

(No Model.)

F. A. BICKFORD.
BOTTLE STOPPER.

No. 582,976.

Patented May 18, 1897.

Fig. 1.

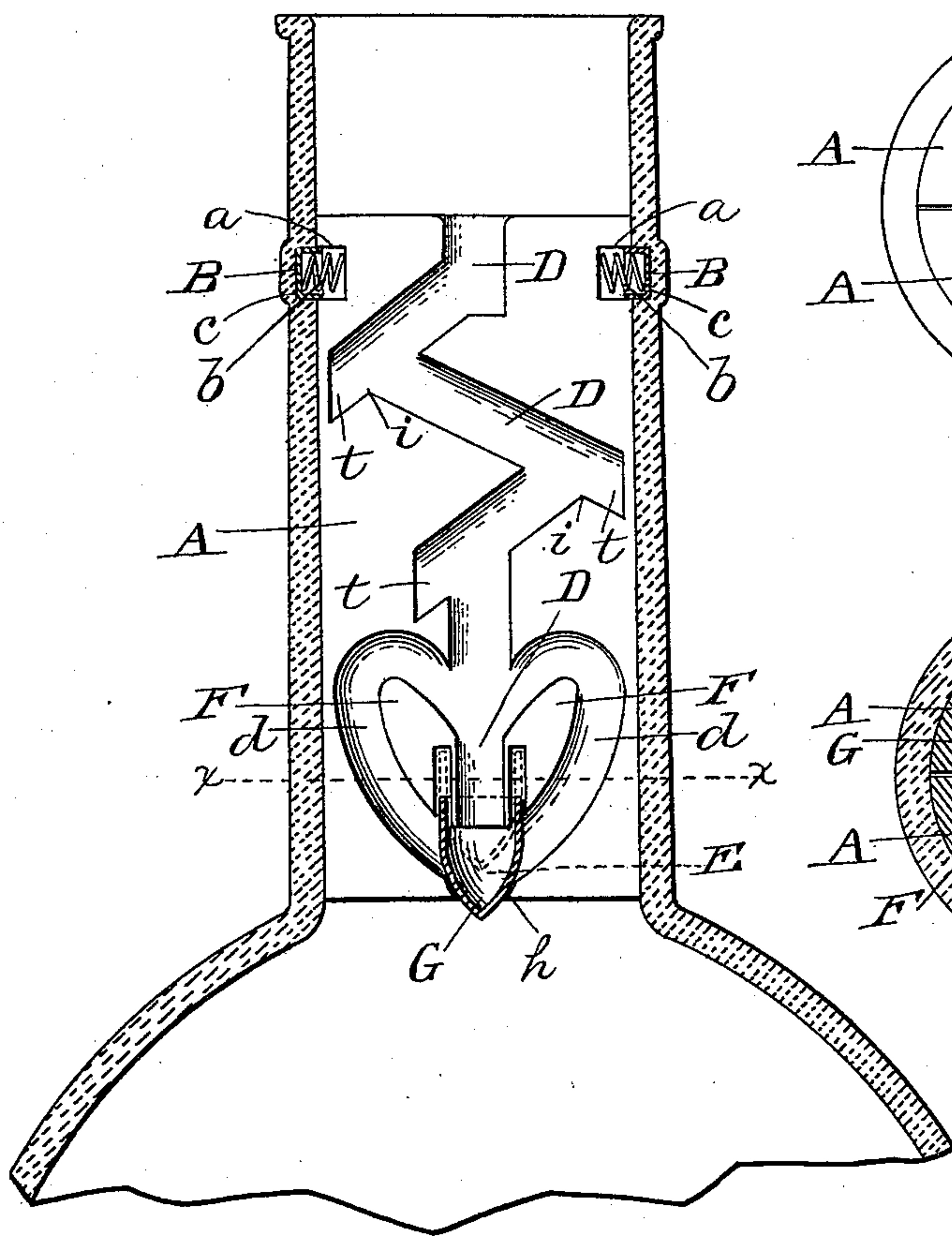


Fig. 2.

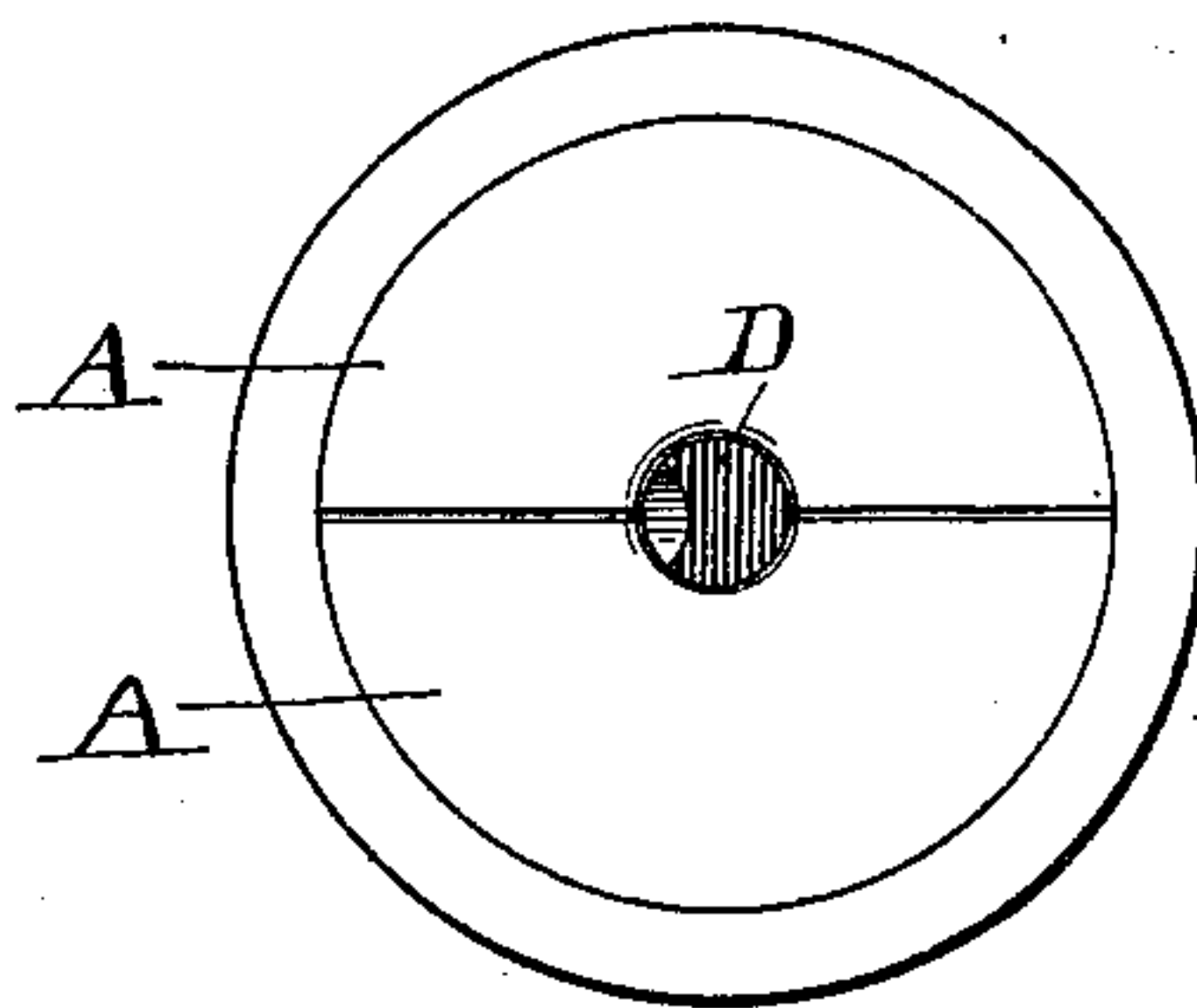


Fig. 3.

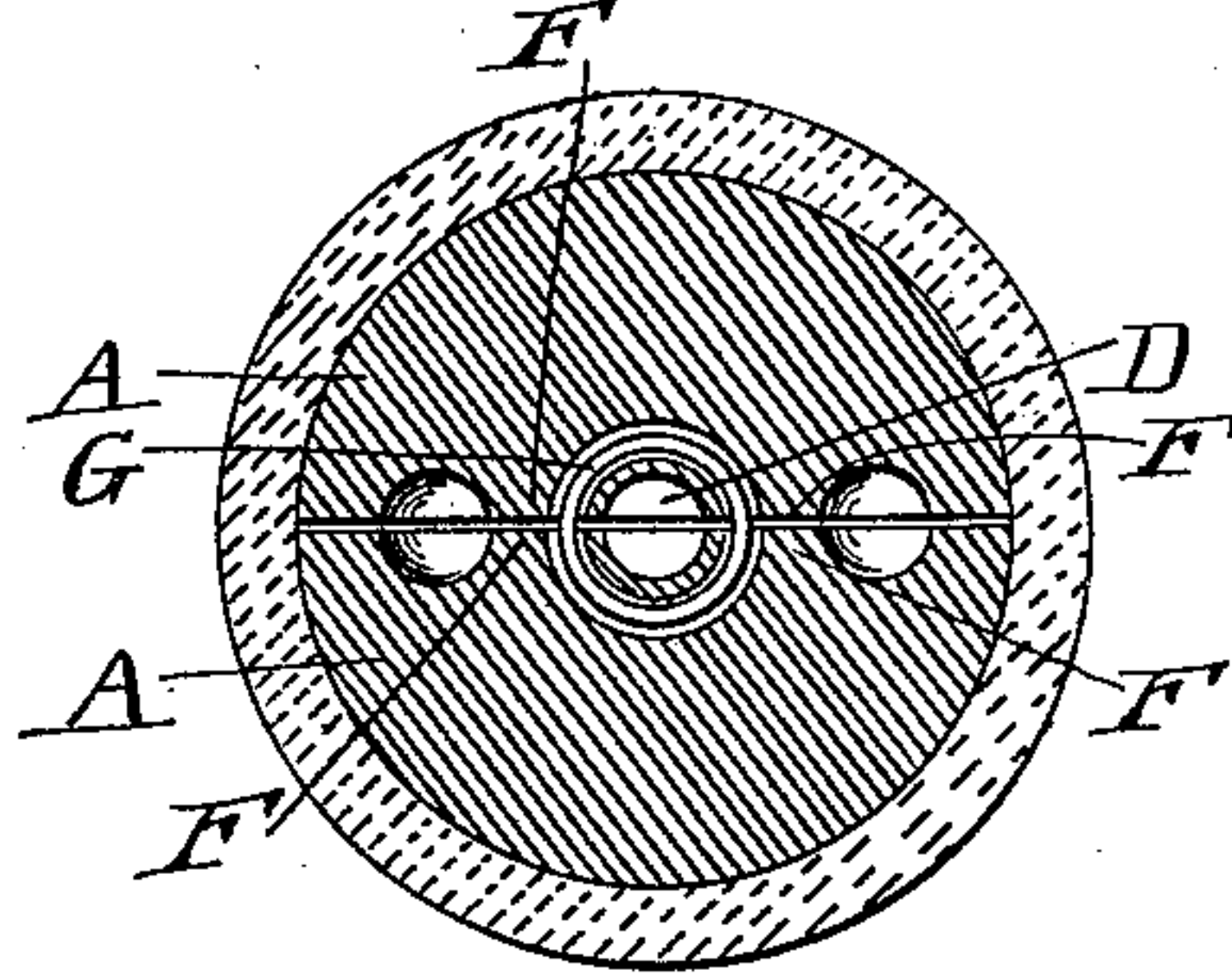
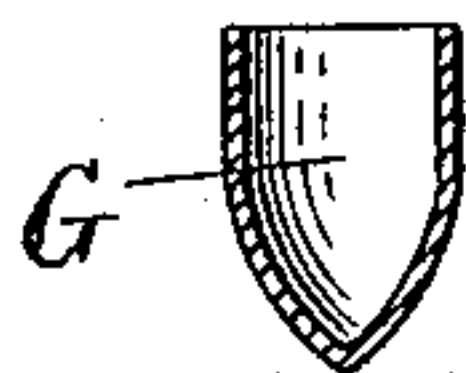


Fig. 4.



Witnesses

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UNITED STATES PATENT OFFICE.

FREDERICK A. BICKFORD, OF LOCK HAVEN, PENNSYLVANIA; CARRIE E. BICKFORD, ADMINISTRATRIX OF SAID FREDERICK A. BICKFORD, DECEASED, ASSIGNOR TO JAMES A. BICKFORD, OF SAME PLACE.

BOTTLE-STOPPER.

SPECIFICATION forming part of Letters Patent No. 582,976, dated May 18, 1897.

Application filed April 24, 1896. Serial No. 588,926. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK A. BICKFORD, a citizen of the United States, residing at Lock Haven, in the county of Clinton and State of Pennsylvania, have invented certain new and useful Improvements in Bottle-Stoppers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to bottle-stoppers, and more especially to that class of stoppers intended to prevent the refilling of the bottle after it has once been used.

In the sale of many liquid preparations, particularly fine perfumed waters, liquors, and certain medicines, it is highly desirable, in order to provide against the subsequent sale of inferior articles under the designation and label of the original preparation or to secure the return of the bottle itself, that means be provided to render impossible the reemployment of the bottle after its contents have been used. To effectually prevent this refilling of the bottle is the object of my invention; and to this end it consists of a stopper or plug simple in construction and operation, of inexpensive manufacture, and of such form as to thwart any attempts to defeat its object.

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

Figure 1 is a central vertical section of stopper and bottle; Fig. 2, a top plan view; Fig. 3, a horizontal section on line *xx* of Fig. 1, and Fig. 4 a detail of valve.

Referring to the drawings, the stopper is composed of two parts A A, preferably made of porcelain, although glass or any other suitable material may be used in its construction.

On its outer surface, near the top or about midway between its ends, each section of the stopper or plug is provided with a recess *a*. A plate B, having spiral springs *b* projecting slightly beyond the side pieces of the plate, is adapted to fit into the recess *a* and constitutes a spring-catch to hold the stopper in the bottle. When the bottle has been filled and it is desired to place the stopper therein, the two parts of the plug are first put together,

and the spring-plates B are then placed within the recesses and held there until the plug has been inserted far enough into the bottle to bring the plates below the mouth of the same, when the pressure of the springs against the side of the bottle will keep them in place. The stopper is then pushed down until the springs come opposite recesses *c* in the neck of the bottle. Upon reaching these recesses the springs will press outward, throwing the plate into the same and be held thereby, thus locking the plug in place. The side pieces of the plate will be forced out of the recess *a* by the action of the spring sufficiently to form a close protecting-joint at the point of engagement. The recesses *a* and *c* may be of slight width and adapted to receive small plates, or they may extend entirely around the circumference of the bottle, or other styles of locking can be used to hold the plug or stopper in place.

Each section A of the stopper is provided on its inner surface at its upper part with a zigzag groove, which when the two sections are brought together form a zigzag channel D through the central portion of the plug. Near the bottom of the plug the channel divides into two curved passages *d*, which enter a chamber E, into which chamber extend two depending wings F of the plug. In the chamber E, just below and within these wings, is placed a thimble-shaped valve G, having a conical end adapted to fit into and close the opening *h* into the body of the bottle. The opening *h* must conform to the shape of the end of the valve, so as to form a seat therefor and a close joint when the valve is seated.

When the liquid is poured out of the vessel, the valve G will fall against the wings F, embracing the lower part of the wall of the channel D, and the liquid will pass through the passages *d* and out through the channel D. If, however, an attempt is made to pour anything into the bottle, it will be seen that the liquid coming through the channel D and being forced to strictly follow the course thereof will enter the thimble-shaped valve and force the same tightly into the opening *h*, completely closing the latter and prevent-

ing the entrance of the fluid into the bottle. Owing to the fact that the walls of the valve, even when the same is seated, will extend up to and slightly around the wall of the channel D, and to the further fact that on tipping the bottle the liquid will be thrown into the pockets of the channel, it will be seen that it will be impossible for any fluid or other substance to pass down through the passages *d* and escape past the valve. The zigzag channel D is also intended to prevent tampering with the valve by means of a wire or other instrument inserted through the mouth; but in order to further insure the accomplishment of this end the grooves forming the channel in the parts A are extended beyond the point of intersection of the zigzags, forming at that point a shoulder *i* and beyond such point a pocket *t*. Any instrument forced into the plug will follow the line of the channel into the pocket *t*, and it will be found impossible to force the object past the shoulders *i*. The channels should be and may be of such dimensions as will not interrupt the free flow of the liquid and still be of such construction as to defy successful tampering in efforts to refill the bottle.

The stopper should be of some non-transparent material, in order that its construction and the form of the channel cannot be observed and means taken to defeat the object of the invention; also, both the stopper and valve should be made of some non-corroding material, and either glass or porcelain may be used, although the latter would probably be preferable. Owing to this construction, no parts of the stopper will be liable to be corroded by the action of the liquid in the bottle, nor will they taint or otherwise affect such liquid, as is the case when a stopper having metallic parts, which is the usual construction, is employed.

It will be seen that my device is adapted to other vessels having necks as well as to bottles. The usual cork stopper or a stopper of any character desired may be placed in the neck of the bottle above the antirefilling stopper.

I am aware that antirefilling-stoppers have been before constructed with a valve, means to hold the stopper within the bottle, and with means to prevent the insertion of a wire or other instrument to unseat the valve, and I do not claim, broadly, such a construction; but

What I do claim is—

1. An antirefilling bottle provided with a stopper made in two longitudinal parts, grooves on the inner surface of said parts which when brought together form a continuous zigzag channel through the central portion of said stopper, said channel having an extension at the point of intersection of each zigzag forming a shoulder and pocket at the lower end of said zigzag, a valve-chamber in the lower part of said stopper, a valve in said chamber, and means to secure said stopper in said bottle, substantially as described.

2. In an antirefilling bottle, a stopper having a zigzag channel therein, springs placed in recesses on the exterior of said stopper adapted to engage recesses in said bottle, a valve-chamber in said stopper, a thimble-shaped valve in said chamber adapted to embrace the walls of said channel and to receive incoming liquid, and two side channels for the exit of the liquid, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

FREDERICK A. BICKFORD.

Witnesses:

W. F. SATTERLEE,
JAS. SNYDER.