J. C. DAVIS.

NON-REFILLABLE BOTTLE.

APPLICATION FILED OCT. 2, 1908.

921,809.

Patented May 18, 1909.

2 SHEETS—SHEET 1.

FIG. 1

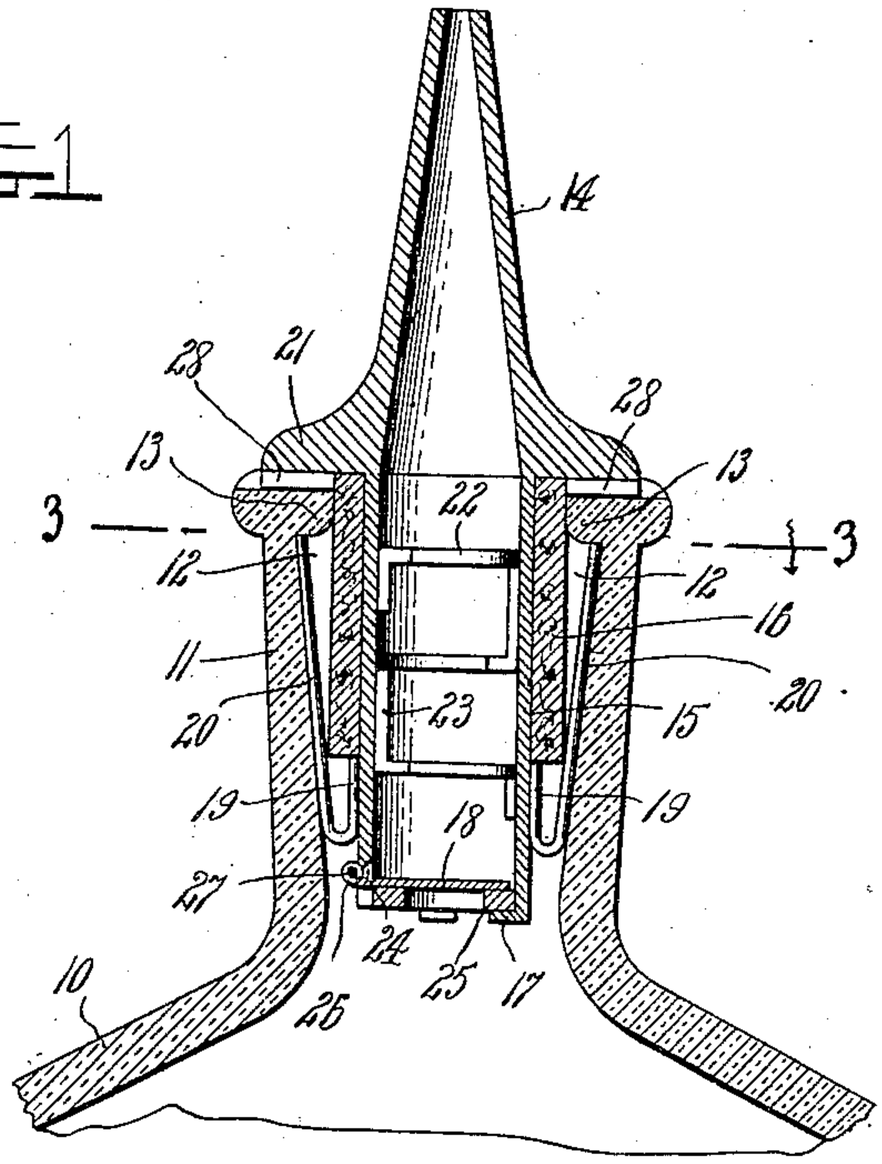


FIG. 3

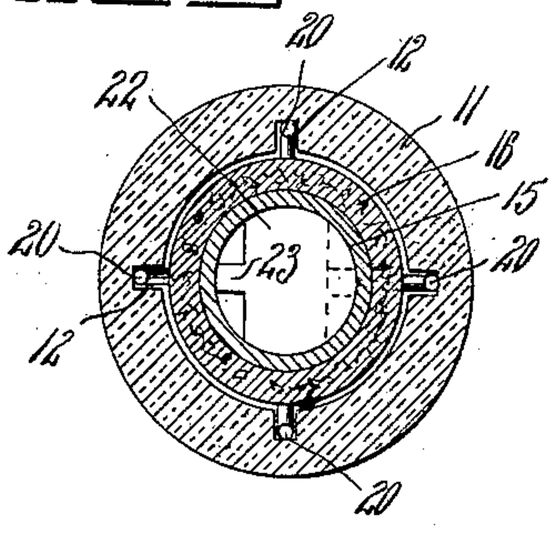
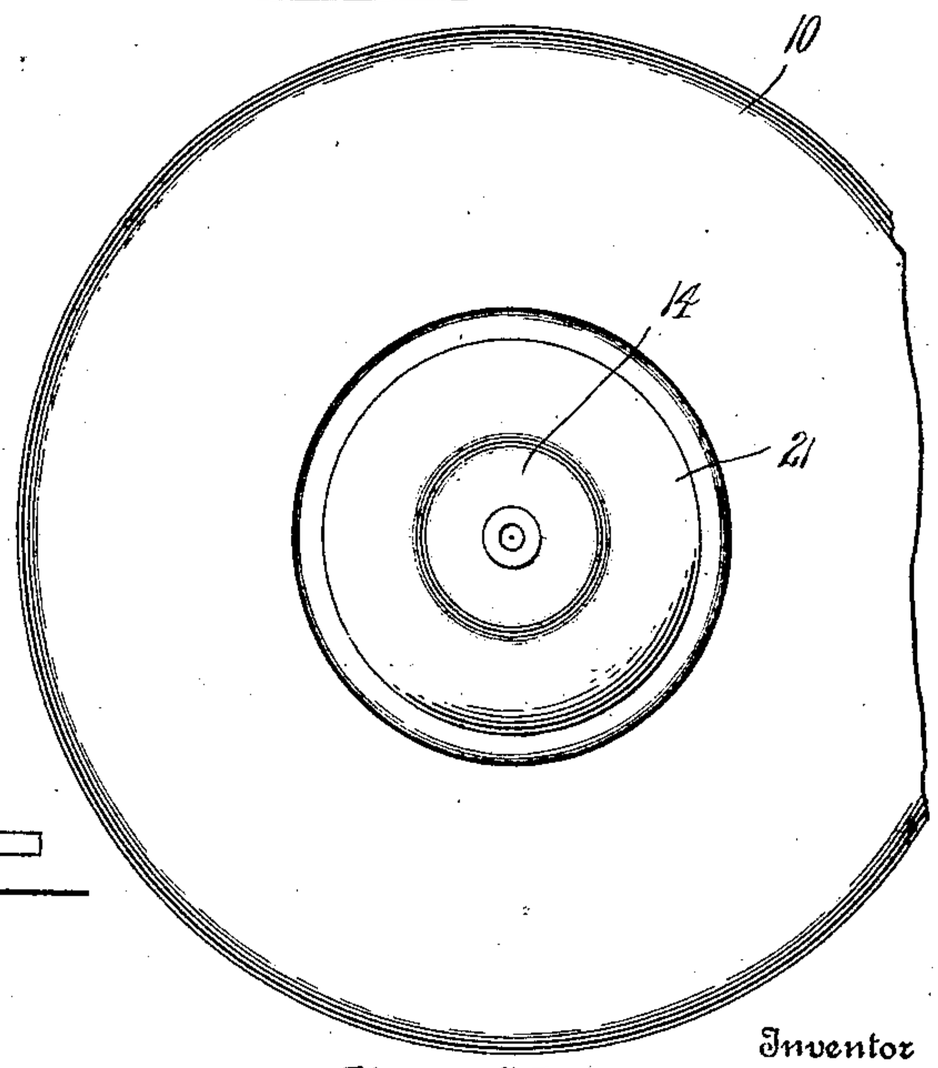


FIG. 2



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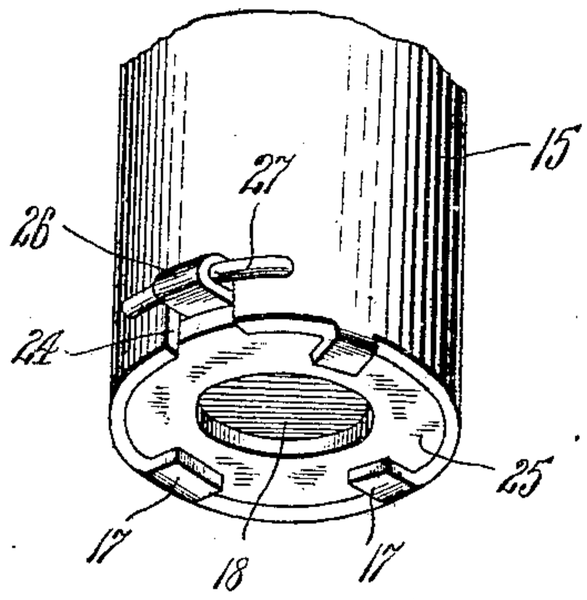

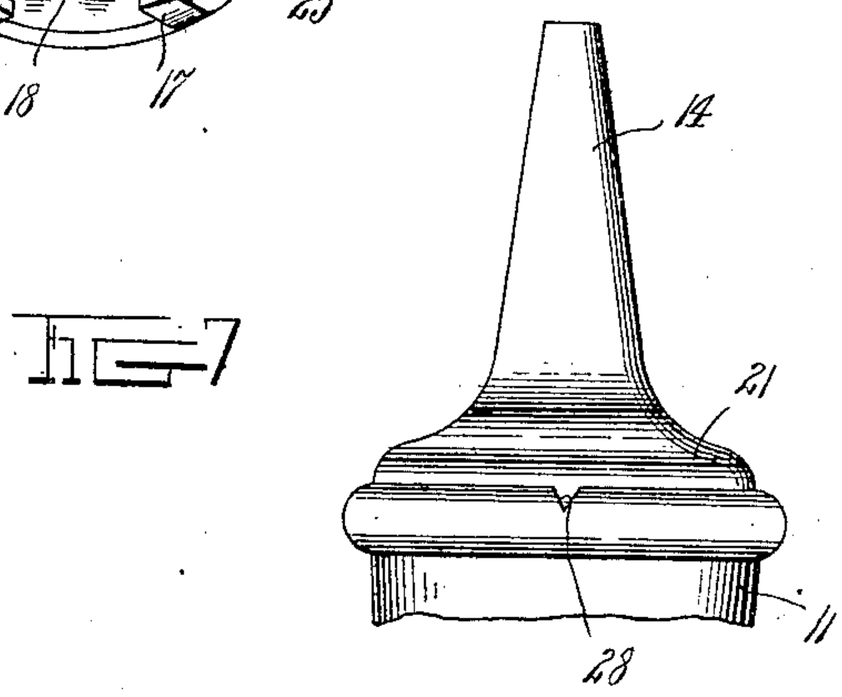

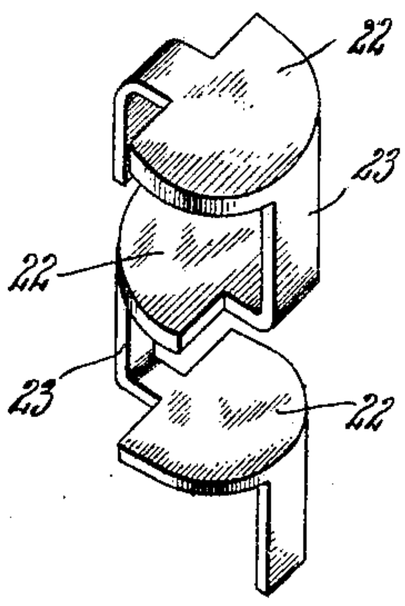

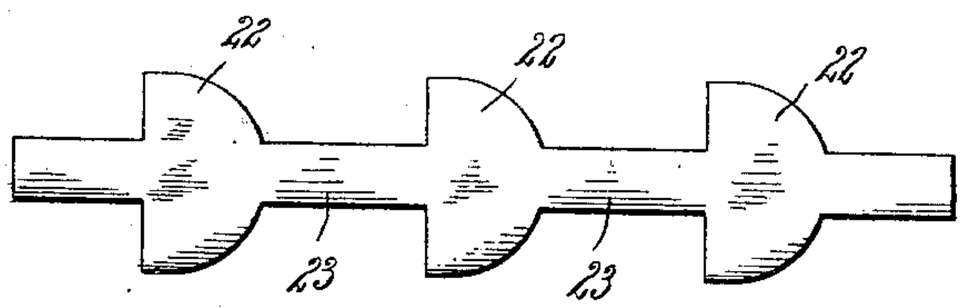

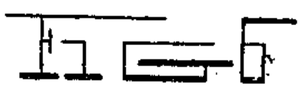

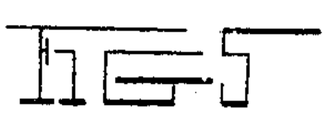

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UNITED STATES PATENT OFFICE.

JOHNSON C. DAVIS, OF CONCORD, NORTH CAROLINA.

NON-REFILLABLE BOTTLE.

No. 921,809. Specification of Letters Patent. Patented May 18, 1909.

Application filed October 2, 1908. Serial No. 455,834.

To all whom it may concern:

Be it known that I, JOHNSON C. DAVIS, a citizen of the United States, residing at Concord, in the county of Cabarrus, State of North Carolina, have invented certain new and useful Improvements in Non-Refillable Bottles; 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.

This invention relates to bottles, more particularly to non-refillable bottles, or bottles provided with means whereby the contents may be readily discharged but in which provision is made for preventing the refilling of the bottle after it has been once emptied, and has for one of its objects to simplify and improve the construction and increase the efficiency and utility of devices of this character.

With these and other objects in view, the invention consists in a bottle having internal longitudinal grooves in its neck portion, the grooves preferably increasing in depth toward and terminating short of the discharge end of the neck of the bottle, a stopper having resilient lock members engaging in the grooves, and an upwardly operating valve within the stopper, and a plurality of transverse stops operating to prevent the introduction of an implement for surreptitiously opening the valve.

The invention further consists in certain novel features of construction as hereafter shown and described and then specifically pointed out in the claims, and in the drawings illustrating the preferred embodiment of the invention, Figure 1 is a vertical sectional view of the neck portion of the improved bottle with the stopper mechanism applied. Fig. 2 is a plan view. Fig. 3 is a section on the line 3—3 of Fig. 1. Fig. 4 is a perspective view enlarged, of the lower portion of the stop from beneath. Fig. 5 is a perspective view of the stop element employed within the stopper to prevent the introduction of an implement for manipulating the valve. Fig. 6 is a view of the blank from which the stop member is constructed. Fig. 7 is a side view of the improved stopper and a portion of the bottle neck.

The improved device may be applied to any of the various sizes and forms of bottles employed for containing liquids of various kinds, and it is not desired therefore to limit the invention to any specific size or form of bottle or to bottles employed for any specific purpose, but for the purpose of illustration is shown applied to a conventional bottle comprising a body portion 10 and a neck portion 11. The neck portion of the bottle is formed cylindrical for a distance and slightly thicker than in ordinary bottles and with a plurality of longitudinal grooves 12 increasing in depth toward and terminating short of the discharge end of the neck, whereby overhanging lips 13 are produced between the outer terminals of the grooves and the outer face of the neck, as shown. Any required number of the grooves may be employed, but preferably four will be used as shown, but it will be understood that any required number may be employed. In the smaller sizes of bottles two of the grooves will be required, while in the larger sizes three or more may be employed.

The stopper portion of the bottle may be of any required shape, but for the purpose of illustration is shown formed with a contracted discharge nozzle 14 and a cylindrical portion 15 extending inside the neck of the bottle and surrounded by an annular member 16 of cork or similar material, to provide the requisite packing between the bottle and the cylinder. The packing portion 16 may be of cork, rubber, or other similar suitable material, depending somewhat upon the nature of the contents of the bottle, and it is not desired therefore to limit this portion of the invention to any particular material.

Attached to the sides of the cylindrical portion 15 of the stopper are a plurality of lock devices, each preferably formed of a single piece of wire bent into V shape with one arm 19 shorter than the other and secured by the shorter arm to the face of the cylindrical member 15, while the longer arm 20 extends outwardly over the cylindrical member. After the contents are inserted into the bottle the stopper having the members 19—20 attached is inserted into the bottle and crowded down into the neck of the bottle until the flange portion 21 bears upon the upper end of the bottle, which action will cause the longer arm 20 of the lug members to enter the grooves 12 with the upper ends extended beneath the overhanging lips 13 and thus effectually lock the stopper into the bottle. By this means the stopper when once inserted cannot be removed without breaking the stopper, which action would re-

veal the fact that the device had been tampered with.

Inserted into the tubular portion 15 of the stopper are a plurality of mutilated disks 22, any required number being employed, but for the purpose of illustration three of the disks are shown and are preferably connected by reduced portions 23, the disks constructed of the semi-circular portions united at their edges and with the mutilated sides arranged alternately. This arrangement effectually prevents the introduction of an implement through the stopper to open the valve 18 and enable liquids to be surreptitiously introduced. The stopper members 22—23 are preferably formed in a single piece of sheet metal, usually in the form shown in Fig. 5, and bent up into the required shape and thrust into the cylindrical portion 15 before the member 16 and the valve 18 is inserted.

The lower end of the tubular portion 15 is formed with a plurality of lugs 17 and with a longitudinal recess 24, and fitting into the lower end of the tubular portion is an annular seat 25 and held in place by bending the lugs 17 inwardly of the seat, as shown. Bearing upon the inner surface of the seat 19 is a valve 18 having an arm projecting over one side and terminating in an eye 26, the arm and its eye projecting through the recess 24 in position to receive a transverse pintle 27, the latter secured as by soldering to the outer face of the tubular member 15. By this means the valve is hingedly united to the tubular member and seats freely upon the member 25, the valve thus working upwardly and effectually preventing the introduction of liquids into the bottle, while at the same time permitting the liquids to be freely discharged therefrom.

The improved device is simple in construction, can be inexpensively manufactured, and operates effectually for the purpose required.

The flange portion 21 of the stopper is provided with radial ribs 28, preferably V-shaped and fitting into radial recesses in the rim of the bottle neck to prevent rotation of the stopper after it has been located in position. By this means it will be obvious that the stopper cannot be rotated forcibly after it has been located in position and thus forcibly displace the resilient holding members.

What is claimed is:—

1. The combination with a bottle having grooves extending longitudinally within the neck portion and terminating short of the rim of the same, a stopper including a tubular portion and insertible into the neck of the bottle, a plurality of resilient lock devices connected at one end to the tubular portion and engaging respectively in the grooves by their free ends, a valve within the tubular portion, and a plurality of mutilated disks coupled by integral webs and adapted to be arranged to bear alternately against opposite sides of the tubular portion.

2. A device of the class described comprising a stopper including a tubular portion, having a plurality of spaced inwardly extending lugs and a longitudinal recess at its lower end, an annular seat bearing within the tubular portion and retained in place by said lugs, a valve upon said annular seat and provided with a lateral arm extending through said recess and terminating in an eye, and a pintle extending through said eye and secured to the tubular portion.

3. A device of the class described comprising a stopper including a tubular portion, a plurality of resilient lock devices adapted to lock the stopper within the neck of a bottle, a valve within the tubular portion, and a plurality of mutilated disks coupled by integral webs and adapted to be arranged to bear alternately against opposite sides of the tubular portion.

4. A device of the class described comprising a stopper including a tubular portion, having a plurality of spaced inwardly extending lugs and a longitudinal recess at its lower end, an annular seat bearing within the tubular portion and retained in place by said lugs, a valve upon said seat and provided with a lateral arm extending through said recess and terminating in an eye, a pintle extending through said eye and secured to the tubular portion, and a plurality of mutilated disks coupled by integral webs adapted to be arranged to bear alternately against opposite sides of the tubular portion.

5. The combination with a bottle having lateral recesses in its upper edge and with grooves extending longitudinally within the neck portion and terminating short of the rim of the same, a stopper including a lateral flange bearing upon said bottle neck and with ribs engaging in the recesses of the same and with a tubular portion and insertible into the neck of the bottle, a plurality of resilient lock devices connected at one end to the tubular portion and engaging respectively in the grooves by their free ends, a valve within the tubular portion, and a plurality of mutilated disks coupled by integral webs and adapted to be arranged to bear alternately against opposite sides of the tubular portion.

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

JOHNSON C. DAVIS.

Witnesses:

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E. L. MORRISON,