

A. C. APPLETON.
BOTTLE STOPPER.
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972,492.

Patented Oct. 11, 1910.

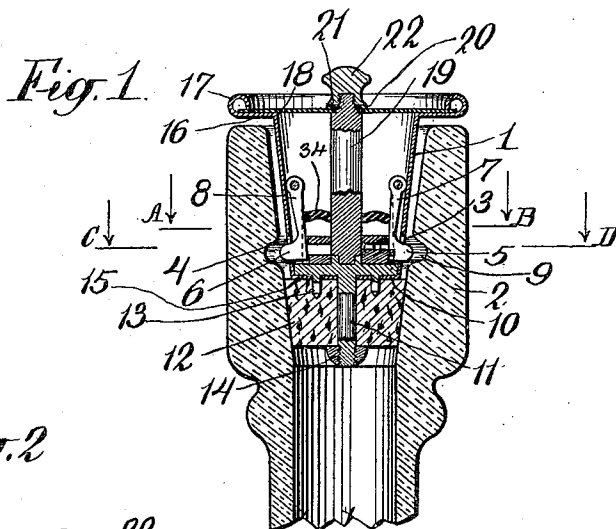


Fig. 2

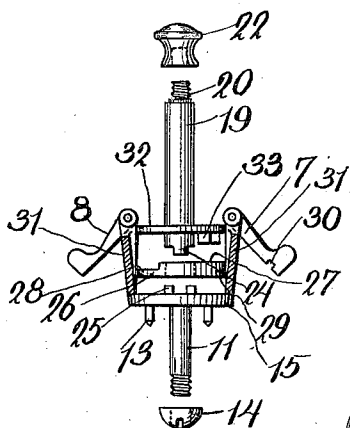


Fig. 4.

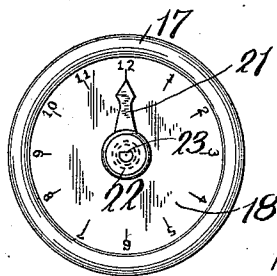


Fig. 3.

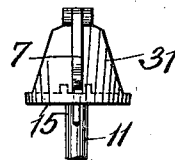


Fig. 5.

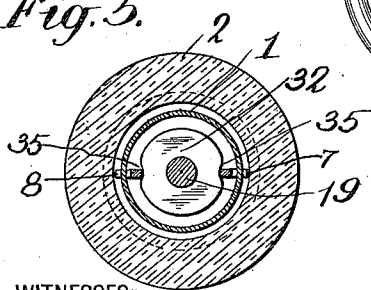
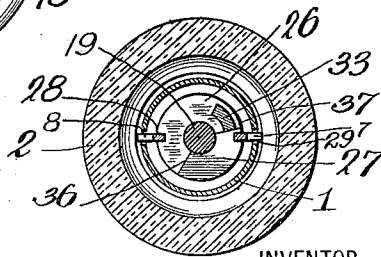


Fig. 6.



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UNITED STATES PATENT OFFICE.

ALFORD C. APPLETON, OF DAYTON, OHIO, ASSIGNOR TO THE HAYNER DISTILLING COMPANY, A CORPORATION OF OHIO.

BOTTLE-STOPPER.

972,492.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, ALFORD C. APPLETON, a citizen of the United States, residing at Dayton, in the county of Montgomery and State of Ohio, have invented certain new and useful Improvements in Bottle-Stoppers, of which the following is a full, clear, and exact description.

This invention relates to bottle stoppers which, under the control of a combination lock, can be securely fixed in a bottle to prevent access to the contents thereof by unauthorized persons.

The chief object of the invention is to provide an improved stopper of the kind referred to, which shall be simple and inexpensive in construction, as well as effective in use, and as free as possible from liability of derangement by careless usage.

To this and other ends the invention consists in the novel features of construction and combinations of elements hereinafter described and more particularly pointed out in the appended claims.

The preferred embodiment of the invention is illustrated in the annexed drawings, and referring now thereto, Figure 1 shows the stopper in vertical section, in position in the mouth of a bottle but unlocked. Fig. 2 is a detail side view of the lock mechanism, partly in vertical section. Fig. 3 is a side view of the dog-supporting member. Fig. 4 is a top plan view of the stopper, showing the dial and index of the lock mechanism. Fig. 5 is a horizontal section on line A—B of Fig. 1. Fig. 6 is a horizontal section on line C—D of Fig. 1.

The body portion of the stopper is designated by 1, and is made tapering or conical in form, in correspondence with the tapering mouth of the bottle-neck 2. Said body portion is made of sheet metal, as shown, and is provided at its sides with diametrically opposite apertures 3, 4, through which the fingers or lugs 5, 6, on the locking dogs 7, 8, are adapted to extend into engagement with the bottle-neck in the circumferential locking groove 9. The bottom of the body portion is closed by a disk of sheet metal 10, having a central aperture through which extends a pin 11. Fitted over this pin is a tapering piece 12, of cork or other resilient impervious material, large enough to fit tightly the lower part of the bottle-mouth when the stopper is pushed

home, thereby hermetically closing the bottle. Extending downwardly through the disk 10 is a plurality of downwardly extending pins or lugs 13, which engage the resilient sealing member 12 to prevent rotation thereof about the stem 11 as the stopper is twisted to seat or withdraw the same from the mouth of the bottle. The sealing member is held in place on the stopper by a nut 14 threaded on the stem 11, as shown. The pins 13 are carried by a flat plate or disk 15, fitted snugly in the bottom of the body portion, to which plate the pin 11 is also secured.

At the top the body portion 1 has a laterally extending flange 16 provided with an inwardly bent edge 17 securely gripping a dial 18 which rests on said flange. The stem or spindle 19, the rotation of which serves to "set" the combination as hereinafter described, extends vertically through the dial, and just above the same the spindle has a shoulder 20. On this shoulder or offset rests an index or pointer 21, held in place by a knob 22 threaded on the reduced upper end of the spindle and serving to bind the pointer securely against the shoulder. If desired the portion of the spindle above the shoulder may be flattened, as shown at 23, and the aperture in the pointer may be similarly shaped, so that there can be no possibility of the pointer being shifted on the spindle. Such movement of the pointer would of course disturb the necessary correspondence of the position of the pointer with the lock mechanism and the locking dogs would not be unlocked when the pointer is turned to the supposedly proper number on the dial.

The bottom of the spindle 19 has a journal fitting into a socket 25 on the top of disk 15. Resting on said disk, and rotatable about the socket as a bearing is a tumbler 26, in the form of a circular disk, and fixed on top of this tumbler is a segmental tumbler 27. At one side of the tumbler 26 is a notch or recess 28, of such depth that when the dog 8 is seated therein the locking finger 6 will be disengaged from the locking groove 9. In the same tumbler, diametrically opposite this notch, is another notch or recess 29, of similar depth, to receive dog 7. The upper tumbler, or segment, 27, extends over the recess 29, and it will therefore be seen that even if the lower tumbler were turned into

register with the position of the dog 7 the latter could not enter the recess and hence would remain in engagement with the locking groove. To permit the necessary entrance of the dog into the recess the former is provided with a notch 30, to receive the edge of the segment 27. It will now be seen that the dogs can be retracted only when the recesses 28 and 29 are opposite dogs 8 and 7 respectively, for if recess 29 is brought opposite dog 8 the latter, having no notch like that in dog 7, would be prevented from entering the recess by the segment 27. The dogs themselves are pivoted at the top to the upper ends of two standards 31, rising from the sides of disk 15, said standards being provided with vertical slots to permit the dogs to swing inwardly to their retracted positions.

For the purpose of rotating the tumblers the spindle 19 has fixed to it an actuating disk or tumbler 32 carrying on its underside an arc-shaped actuating lug 33, adapted to engage either side of the segmental tumbler 27 to rotate the same and with it the lower tumbler 28; it being remembered that these two tumblers are fixed to each other. The actuating tumbler or disk 32 is of the same diameter as the tumblers, and hence would prevent the dogs from entering the appropriate recesses in the tumblers but for the fact that it is provided on opposite sides with notches 35 to receive the dogs, said notches having sloping or inclined sides for the purpose of camming the dogs outwardly as the disk is rotated. These cam notches are 180° apart and lie on opposite sides of the lug 33. Encircling the spindle is a band or disk 34 of rubber or equivalent resilient material, engaging the dogs and pressing them yieldingly outward.

The operation of the locking mechanism will now be readily understood. Assuming a combination (dependent, of course, upon the position of the pointer with respect to the tumblers and the actuating disk) the knob is turned counterclockwise until the pointer points accurately to the first number of the combination, say 9, or 9, 1-2, or any other number, as the case may be. This movement of the knob rotates the spindle, and the actuating disk 32 and lug 33. The latter, striking the side 36 of segmental tumbler 27, rotates the tumblers and brings them to rest in the position shown in Fig. 6, with the recesses 28 and 29 opposite the dogs 8 and 7 respectively. The latter are now free to enter the recesses but for the actuating disk, which overrides the recesses and in effect closes them. The operating knob is now turned backward, or in the clockwise direction, until the pointer is at the second number of the combination. This movement brings the notches 35 in the actuating disk into register with the tumbler

recesses, but the dogs are still held in the outward or locking position by the resiliency of the spring disk or washer 34. However, on drawing the stopper outwardly the dogs are cammed inwardly against the tension of the spring disk by the upper edge of the locking groove cooperating with the rounded locking lugs 5 and 6 on the dogs and thus permit the stopper to be removed. Inserting the stopper again pushes the dogs inward until they snap into the groove. A turn of the operating knob then locks the stopper in the bottle.

It will be observed that in working the combination the first number of the combination can be set only by turning the knob in one direction,—counterclockwise in the present embodiment of the invention,—because clockwise rotation would bring the recess 29, instead of 28, in register with the dog 8; and since dog 8 has no notch to match the segment 27 which overhangs the recess 29, the dog could have no inward movement. Similarly, the second number can be set only by reverse rotation,—clockwise in the present construction,—since continued movement of the actuating disk 32 in the counterclockwise direction after setting the first number, would turn the tumbler on farther and so nullify the first setting. The use of a lug having some angular width, as the lug 33, instead of a mere pin or stud, for setting the tumblers, is an important though not indispensable feature. It will be observed that with a lug of this character the range of movement through which the knob can be turned to set the second number of the combination, without having the lug strike the side 37 of the segment 27 and so disturbing the first setting, is limited. For example, suppose the combination is such that when the pointer is set to the second number the lug lies in contact with the segment, as in Fig. 6; then if the clockwise movement of the knob is continued in the slightest degree, in other words if the operator does not stop exactly on the number, the tumblers will be shifted and the first setting thereby disturbed. While reliance may be placed in the actuating disk 32 for keeping the dogs in locking position until both members of the combination are accurately set, the use of the resilient disk 34 is an advantageous feature. Without such disk the lock could be "picked" with less difficulty by laying the bottle on its side and turning the knob until one of the dogs dropped out of the locking groove; then reversing the bottle and again turning the knob until the other dog dropped; whereupon it would be known that the combination had been set and that the stopper could be withdrawn; whereas with the resilient disk in use the dogs are maintained in the locking position, even when the combination is correctly set, until the

stopper is drawn outwardly. These several features greatly increase the difficulty of "picking" the lock, and make the operation extremely tedious even to one who knows part of the combination.

The construction herein specifically described has proved satisfactory, and I consider it the best form of the invention, but it is to be understood that the invention is capable of embodiment in other forms without departure from its proper spirit and scope as defined by the appended claims.

What I claim is:

1. In a combination-lock bottle-stopper, the combination of equidistant locking dogs adapted to coöperate with the bottle-mouth to lock the stopper therein, movable locking tumblers normally preventing disengagement of the dogs from the bottle-mouth except when the tumblers are in a single predetermined position relative to the respective dogs, a movable actuating tumbler for moving the other tumblers and normally preventing disengagement of the dogs from the bottle-mouth except when the actuating tumbler is in a predetermined position relative to the dogs, and combination mechanism for moving the actuating tumbler.

2. In a combination-lock bottle-stopper, the combination of equidistant locking dogs adapted to engage the bottle-mouth to hold the stopper therein, movable tumblers coöperating to lock the dogs in engagement with the bottle-mouth except when the tumblers are in a single predetermined position relative to the respective dogs, combination-lock mechanism for shifting one of the tumblers, and means carried by the last-mentioned tumbler for shifting the other.

3. In a combination-lock bottle-stopper, the combination of dogs adapted to engage the bottle-mouth to hold the stopper therein, one of said dogs being provided with a notch, a movable tumbler having recesses adapted to receive the dogs, a member carried by the said tumbler and covering one of the recesses therein in position to enter the notch on the notched dog when the tumbler is in unlocking position, an actuating tumbler having recesses to receive the dogs and provided with means adapted to engage said member to move the other tumbler, and means for moving the actuating tumbler.

4. In a combination-lock bottle-stopper, the combination of locking dogs adapted to engage the bottle-mouth to hold the stopper therein, a rotatable tumbler having recesses to receive the dogs when the tumbler is in a single position, a rotatable actuating tumbler having recesses to receive the dogs when in register therewith, means for rotating the actuating tumbler, and means enabling the actuating tumbler to rotate the other.

5. In a combination-lock bottle-stopper, the combination of a rotary tumbler-disk

having recesses in its periphery diametrically opposite each other, locking dogs adapted to engage the bottle-mouth to hold the stopper therein and capable of entering the recesses in the said tumbler when the latter is in unlocking position, one of said dogs being provided with a notch, a segmental tumbler fixed to the other over one of the recesses therein and arranged to enter the notch in the notched dog when the said tumblers are in unlocking position, a rotary actuating tumbler having recesses to receive the dogs when in unlocking position, a lug carried by the actuating tumbler and adapted to engage the segmental tumbler to rotate the same and the tumbler to which it is fixed, and means for rotating the actuating tumbler.

6. In a combination-lock bottle-stopper, the combination of locking dogs, a base having members pivotally supporting the dogs, a tumbler rotatable on said base, a spindle arranged axially of said tumbler and rotatable independently thereof, a tumbler fixed to the spindle, means enabling the last-named tumbler to rotate the first, and a resilient impervious member fixedly connected with the said base for hermetically closing the bottle-mouth when the stopper is in place therein.

7. In a combination-lock bottle-stopper, the combination of pivoted locking dogs adapted to engage the bottle mouth to hold the stopper therein, tumblers controlling the dogs, combination-lock mechanism for actuating the tumblers, and yielding means for maintaining the dogs in locking position.

8. In a combination-lock bottle-stopper, the combination of pivoted locking dogs, tumblers controlling said dogs, a rotatable spindle between said dogs and associated with the tumblers to actuate the same, and a disk of resilient material carried by the spindle and engaging the dogs whereby to press the dogs yieldingly outward with respect to the tumblers.

9. In a combination-lock bottle-stopper, the combination of a body portion comprising a hollow shell adapted to enter the bottle-mouth, a base positioned in the bottom of the shell, lock-mechanism inclosed by the shell and supported by said base, a stem carried by the base and projecting through the bottom of the shell, a yielding member of impervious material detachably mounted on the stem, and one or more fingers carried by the said base and extending through the bottom of the shell into engagement with the yielding member to prevent rotation thereof.

10. In a combination-lock bottle-stopper, the combination of inwardly and outwardly movable locking dogs, a rotatable tumbler coöperating with the dogs, a second rotatable tumbler provided with means for ac-

tuating the first and having in its periphery notches to receive the dogs when in unlocking position with respect thereto, said notches having inclined sides whereby to
5 can the dogs outwardly when the tumbler is rotated from its unlocking position, and means for rotating said second tumbler.

10 11. In a combination-lock bottle-stopper, the combination of a rotatable tumbler-disk adapted to coöperate with suitable locking dogs, a segmental member fixed to the tumbler-disk, a second tumbler disk co-axial with the first, a circumferentially extending

lug carried by the second disk and adapted to engage the said segmental member to rotate the same and the tumbler-disk to which it is fixed, and means for rotating the second tumbler-disk. 15

In testimony whereof I affix my signature in the presence of two subscribing witnesses. 20

ALFORD C. APPLETON.

Witnesses:

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WALTER MIDDEN.