W. H. HICKS.

BOTTLE-CLOSING DEVICES.

No. 195,128. Patented Sept. 11, 1877.

Fig 1

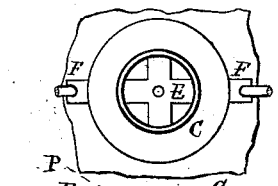


Fig 2

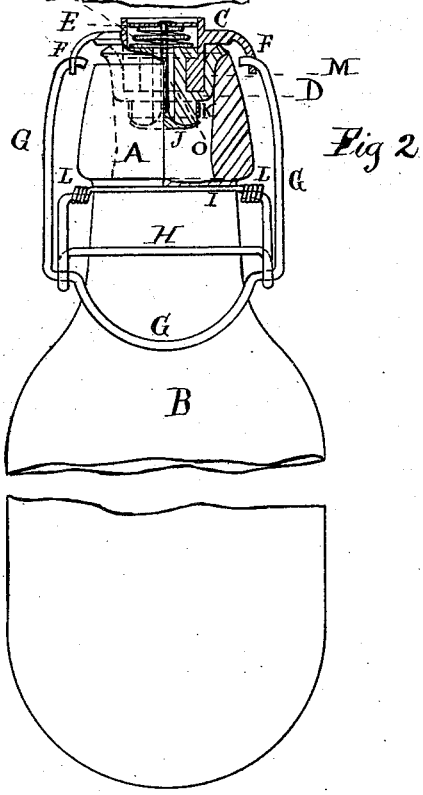


Fig 3

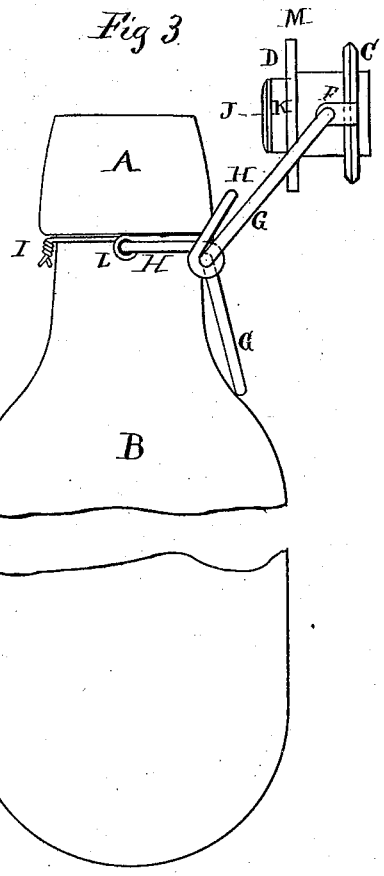


Fig 4

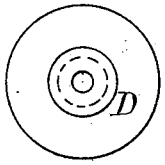
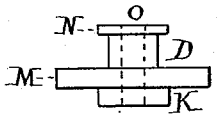


Fig 5



Witnesses
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UNITED STATES PATENT OFFICE.

WILLIAM H. HICKS, OF BROOKLYN, NEW YORK.

IMPROVEMENT IN BOTTLE-CLOSING DEVICES.

Specification forming part of Letters Patent No. **195,128**, dated September 11, 1877; application filed June 2, 1877.

To all whom it may concern:

Be it known that I, WM. H. HICKS, of Brooklyn, county of Kings, and State of New York, have invented Improvements in Bottle-Closing Devices, of which the following is a specification, reference being had to the drawings, which form part of this specification.

My invention relates to bottle-closing devices through which the bottle is filled without removing the closing cap-piece.

I am aware that bottles have been filled through an opening in the cap-piece previous to my invention.

My invention overcomes certain defects which are present in previous methods; and consists in certain combinations of the following parts or elements:

A cap-piece having an opening through it of two different diameters; an angular flange projecting from its under side, of less diameter than the diameter of the cap-piece, said cap-piece being provided at its circumference to connect to a closing leverage or mechanism; an annular double-flanged packing-piece, the upper flange formed to sustain the packing-piece within the opening through the cap-piece by resting in its larger diameter, the lower flange formed to extend below and beyond the outside diameter of the projecting flange from the under side of the cap-piece, and having beneath said lower flange a projection to form a seat for a valve; a valve, preferably conically shaped or curved on its upper surface, attached by a stem, through the opening through the said packing-piece, to a cap flange or plate, perforated or notched to allow the passage of fluids through or past it; a spring, preferably coiled, situated to operate between the cap-plate on the upper end of said valve-stem and the upper surface of the upper flange on said packing-piece, to close the valve on the lower end of said valve-stem against the projection on the under side of the lower flange of the said packing or valve-seat, to close the opening through said packing-piece; a controlling-wire, curved at its central portion, bent equidistant from its center to form eyes or bearings, and beyond said eyes bent at nearly a right angle with its central portion, and at its ends arranged to joint to bearings in opposite sides of the neck of a bottle; a lever-wire, curved at its central portion, bent at equal distances from its center to pivot or joint in eyes in said controlling-wire, beyond said pivots or joints bent at more than a right angle with its central portion, and at its ends arranged to joint to a cap-piece of a bottle.

To enable persons skilled in the arts to make and use my invention, I will proceed to describe it, referring to the drawings, which form part of this specification, in which the same letters indicate like parts.

In the drawings, Figure 1 is a top view of the cap-piece and perforated plate on the top of the valve-stem. Fig. 2 is a vertical view, showing the cap-piece partly in section. Fig. 3 is a vertical side view, showing the cap-piece in position when the bottle is open. Figs. 4 and 5 are views of the double-flanged annular packing-piece.

A is the nose of a bottle, forming a shoulder where it joins the neck. B is the body of a bottle. D is the double-flanged packing-piece, having an opening through it. E is a notched plate, fastened to the top of the valve-stem. F F are ears on the opposite sides of the cap-piece. G is a lever-wire. H is a controlling-wire. I is a wire fastened around the neck of a bottle, provided with bearings on opposite sides. J is a valve, conically shaped on its upper surface, and attached to the bottom of a valve-stem, which connects it, through the opening in the packing-piece, to the plate at its top. K is a projection from the lower side of the lower flange of the packing-piece for a valve-seat, re-enforced around its circumference by a band to hold it in shape. L L are bearings on the neck-wire, into which the ends of the controlling-wire pivot. M is the lower flange on the packing-piece, of larger diameter than the diameter of the flange on the under side of the cap-piece. N is the upper flange on the packing-piece, which supports the packing-piece in its position in the opening in the cap-piece by resting in its larger diameter. O is a valve stem or rod, which connects the valve to the notched plate at its top through the opening in the packing-piece. P is a spring, which operates be-

tween the cap-plate on the valve-rod and the upper flange on the packing-piece, or a plate which may be placed thereon.

The operation of my invention is as follows: The annular double-flanged packing having been inserted in the opening in the cap-piece, the valve, rod, spring, and cap-plate having been adjusted in the packing-piece so as to close the opening through it, the cap-piece thus arranged is connected with the closing mechanism, the lever-wire is thrown down upon the neck of the bottle to its lower position, bringing the cap-piece down on the mouth of the bottle, and squeezing the lower flange of the packing-piece between the flange on the under side of the cap-piece and the inside of the nose of the bottle, which makes a tight joint at this point. When this is done the curved part of the controlling-wire comes in contact with the neck of the bottle, preventing further motion in this direction. The eyes of the controlling-wire and the pivots of the lever-wire will then be in position a little beyond a perpendicular line, in which position the elasticity of the packing-piece holds them, preventing any backward movement to open the bottle.

The bottle is then filled on a bottling-table, through the opening in the cap-piece and packing-piece, by depressing the valve from its seat, and holding it there by suitable mechanism. When the bottle is filled with liquids under pressure, the bottle is removed from the bottling-table, and the spring draws the valve to its seat suddenly, and it is held there by the power of this spring, assisted by the pressure from within the bottle. The re-enforcing band around the valve-seat keeps the seat from changing its shape materially when the conically-shaped valve presses out the opening through the packing-piece, in which it enters partially at its lower end. The valve is also curved up at its circumference, to inclose the outer edges of the valve-seat within its diameter, which causes the compressible seat to shape itself to conform to the shape of the valve, nearly.

The bottle is opened by pressing the curved part of the lever and controlling-wires away from the neck of the bottle, when the elasticity of the packing-piece and the pressure from within the bottle throw the cap-piece away from the mouth of the bottle. The lever-wire is then pressed down upon the bottle by the thumb or finger, and, as the lever-wire is rigid, this throws the cap-piece clear of the bottle, as shown in Fig. 3, in which position it is firmly held as long as the wire is held against the bottle. Thus it will be seen that the cap-piece is entirely controlled in its position by the hand of the operator, so that it cannot move about and drop over the mouth of the bottle while the liquid is being emptied out, as happens in other kinds of devices. This is an important point.

The projection on the bottom of the lower flange of the packing-piece, which serves as a valve-seat, also prevents the packing-piece from becoming set in any shape except the one designed and shown herein. Were it not for this the straining of the lower surface of this flange by compression, and drawing up occasioned by the depression of the cap-piece on the bottle, would curve it at this point, and it would become permanently set in the curved form.

The packing-piece may be held in the hole in the cap-piece by corrugations instead of by an upper flange, when desirable.

A plate may be placed over the top of the upper flange of the packing-piece, for the spring to bear upon instead of the surface of the rubber; or the spring may bear on the shoulder around the edges of this upper flange without departing from my invention.

Having now described my invention, what I claim as my invention, and desire to secure by Letters Patent, is—

1. An annular or tubular compressible packing-piece for a bottle, substantially as hereinbefore described, surrounded by two flanges, so placed as to form a projection from the under surface of each flange, substantially as and for the purposes set forth.

2. A double-flanged annular packing-piece, having a projection from the under side of its lower flange, surrounded by a re-enforcing band, substantially as and for the purposes set forth.

3. The combination of a controlling-wire, curved at its central portion, bent to form eyes or bearings equidistant from its center, beyond said eyes bent at nearly right angles with its central portion, and arranged at its ends to bear in bearings on opposite sides of the neck of a bottle, with a lever-wire, curved at its central portion, bent to pivot in bearings in a controlling-wire equidistant from its center, beyond said bearings or pivots bent to more than a right angle with its central portion, and arranged at its ends to joint to a cap-piece of a bottle, the whole arranged to operate together as a closing mechanism, substantially as and for the purposes set forth.

4. The combination of a cap-piece for a bottle, substantially as hereinbefore described, having an opening through it of different diameters, a flange projecting from its under side surrounding said opening, and provided with eyes or pivots upon opposite sides to connect with a lifting and closing mechanism, substantially as described, whereby said cap-piece may be lifted away from, and closed down upon, the mouth of a bottle uniformly, substantially as and for the purposes set forth.

5. The combination of a cap-piece for a bottle, substantially as hereinbefore described, having an opening through it of different diameters, surrounded on its under side by an angularly-projecting flange, and arranged to connect with a closing mechanism, substantially as described, a packing-piece, compressible, having two flanges surrounding it, arranged to form a projection beneath each

flange, said packing-piece being perforated through its entire length, substantially as and for the purposes set forth.

6. The combination, in a bottle-closing mechanism, of a cap-piece, substantially as hereinbefore described, having an opening through it of two different diameters, surrounded on its under side by a flange projecting from it, arranged at its edges to connect with a closing mechanism, substantially as described, a double-flanged annular compressible packing-piece, a valve connected by a stem, through the opening through said packing-piece, with a cap-plate, perforated or notched, a spring, arranged to operate beneath said cap-plate to close the valve against its seat, and a closing mechanism, substantially as described, all operating or arranged to operate substantially as and for the purposes set forth.

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Witnesses:
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