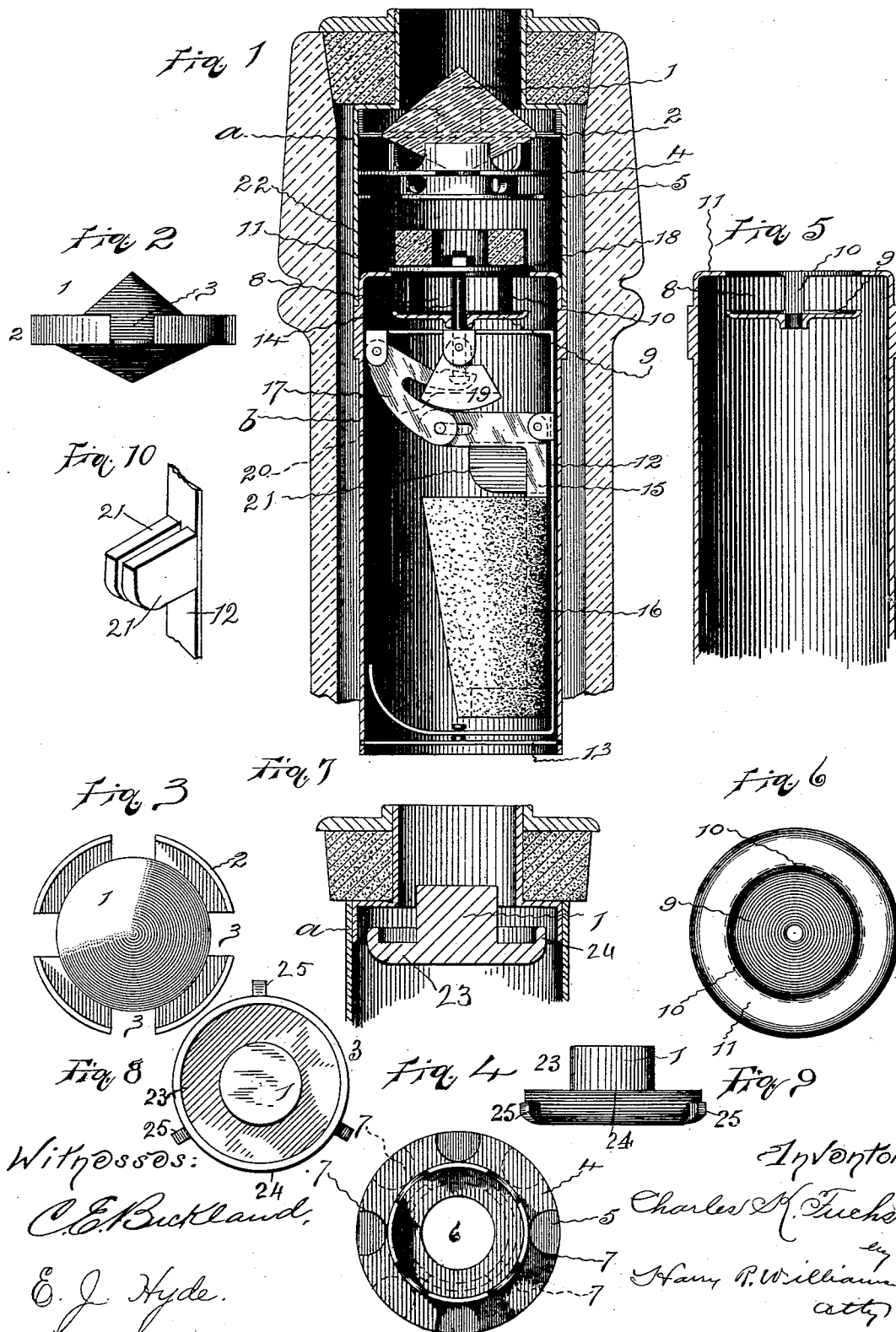


(No Model.)

C. K. FUCHS.
BOTTLE STOPPER.

No. 573,589.

Patented Dec. 22, 1896.



UNITED STATES PATENT OFFICE.

CHARLES K. FUCHS, OF WATERBURY, CONNECTICUT, ASSIGNOR OF THREE-FOURTHS TO VICTORY L. SAWYER, OF SAME PLACE.

BOTTLE-STOPPER.

SPECIFICATION forming part of Letters Patent No. 573,589, dated December 22, 1896.

Application filed March 19, 1895. Serial No. 542,366. (No model.)

To all whom it may concern:

Be it known that I, CHARLES K. FUCHS, a citizen of the United States, residing at Waterbury, in the county of New Haven and State of Connecticut, have invented certain new and useful Improvements in Bottle-Stoppers, of which the following is a specification.

The invention relates to the class of stoppers that are secured in the necks of bottles to prevent the bottles from being refilled, so that an inferior liquor or other liquid cannot be surreptitiously or maliciously introduced into bottles bearing the mark of a good liquid and be disposed of as the genuine or sold for what the bottles originally contained, such as is shown in Letters Patent No. 538,644, issued April 30, 1895.

The object of the invention is to provide a simple and cheap stopper of this class so constructed that the original genuine liquor or liquid in the bottle can be readily poured out, but which cannot be bored or drilled to furnish an opening for the introduction of other liquid, and which cannot be opened by a wire, by siphoning, by hydraulic pressure, or any other practical means.

The invention herein shown and claimed is an improvement in mechanism on the invention of the patent above referred to, and it resides in a stopper having a frame adapted to be sealed securely in the mouth or neck of a bottle and having a peculiarly-formed valve-seat and valve that is connected by means of levers with a float designed to be operated by liquid in the interior, said frame also supporting a solid part arranged to guard against the forming of a hole or passage through the stopper by drilling and a part that protects or shields the valve against any attempt to open it by the insertion of a wire, as more particularly hereinafter described, and pointed out in the claims.

Referring to the accompanying drawings, Figure 1 is a central section of the neck of a bottle provided with the stopper, portions of the stopper also being in section to show the construction of the parts. Fig. 2 is a side view of the conical guard at the mouth of the stopper. Fig. 3 is a plan of the same. Fig. 4 is a plan of the protector that prevents the insertion of a wire. Fig. 5 is a detail section of the valve-seat and a portion of the frame of the stopper. Fig. 6 is a plan of the valve-

seat. Fig. 7 is a detail section of the upper part of the stopper with a protector against wiring and guard against drilling of modified form. Fig. 8 is a plan of the modified protector and guard. Fig. 9 is a side view of the same, and Fig. 10 is a detailed perspective view of a portion of the swinging frame to illustrate more clearly the construction of its slotted weight.

In the views the shell or frame that holds the mechanism of the stopper is shown as formed in two cylindrical sections *a*, which supports the guard and protector, and *b*, which supports the valve and its operating mechanism, these being connected in any common manner and secured in the mouth of the bottle by a seal, a cap, or any other common fastening that will prevent the removal of the stopper without either destroying the bottle or the seal or cap which secures the stopper within the bottle.

The outer end of the section *a* is somewhat reduced in size to form the mouth, and inside this part with a portion projecting into the outlet, so as to produce the opening, is a solid guard 1, that is preferably formed in the shape of a double cone, of glass or a similar hard material that cannot be perforated by drilling; but it may be formed of a cylinder of steel, if desired, as shown in Figs. 7, 8, and 9. The edge 2 of the projecting solid guard fits the walls of the frame, and by cutting away a portion of the edge openings 3 are provided for the passage of outflowing liquid. Adjacent to the guard is a protector, which in the first views is shown as formed of a pair of metallic disks 4 and 5, held separated from each other with coinciding central openings 6, that come beneath the guard, and with openings 7 through their edges that do not coincide, so that while liquid can readily flow out any wire that is inserted and run past the edges of the outer conical guard will be stopped by one or the other of these disks.

In the form shown in Figs. 7, 8, and 9 the protector 23 is formed by having an upward-projecting annular flange or rim 24 encircling entirely around the solid guard 1 and secured to it, this being the same as the form of guard shown in Fig. 2, except in that form the flange or rim is not solid all the way around and the guard is made separate from the protector. In this modified form the openings 3,

formed around the edges of the protector, are made considerably longer than in the first form, as will be seen by a comparison of Figs. 3 and 8, so that in the modified form the edges of the protector are left more as projecting lugs 25. When the rim extends completely around, a wire inserted past the guard cannot be slipped or sprung past this upturned edge.

The section *b* is preferably formed of a tube with one end closed. This closed end is blanked or stamped inward and openings 8 formed in the side walls of the reëntrant portion that is blanked inward, so as to leave a central disk 9, supported by inward-projecting arms 10. The disk 9 may be centrally perforated for the passage of the valve-stem, while the outer annular face of the end is left plain to afford the valve-seat 11. With this construction when the valve is opened the outflowing liquid passes laterally through the openings 8 and then laterally beneath the valve, the openings formed in this manner being large enough to permit a sufficient outflow of liquid with a corresponding inflow of air, so that the passage will not be choked or the valve closed by the suction of inflowing air.

In the section *b* is a swinging frame 12, that is supported at one end by a pivot secured to the cross-bar 13 and at the other end by the valve-stem 14, that is loosely held by the walls of a central perforation through the disk 9. Secured to this frame is a weight 21, that by gravity swings to its lowest level, and thus always holds the frame in the right position to properly operate when liquid is being poured from the bottle. This weight is formed in two parts with a slit or opening between them, each part being secured to an edge of the longitudinal strip of the frame 12. In the views one-half of this weight 21 is omitted in order to expose the shape of the lever 15. Pivoted to this frame and swinging through the slit or opening between the parts of the weight 21 is a bent lever 15, that is connected at one end with a float 16 and at the other end with a bent lever 17, that is pivoted to the swinging frame and connected with the valve-stem 14, that bears the valve-disk 18. Also pivoted to this swinging frame is a weight 19, that by gravity turns the frame and holds it always in the proper position for the float to operate. In so far as the weights 19 and 21 aid in rotating the swinging frame and causing it to normally be held in position for use they operate conjointly. Either one for this function alone could be made large enough to answer the purpose, but practice has found it best to utilize both. This weight is provided with a lug or bar 20, that until the bottle is tipped up to nearly a vertical position extends in front of the end of the lever 15 and between the arms of the lever 17, so as to lock the levers against movement and hold closed the valve 18, that is on the end of the valve-stem 14 and shuts against the annular seat 11.

In the chamber in the shell between the protector and the top of the valve-disk is a loose float 22. This float is usually an annular piece of cork, and it is laid loosely in the chamber, so that it falls by its own weight and the weight of the outpouring liquid when the bottle is tipped up for emptying. When the bottle is inverted and an attempt is made to force in any liquid, this float will rise in the liquid according to its buoyancy and press against the valve-disk in such manner as to close it, preventing the entrance of any liquid past the valve.

When a bottle provided with this stopper is tipped, the weight 21 swings the frame so the float can be lifted by the outflowing liquid, and this lifting of the float by the outflowing liquid oscillates the levers 15 and 17 in such manner that the valve-disk 18 is moved away from the annular seat-face 11, allowing the liquid to pass laterally around the disk 9 and then beneath the valve-disk, and, after passing the protector against wiring and guard against drilling, flow out the mouth. With the form of valve-port described a comparatively large passage is provided, so that the liquor can flow out and the air flow in without choking the flow, and with this form there is not much suction on the valve caused by the inflowing air, as would be caused if the passage for the outflowing liquid and inflowing air was straight and directly against the face of the valve. The disk that is inside the opening through the valve-seat also affords a support for guiding the valve-stem in its movement. The guard at the mouth of the stopper is easily formed and desirably contracts the outlet, and while aiding in preventing the direct insertion of a wire it is of such a shape as to be strong and proof against drilling or boring to provide a false opening into the bottle.

I claim as my invention—

A bottle-stopper for the purpose set forth consisting of a sectional shell, one section of which has an outlet at its upper end, a guard supported by the shell below said outlet, separated metallic disks arranged below said guard and having their rims connected with said shell, the other section of said shell provided with a valve-seat, a disk valve that seats thereon, a swinging frame supported at its upper end by the stem of the valve and pivoted at its lower end to a cross-bar which is secured to said shell, the angular lever 15 pivoted to the said swinging frame and having a float secured to one of its limbs, and the angular lever 17 pivoted to said swinging frame and to a limb of said lever 15, and a detached float between the said valve and said disks and adapted to close said valve.

CHARLES K. FUCHS.

Witnesses:

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VICTORY L. SAWYER.