No. 827,053. PATENTED JULY 24, 1906.

J. C. BOWERS.

PERMUTATION LOCK FOR BOTTLE STOPPERS.

APPLICATION FILED JUNE 27, 1905.

Fig. 1.

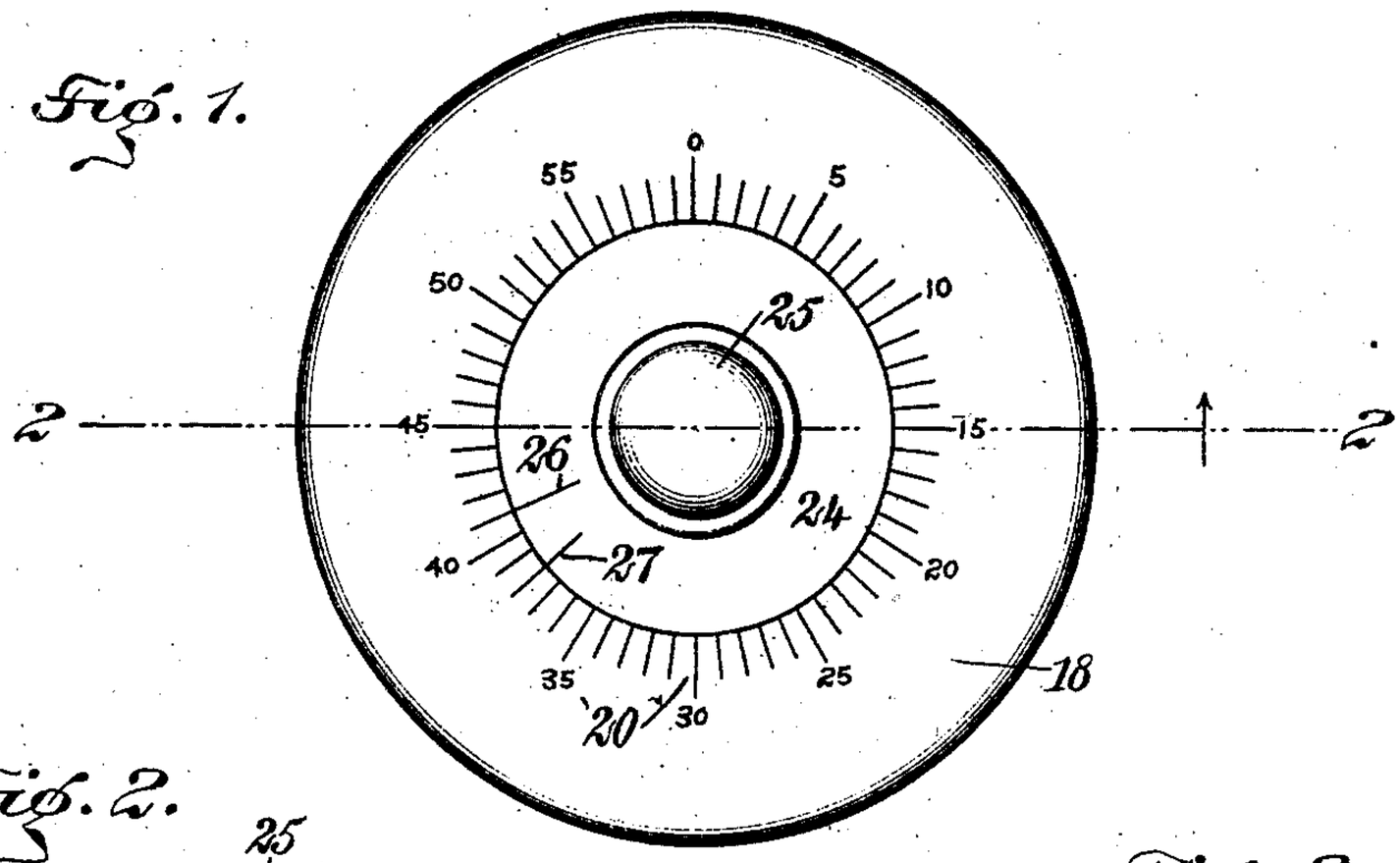


Fig. 2.

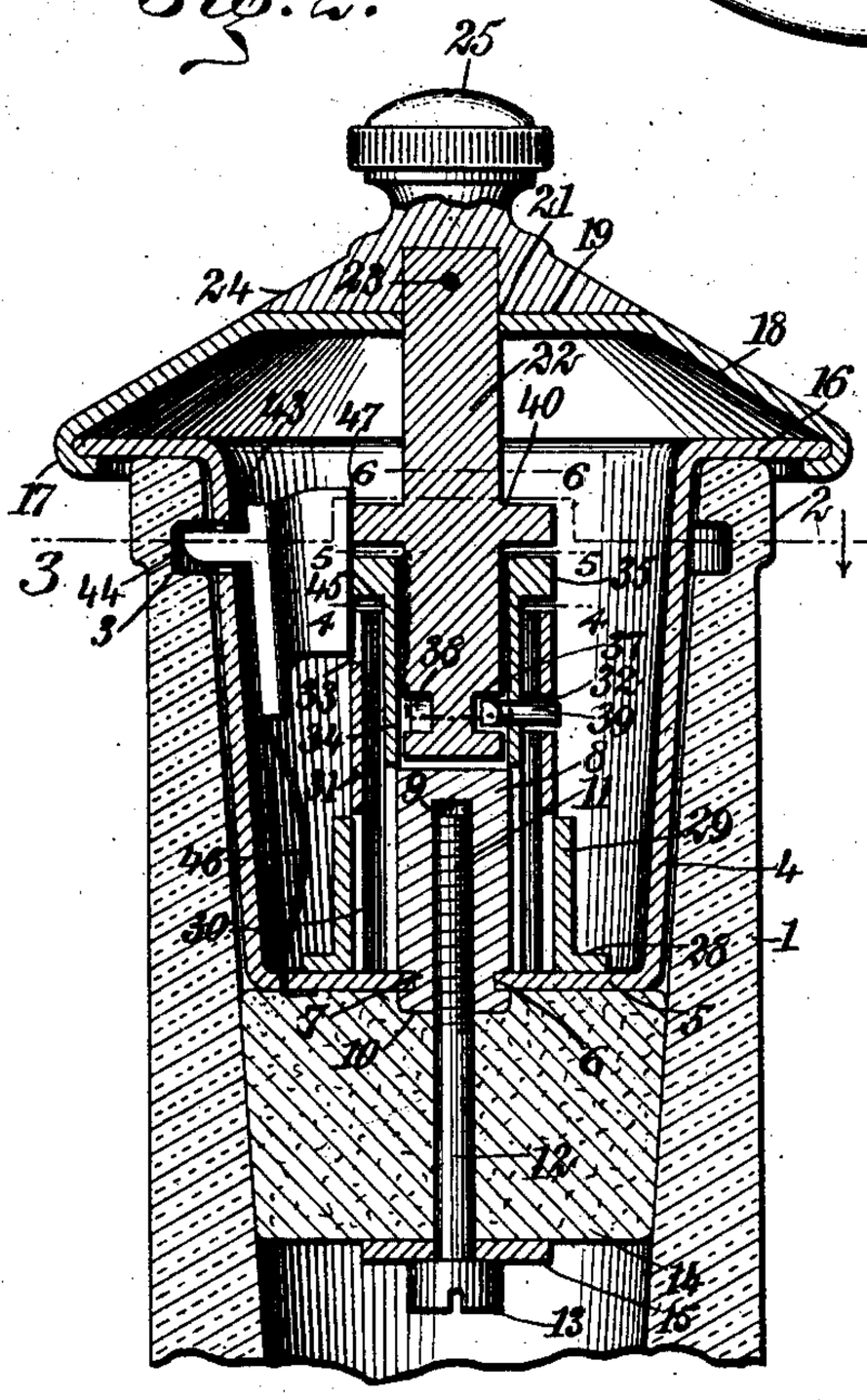


Fig. 3.

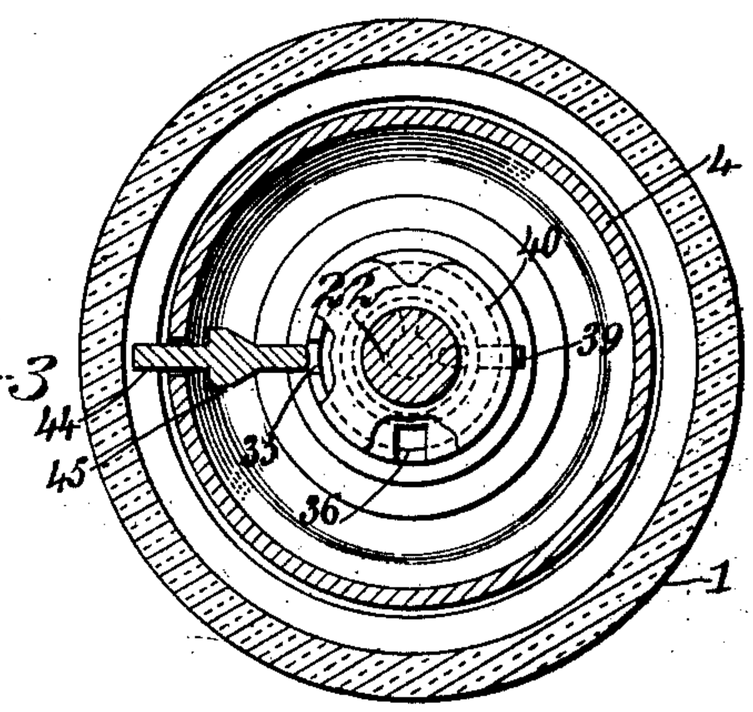


Fig. 4.

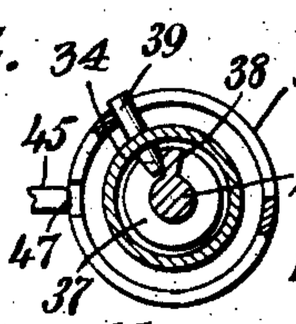


Fig. 6.

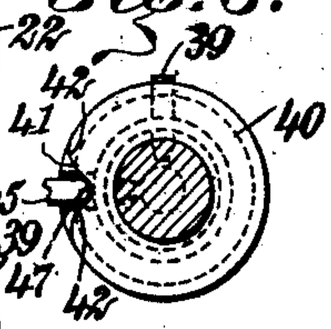
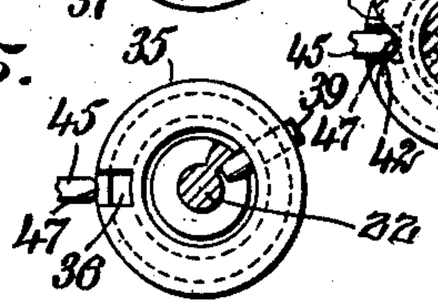


Fig. 5.



WITNESSES:

P. C. Allott

E. E. Ellis

INVENTOR

John C. Bowers

BY Munn & Co

ATTORNEYS

UNITED STATES PATENT OFFICE.

JOHN C. BOWERS, OF BOSTON, MASSACHUSETTS.

PERMUTATION-LOCK FOR BOTTLE-STOPPERS.

No. 827,053. Specification of Letters Patent. Patented July 24, 1906.

Application filed June 27, 1905. Serial No. 267,218.

To all whom it may concern:

Be it known that I, JOHN C. BOWERS, a citizen of the United States, and a resident of Boston, in the county of Suffolk and State of Massachusetts, have invented a new and Improved Permutation-Lock for Bottle-Stoppers, of which the following is a full, clear, and exact description.

This invention relates to permutation-locks; and it consists, substantially, in the details of construction and combinations of parts hereinafter more particularly described, and pointed out in the claims.

The invention has reference more especially to permutation-locks for bottle-stoppers; and one of the principal objects thereof is to provide a device of this kind of an embodiment to overcome numerous disadvantages and objections encountered in the use of other structures hitherto devised for a similar purpose.

A further object is to provide a permutation-lock for bottle-stoppers which is simple in construction and comparatively inexpensive to manufacture, besides being effective and reliable in use and capable of long and repeated service.

The above and additional objects are attained by means substantially such as are illustrated in the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures, and in which—

Figure 1 is an enlarged top plan view of a permutation-lock embodying my improvements. Fig. 2 is a vertical sectional view of the lock on the line 2 2 of Fig. 1. Fig. 3 is a horizontal sectional view taken on the line 3 3 of Fig. 2; and Figs. 4, 5, and 6 are reduced detail views showing the operations of each of the tumblers employed and taken on the lines 4 4, 5 5, and 6 6 of Fig. 2, respectively, a portion of the tumbler 31 being broken away.

Before proceeding with a more detailed description it may be stated that in the form of my improvements herein shown I employ a permutation-lock for bottle-stoppers comprising a casing of special construction carrying special means for supporting the cork or other stopper for the bottle with which the latter is employed, the said casing having mounted therein a specially-constructed spring-controlled bolt, coöperating with which are a plurality of tumblers, each of special construction, which require to be brought into certain positions relatively to each other, by which to enable the lock and stopper for the bottle to be removed. I employ a specially-constructed dial-plate for the lock, in association with which is a rotatable knob having special means for operating the tumblers to cause the bolt to become either engaged with or disengaged from a portion of the neck of the bottle, and while I have herein represented my improvements in a certain preferred embodiment it will be understood, of course, that I am not limited thereto in precise detail, since immaterial changes therein may be made coming within the scope of my invention.

Reference being had to the drawings by the designating characters thereon, 1 represents the neck of an ordinary glass bottle, preferably provided at its upper end with an annular flange 2 and formed interiorly near the upper edge thereof with an annular channel or groove 3. Extending within the mouth of the bottle for a suitable distance is a metal or other suitable casing 4, preferably of tapering form downwardly and having the base 5 thereof formed with a central opening through which extends a short section 7 of a pillar or post 8 of greater diameter than the said short section 7 thereof and formed therein from its lower end with a threaded opening 9, said short section 7 being enlarged at 10, so as to thus form an annular groove in which is received the edge portions of the hereinbefore-mentioned central opening of the base 5 of the said casing 4 of the lock. Screwing within the said opening 9 is the threaded portion 11 of a screw 12, having at the lower end thereof a head 13, said screw being inserted through a suitable opening therefor in a cork or other stopper 14 for the bottle which is tightly secured to the under side of the casing, as will be understood, a washer 15 preferably being employed between the head of the screw and the lower surface of the stopper 14, although it is apparent that the same way be dispensed with, if desired. Also, if desired, both the head of the screw and the said washer may be covered over or inclosed by any suitable material (not shown) by which to prevent the contents of the bottle from becoming contaminated by contact with the metal thereof, as will be readily understood.

The casing 4 is provided at its upper edge with a horizontally-disposed flange 16, extending considerably beyond the outer face

of the flange 2 of the bottle, said flange 16 seating upon the said flange 2 and having the free edge portion thereof embraced by the continuously-inturned edge portion 17 of a dial-plate 18, provided on the surface thereof concentric with its top member 19 with a series of ordinary graduations or indicator-marks 20. (See Fig. 1.) The top member 19 of the said dial-plate is provided with a central opening 21, through which extends a spindle or stem 22, having rigid connection at 23 with the knob-plate 24 of a knob 25, said knob-plate being provided at one or more points thereof with lines or indicating-marks 26 and 27 to denote the starting and finishing points of the rotation or revolution of the said spindle 22 in effecting the proper operations or turning movements of the specially-constructed tumblers employed within the casing, as will be presently more fully explained.

Seated upon and rigidly secured to the upper surface of the base 5 of the casing in any suitable way is the base-flange 28 of an upstanding circular or tubular guide 29 for the split portion 30 of a circular or tubular tumbler 31, the height of which is greater than the height of said guide 29, and the same having formed in the body thereof at a suitable height a horizontally-disposed slot 32, extending for a suitable distance of the circumference thereof, this tumbler being furthermore provided with a notch or open-ended slot 33, extending for a suitable distance from the upper edge thereof. In virtue of this split construction of the lower portion of said tumbler 31 it is apparent that the same will fit within the guide 29 frictionally and with such degree of tightness therein as to permit the same to be rotated in the manner and for the purpose presently to be explained. Surrounding the hereinbefore-mentioned pillar or post 8 and having frictional rotatable contact therewith is the split portion of another circular or tubular tumbler 34, having at the upper end thereof an outwardly-extending annular flange 35 of proper depth and formed vertically therethrough at a suitable point thereof with a notch 36, which accordingly as the tumblers of the lock are to be brought into position either to cause the bolt to become engaged with or disengaged from the bottle may be carried into or out of alinement or registry with the hereinbefore-mentioned notch 33 in the upper edge portion of the said circular or tubular tumbler 31.

Referring back to the hereinbefore-mentioned spindle or stem 22, it will be noted that the same is formed at or near the lower end thereof with an annularly-extending groove 37, which does not extend for quite the full circumference of the spindle or stem, but the terminals of which are separated by a division 38. (See Figs. 2 and 4.) The circular or tubular tumbler 31 is provided at a suitable point of its circumference with a horizontally-disposed pin 39, the inner end portion of which extends within said groove 37 and the outer end portion of which projects through the hereinbefore-mentioned slot 32 of the said tumbler. Formed rigid with the spindle or stem 22 is a further tumbler 40, provided at a suitable point thereof with a notch 41, extending vertically through the same, (see Fig.6,) the sides of said notch being divergent from each other and rounded at 42. (See also Fig. 6.)

The casing, at a suitable point thereof adjacent to the hereinbefore-mentioned flange 16, is provided with an opening 43, within which plays the operative member 44 of a bolt 45, supported in position by means of a spring 46, secured in any suitable manner to the base 5 of the casing 4, the inner vertical edge of the said bolt 45 being struck on a curve 47, the purpose of which will be understood later on.

From the foregoing it will be understood that when the spindle or stem 22 is turned, through the medium of the knob 25, so as to bring the notches 33, 36, and 41, respectively, of the tumblers herein mentioned into registry or alinement with each other, the controlling-spring 46 of the bolt 45 will cause the rounded inner edge portion of the said bolt to be carried into the said mentioned notches, and thus will the operative member 44 of the bolt be withdrawn sufficiently within the opening 43 of the casing to release the engagement of such member with one or both of the walls of the channel or groove 3 in the bottle. Now it will be understood the entire structure may be withdrawn from the bottle and again inserted therein whenever desired. When again inserted, in order to again effect locking engagement of the member 44 with the bottle the knob 25 of the dial-plate is turned in the left-hand direction, carrying with it the spindle or stem 22, and in virtue of the curved sides 42 of the said notch 41 in the tumbler 40, carried by said spindle, it is apparent that the bolt will be caused to be moved outwardly against the tension of its controlling-spring, thus to cause the member 44 thereof to be projected within the said channel 3. Then by repeated turning of the spindle in first one direction and then the other it is apparent that the tumblers will be so moved about as to absolutely prevent disengagement of the operative member of the bolt from the bottle until the tumblers are again specially operated to bring them into the first-described position thereof—that is to say, with the notches therein registering or coinciding with each other. To effect release of the locking engagement of the operative member of the bolt with the bottle, the knob-plate and spindle are turned in the left-hand direction until the indicating-mark

26 or 27, as the case may be, (and as presently explained,) is brought into alinement or coincidence with any particular one of the indicating-marks 20 on the dial-plate 18, (according to the particular combination which may have been selected by the operator,) and during the turning of the said knob-plate it will be understood that the division 38 between the extremities or terminals of the groove 37 in the lower end portion of the spindle 22 engages with the inwardly-projecting end portion of the pin 39, carried by the tumbler 34, thus moving the said pin and tumbler until the tumbler 31 is carried to the position indicated in Fig. 4. The spindle 22 is now turned in the opposite or right-hand direction until proper registry of the indicating-marks of the dial-plate and knob-plate have been again effected, the said pin 39 having been left in the position to which it was carried. During this rotation or movement of the spindle, however, the division 38 between the terminals of the groove 37 will have engaged the inner projecting portion of the pin 39 from the other side thereof, and thus will the circular or tubular tumbler 34 be carried around to bring the notch 36 in the flange 35 thereof into registry with the notch 33 of the tumbler 31. By now again turning the knob-plate and spindle in the left-hand direction until the notch 41 of the tumbler 40 is brought into registry with the notches of the tumblers first named the inner vertical edge portion of the bolt 45 will enter all of the said notches, due to the actuation of said bolt by its spring, and in this way will the said operative member 44 of the bolt be disengaged from the bottle, as already explained.

The described connection between the dial-plate 18 and the flange 16 of the casing is such as to maintain said plate rigidly in place during the manipulations of the knob-plate and spindle, as set forth; but by applying sufficient force thereto the dial-plate is capable of being partially rotated or turned to alter or change the position of the vertical indicating-mark thereon, with which either the indicating-mark 26 or 27 of the knob-plate is to coöperate, in accordance with any change that may be made in the operative combination of the tumblers—that is to say, whenever the initial position of all the tumblers is changed, as will be understood. The purpose of employing two indicating-marks 26 and 27 on the knob-plate is to render it confusing to any one attempting to open the lock to gain access to the bottle without authority. The series of indicating-marks 20 on the dial-plate are herein shown as numbered from "0" to "55," as in the manner of an ordinary safe-lock, and it is thought the construction and operation of my improvements will be fully understood from the foregoing description.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. A permutation-lock for bottle-stoppers, comprising a casing to fit within the mouth of a bottle, carrying a stopper for the latter, a plurality of tumblers within the casing, an operating-spindle therefor, a bolt for engagement with a portion of the bottle to secure the entire structure therein, and means for moving the bolt out of such engagement on bringing the tumblers to certain positions with reference to each other and to the bolt.

2. A permutation-lock for bottle-stoppers, comprising a casing to fit within the mouth of a bottle, carrying a stopper for the latter, a plurality of tumblers within the casing, an operating-spindle therefor with which one of the tumblers is rigid, a bolt for engagement with a portion of the bottle to secure the entire structure therein, and means for moving the bolt out of said engagement on bringing the tumblers into certain positions with reference to each other and to the bolt.

3. A permutation-lock for bottle-stoppers, comprising a casing to fit within the mouth of a bottle, carrying a stopper for the latter, a plurality of tumblers within the casing, an operating-spindle therefor with which one of the tumblers is rigid, a self-acting bolt for engagement with a portion of the bottle to secure the entire structure therein, and means for moving the bolt out of said engagement on bringing the tumblers into certain positions with reference to each other and to the bolt.

4. A permutation-lock for bottle-stoppers, comprising a casing to fit within the mouth of a bottle, carrying a stopper for the latter, a plurality of tumblers within the casing, an operating-spindle therefor, an adjacent bolt for engagement with a portion of the bottle to secure the entire structure therein, and means for moving the bolt out of said engagement on bringing the tumblers to certain positions with reference to each other and to the bolt.

5. A permutation-lock for bottle-stoppers, comprising a casing to fit within the mouth of a bottle, carrying a stopper for the latter, a plurality of tumblers within the casing, an operating-spindle therefor with which one of the tumblers is rigid, a bolt for engagement with a portion of the bottle to secure the entire structure therein, and means for moving the bolt out of said engagement on bringing the tumblers into certain positions with reference to each other and to the bolt, said tumblers having notches therein adapted to be brought into registry with each other, the notch of the tumbler rigid with the spindle having outwardly-divergent sides.

6. A permutation-lock for bottle-stoppers, comprising a casing to fit within the mouth

of a bottle, carrying a stopper for the latter, a plurality of tumblers within the casing, an operating-spindle therefor, a rotatable dial-plate on the casing, a knob-plate coöperating with the dial-plate and being rigid with said spindle, a self-acting bolt for engagement with a part of the bottle to secure the entire structure therein, and means for moving the bolt out of said engagement on bringing the tumblers to certain positions with reference to each other and to the bolt.

7. A permutation-lock for bottle-stoppers, comprising a casing to fit within the mouth of a bottle, carrying a stopper for the latter, a pillar extending upwardly within the casing and rigidly supported at the base of the latter, said pillar having a threaded opening therein, a plurality of rotatable tumblers within the casing, supported concentrically of the said pillar, an operating-spindle therefor, a bolt for engaging with a portion of the bottle to secure the entire structure therein, means for moving the bolt out of said engagement on moving the tumblers to certain positions with reference to each other and to the bolt, and a screw-bolt extending through the stopper and entering the said threaded opening in the pillar.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN C. BOWERS.

Witnesses:
E. EVERETT ELLIS,
JNO. M. RITTER.