(No Model.)

# W. J. FERRIS.

## BOTTLE STOPPER.

No. 481,616. Patented Aug. 30, 1892.

Fig. 2.

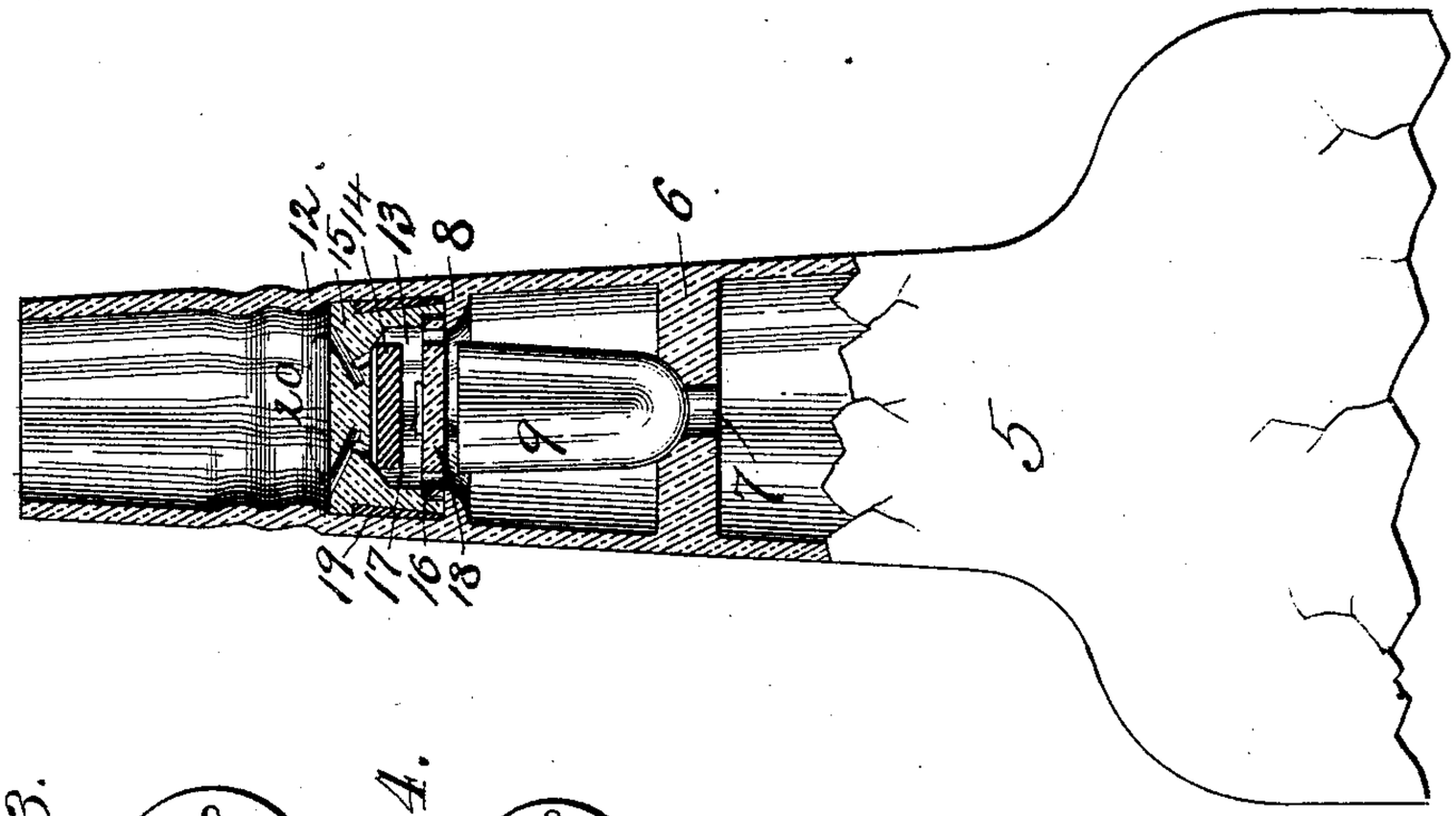



Fig. 3.

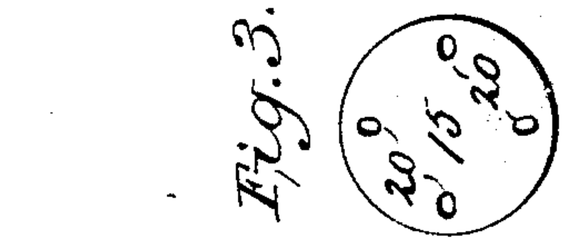
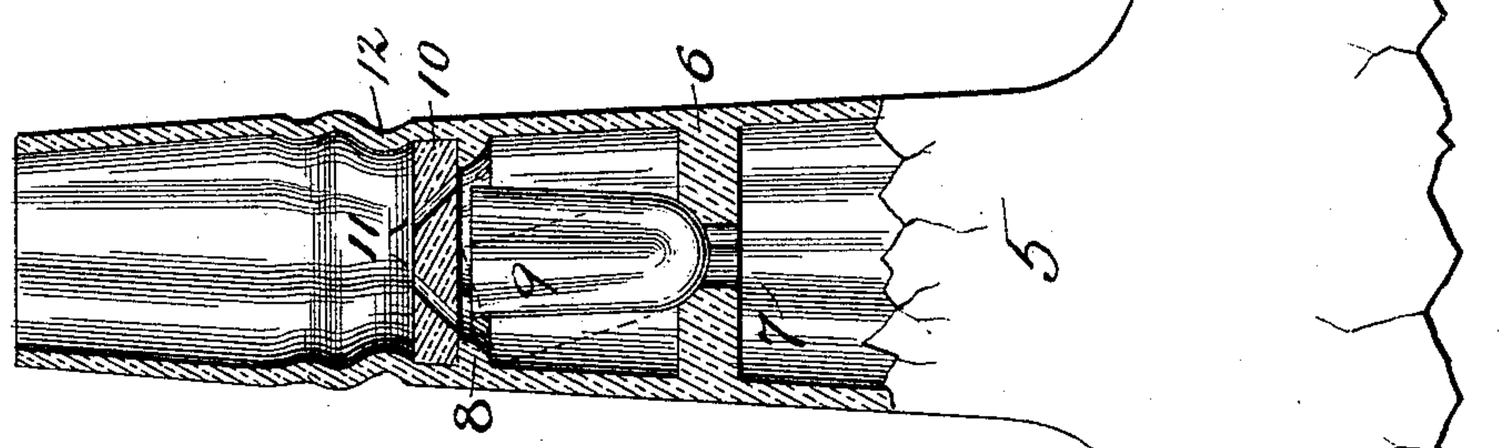



Fig. 4.


Fig. 1.




Witnesses:
Ed. D. York
A. M. Parkins

Inventor:
William J. Ferris.
by Lemmé & Goldsborough,
Attys

# UNITED STATES PATENT OFFICE.

WILLIAM JOHN FERRIS, OF LOUISVILLE, KENTUCKY.

## BOTTLE-STOPPER.

SPECIFICATION forming part of Letters Patent No. 481,616, dated August 30, 1892.

Application filed May 3, 1892. Serial No. 431,646. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM JOHN FERRIS, a British subject, residing at Louisville, in the county of Jefferson and State of Kentucky, 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.

Dishonest retail dealers of bottled liquids frequently defraud the public by refilling bottles with goods cheaper and inferior to the original stock and by dispensing the same under the false representation that they are the manufacture of the established house whose name and label appear upon the bottles.

The main object of my invention is to prevent such impositions upon the public and such injury to the good repute of the productions of conscientious manufacturers.

To this end I have devised a stopper adapted to be irremovably inserted in the bottle-neck after the bottle has been originally filled, said stopper permitting the pouring out of the contents, but preventing subsequent refilling. It is incidental to the construction of the stopper that it also acts as a safeguard against spilling the liquid contents from the bottle should the latter be accidentally tipped over upon its side.

In the accompanying drawings, illustrative of the invention, Figure 1 represents, partly broken away and partly in section, the upper portion of the bottle having a stopper embodying the generic features of the improvement. Fig. 2 represents a like view of a modification thereof. Fig. 3 represents a top plan view of one portion of the stopper shown in Fig. 2, and Fig. 4 represents a like view of another portion thereof.

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

Referring to the drawings, 5 indicates a bottle, flask, or other similar receptacle having in its neck a cross-partition 6, provided with an aperture 7, and having an annular flange 8, said cross-partition being preferably formed integral with the bottle-neck during the manufacture of the latter. The upper face of the partition 6 is ground out true about the aperture 7, so as to form a spherical seat, within which is adapted to fit the spherical lower end of the glass plug or valve 9, the main body portion of said valve being elongated, as shown, so as to extend almost to the plane of the upper surface of the annular flange 8. The valve fits with such nicety to its ground seat as to constitute when in place a liquid-tight cover for the aperture. After the bottle is filled with its original contents the valve 9 is inserted in the neck and seats itself over the aperture 7 in a water-tight manner. In order now to be able to dispense the contents at will, but at the same time to prevent refilling, I provide means for permitting the valve to leave the aperture when the bottle is inverted, but for retaining it in place at all other times. To this end in the form of my invention shown in Fig. 1 I insert a disk 10 in the bottle-neck, so as to rest upon the annular flange 8, said disk being provided with apertures 11 of suitable size and number. I then heat the bottle-neck until sufficiently soft to permit me to press its walls inwardly, as indicated at 12, in such manner that on cooling and hardening said restricted portion of the neck holds the disk 10 rigidly in the neck and irremovably, in so far as any facilities within the usual possession of the retail dealer are concerned. When the bottle is completely inverted or turned upside down, the valve will fall by gravity upon the space between the openings 11 and the contents will then discharge through said openings. Unless the bottle is thus inverted completely the aperture 7 will not be uncovered by the valve 9. Thus if the bottle is tilted sidewise in any direction the valve will tip with it into a position indicated in dotted lines, one point of its flat end striking against the inner wall of the bottle-neck and the diametrically-opposite point coming in contact with the under surface of the disk 10, as shown. Consequently the valve will remain upon its seat, being unable to move endwise, and though the bottle be tilted from side to side the valve will merely swing upon its seat as a pivot and will not leave said seat. Any liquid, therefore, inserted in the bottle-neck while the bottle is upright or tilted sidewise will be

unable to effect an entrance into the interior of the bottle. Nor will it avail to shake the bottle with the expectation that the liquid will enter, inasmuch as at the first attempt to shake the bottle the valve 9 will be tilted into the inclined position.

The stopper shown in Fig. 1 is a sufficient safeguard for general use, as the ordinary retail dealer is not provided with the costly and complicated vacuum apparatus required for filling bottles when completely inverted; but in order to provide against even such contingency, I may employ the additional or auxiliary features of construction shown in Fig. 2. In the construction shown in said Fig. 2 the same form of valve 9, cross-partition 6, aperture 7, and annular flange 8 are present. Instead of the disk 10, however, there is substituted a two-part device having an inner chamber 13, in which is contained a light disk-valve 14, preferably of cork. The part 18, resting upon the annular flange, has the same function and relationship to the valve 9 as has the disk 10 of Fig. 1. It is likewise provided with perforations 16, and on its upper surface has preferably a projection 17, whose purpose is to support the disk-valve so that it will not adhere to the said surface when wet. The upper part consists of a glass cap-piece 15, fitting over the disk 18, as shown, and is made liquid-tight about its periphery in any suitable manner, but conveniently by means of a cylindrical washer 19 of cork. This cap-piece is provided with the zigzag apertures 20 and is held in place by the restricted portion 12 of the bottle-neck in the same manner as has been described in connection with Fig. 1.

As in the form shown in Fig. 1, so also in this form of the invention the contents of the bottle can only be discharged when the bottle is completely inverted. The light disk-valve 14, being buoyant, does not interfere with the outflow, but permits it to take place freely. Refilling without the aid of vacuum apparatus cannot take place for the reasons explained in connection with Fig. 1, nor can refilling be effected even with the aid of the vacuum apparatus.

If it is attempted to refill by the aid of the vacuum apparatus and by inverting the bottle for that purpose, the first effect of the exhaust produced by the vacuum apparatus would be to draw or suck the disk-valve 14 into the position shown in Fig. 2, so as to completely prevent the entrance of any liquid into the bottle beyond said valve. The openings 20 are designedly made zigzag, so as to render futile any attempt to insert a wire for the purpose of holding back the disk-valve during the exhaust.

It will be apparent that should a bottle provided with either form of stopper fall upon its side the contents will not be spilled, as the valve 9 will not in such case leave its seat.

Having thus described my invention, what I claim is—

1. A stopper for bottles, flasks, and like receptacles, consisting of a valve seated upon a discharge-opening of the receptacles, and a retaining device so arranged in proximity to the valve as to permit the latter to have a limited movement from said seat when in a vertical position, but preventing such movement when in any other position, substantially as described.

2. A stopper for bottles, flasks, and like receptacles, consisting of an elongated valve spherical at its lower end and seated upon a spherical seat surrounding the discharge-opening of the receptacle, and a perforated retaining-disk located above the valve and in close proximity thereto, so as to permit the valve to leave its seat only when in a vertical position, substantially as described.

3. A stopper for bottles, flasks, and the like, consisting of a cross-partition located in the discharge-neck and having an aperture, a valve-seat of spherical contour upon the upper end of said aperture, a valve upon said seat, said valve being spherical at one end and flat at the other, and a perforated retaining-disk above the valve in proximity thereto, so as to prevent the valve from leaving its seat except when in a vertical position, substantially as described.

4. In a stopper for bottles, flasks, and the like, a device for preventing the refilling by vacuum apparatus, consisting of a valve located in proximity to the entrance-opening of the bottle and within the same, said valve being adapted to be drawn or sucked across said opening when the vacuum apparatus is set in operation, substantially as described.

5. In a stopper for bottles, flasks, and the like, a device for preventing the refilling by vacuum apparatus, consisting of a valve located in proximity to the entrance-opening of the bottle and within the same, said valve being adapted to be drawn or sucked across said opening when the vacuum apparatus is set in operation, and the bottle-opening being zigzag, so as to prevent interference with said valve, substantially as described.

6. In a stopper for bottles, flasks, and the like, a device for preventing the refilling by vacuum apparatus, consisting of a perforated disk, a cap-piece above said disk and forming therewith an interior chamber, a float-valve located within such chamber, and zigzag openings in the top of the cap-piece, substantially as described.

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

WILLIAM JOHN FERRIS.

Witnesses:
AD WAGNER,
CHAS. SCHUWIRTH.