN.