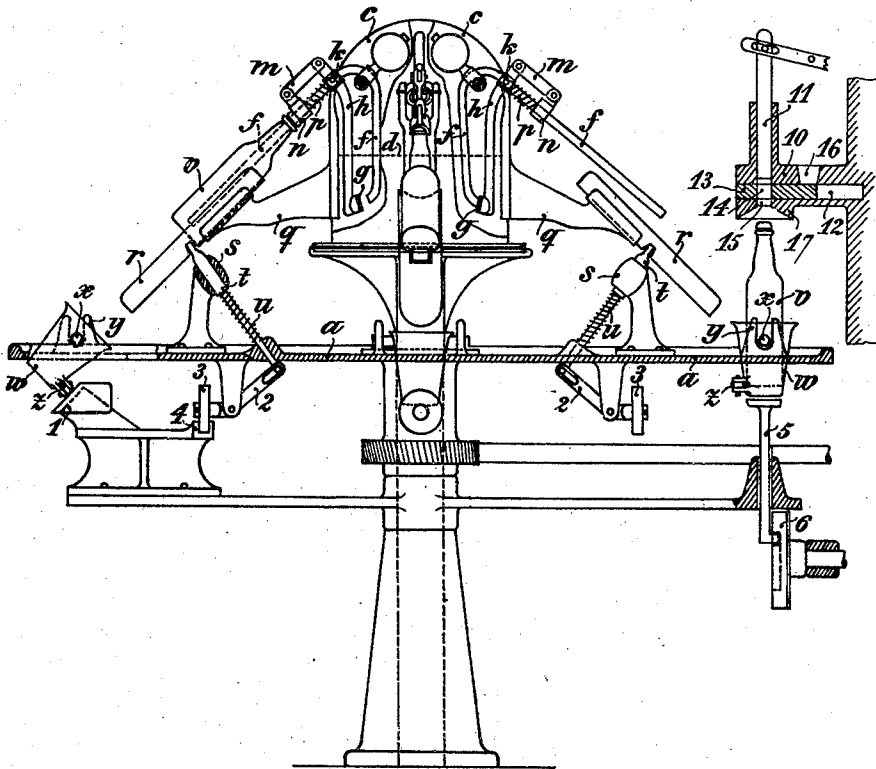


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MACHINE FOR FILLING AND STOPPERING BOTTLES.
APPLICATION FILED SEPT. 29, 1909.

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Patented Mar. 14, 1911.



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UNITED STATES PATENT OFFICE.

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MACHINE FOR FILLING AND STOPPERING BOTTLES.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that we, FRANTS CHRISTIAN STOCKEL, of 72 Ryesgade, and JONAS LUDVIG THEODOR POPP, of 27 H. P. Oerumsgade, Copenhagen, in the Kingdom of Denmark, mechanical engineers, have invented certain new and useful Improvements in Machines for Filling and Stoppering Bottles; and we 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, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

The present invention relates to a machine for filling and stoppering bottles while the latter in inclined positions are caused to rotate about a perpendicular axis, the filling being effected by means of siphons from a tank in which the liquid is kept at a constant level, and the siphons opening and closing automatically whenever the bottle is inserted in or removed from the machine.

The invention consists in the arrangement of a series of movable cups or similar contrivances into which the bottle filled with the liquid can slide and which, when the bottle is immediately below the stoppering-piston, moves said bottle up against same, the bottle at the same time being caused to assume a perpendicular position.

An embodiment of the invention is shown in the accompanying drawing, which represents a sectional elevation of the above-mentioned parts of a filling and stoppering-machine.

a is a table capable of rotating about a perpendicular axis, and above the center of which is a tank *c* which is kept constantly filled with the liquid to be bottled, up to the level *d* by any suitable means. The tank *c* contains a number, say four, siphons *f* the inner ends of which can be closed by flaps or valves *g*, each of which is mounted upon one arm of a lever *h* fulcrumed on a pin *k*. The said levers *h* are connected to blocks *n* by means of links *m*, said blocks being adapted to slide upon the siphons *f* and under the action of springs *p*. To the exterior of the tank *c* are fixed arms *q* carrying semi-circular bearings *r* in which the bottles can be placed.

On the table *a* are arranged brackets *s*

in which pins *t* under the action of springs *u* are adapted to slide, said pins *t* being arranged in such a manner that their upper ends can pass through slots in the bearings *r* and constitute supports for the bottles *v* while the latter are being filled.

When a bottle is to be filled, it is placed in one of the bearings *r*, and passed over the siphon *f* until its bottom bears against the end of the pin *t*. In this position the mouth of the bottle has acted upon the sliding-block *n* the movement of which is transferred to the lever *h* with the result that the flap or valve *g* is removed from the inner end of the siphon *f* so that the liquid from the tank *c* can pass into the bottle until same is filled up to a level corresponding to the line *d* in said tank. The flow of liquid through the siphon *f* is started in the well known manner by exhausting the air through the longer leg and when once the siphon is filled with the liquid contained in the tank *c* said liquid will, on account of the difference between the pressure on the liquid surface *d* and the liquid surface in the bottle *v* flow through the siphon and continue to flow so long as the valve *g* is open.

On the table *a* and at a lower level than each of the bearings *r* are mounted cups *w* or similar contrivances, capable of oscillating on horizontal trunnions *x*, the axes of which are at tangents to the circle described by the center of these axes during the movement of the table *a*. The trunnions *x* rest in bearings *y* open above. Each cup *w* is provided with a roller *z* which at a period slightly before the said cup *w* arrives at the position where the stoppering is to take place, engages a fixed inclined plane or cam 1, whereby the cup will be caused to assume the inclined position shown on the left hand side of the drawing, in which position the axis of the cup will be in alinement with that of the filled bottle carried in the bearing *r*. The pin *t* is connected with a lever 2 carrying a roller 3 which, when the cup *w* assumes the said inclined position, engages an inclined plane or cam 4 which causes the pin *t* to be retracted so that the bottle *v* is released and can slide down into the cup *w*. When the roller *z* has passed the inclined plane, the cup is freed and now assumes the perpendicular position shown on the right hand side of the drawing in which position the stoppering can be effected. As the bottle

slides down, the sliding-block *n* is released, and the flap *g* will now close the opening of the siphon, and the flow of liquid is arrested. The table *a* is not rotated continuously but intermittently, and one of the stoppages takes place when the cup with the bottle therein is immediately below the piston for stoppering and in a perpendicular position; the said piston may be of any known kind. At this place there is arranged below the table *a* a piston 5 adapted for up and down movement by means of which the cup *w* with the bottle therein is lifted and held in the uppermost position while the stoppering takes place. The piston 5 is actuated by means of a cam-disk 6.

The means for corking the bottle consists of a bracket 10 in which a plunger 11 is arranged to move up and down. The bracket 10 is provided with a slot 12 in which a slide 13 can move to and fro. The slide 13 has a hole 14 corresponding to the size of the cork, and the movement of the slide is arranged in such a manner that when one of its limits is reached, the hole 14 will just be located in the prolongation of the channel 15 in which the plunger moves up and down, while in the other limit of the slide the hole 14 will be located just underneath a funnel-shaped opening 16 through which a cork may be introduced into the hole 14. When the slide 13 assumes the position shown on the drawing the cup *w* together with the bottle *v* will through the turning of the disk 6 be pressed up against an elastic plate 17 fixed to the lower surface of the bracket 10, and simultaneously the plunger 11 is moved downward so that the cork in the hole 14 is pushed into the neck of the bottle. When the stoppering is accomplished the bottle is lowered, and the table *a* is again rotated, whereupon the filled and closed bottle may now be removed and another empty one placed in the bearing *n*. Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

1. In a machine for filling bottles, the combination with a rotatable reservoir, of means movable therewith for supporting a bottle comprising a bearing and a stop adapted to engage a bottle in the latter, and means operated by the movement of the supporting means to withdraw the stop.

2. In a machine for filling bottles, the combination with a rotatable reservoir, of means movable therewith for supporting a bottle comprising a bearing and a stop normally adapted to engage a bottle in the latter, means operated by the movement of the supporting means to withdraw the stop and means to automatically return the stop to the normal position.

3. In a machine for filling bottles, the

combination with a rotatable reservoir, of means movable therewith for supporting a bottle comprising an inclined bearing and a stop adapted to engage a bottle in the latter, and means operated by the movement of the supporting means to withdraw the stop.

4. In a machine for filling bottles, the combination with a reservoir, of a revoluble siphon projecting into the reservoir, bottle supporting means revoluble with the siphon, comprising an inclined bearing adapted to receive a bottle placed over the long leg of the siphon and a stop normally adapted to engage the bottom of said bottle, and means operated by the movement of said supporting means to withdraw the stop and release the bottle.

5. In a machine for filling bottles, the combination with a reservoir, of a revoluble siphon projecting into the reservoir, bottle supporting means revoluble with the siphon, comprising an inclined bearing adapted to receive a bottle placed over the long leg of the siphon and a stop normally adapted to engage the bottom of said bottle, means operated by the movement of said supporting means to withdraw the stop and release the bottle and a receptacle to receive the released bottle.

6. In a machine for filling bottles, the combination with a reservoir, of a revoluble siphon projecting into the reservoir, bottle supporting means revoluble with the siphon, comprising an inclined bearing adapted to receive a bottle placed over the long leg of the siphon and a stop normally adapted to engage the bottom of said bottle, means operated by the movement of said supporting means to withdraw the stop and release the bottle, and a pivoted receptacle to receive the released bottle.

7. In a machine for filling bottles, the combination with a reservoir, of a revoluble siphon projecting into the reservoir, bottle supporting means revoluble with the siphon, comprising an inclined bearing adapted to receive a bottle placed over the long leg of the siphon and a stop normally adapted to engage the bottom of said bottle, means operated by the movement of said supporting means to withdraw the stop and release the bottle, and a pivoted receptacle mounted below and movable with the supporting means.

8. In a machine for filling bottles, the combination with a reservoir, of a revoluble siphon projecting into the reservoir, bottle supporting means revoluble with the siphon, comprising an inclined bearing adapted to receive a bottle placed over the long leg of the siphon and a stop normally adapted to engage the bottom of said bottle, means operated by the movement of said supporting means to withdraw the stop and release the bottle, a pivoted receptacle mounted

below and movable with the supporting means and means operated by the movement of the receptacle to automatically position the latter to receive the released bottle.

5 9. In a machine for filling bottles, the combination with a reservoir, of a revoluble siphon projecting into the reservoir, bottle supporting means revoluble with the siphon, comprising an inclined bearing adapted to
10 receive a bottle placed over the long leg of the siphon and a stop normally adapted to engage the bottom of said bottle, means operated by the movement of said supporting means to withdraw the stop and release
15 the bottle, a pivoted receptacle mounted below and movable with the supporting means, and means operated by the movement of the receptacle to automatically position the latter to receive the released bottle simultaneously with said withdrawal.

10. In a machine for filling bottles, the combination with a reservoir, of a siphon communicating therewith, a revoluble bottle support adjacent the long leg of the siphon,
25 a pivoted member to close the short leg of the siphon, means to actuate the pivoted member to open the short leg of the siphon, said support adapted to hold a bottle against the actuating means, and means
30 operated by the revolution of the bottle support to automatically withdraw the bottle holding means.

11. In a machine for filling bottles, the combination with a rotatable support, of a
35 reservoir mounted thereon, a plurality of siphons communicating with the reservoir, spring actuated levers normally closing the short legs of the siphons, inclined bearings movable with the rotatable support, slides
40 connected with said levers adapted to be actuated by bottles placed over the long legs of the siphons, means to hold bottles on the inclined bearings, and means actuated by the movement of the rotatable support to withdraw the bottle holding means.

12. In a machine for filling bottles, the

combination with a rotatable support, of a reservoir mounted thereon, a plurality of siphons communicating with the reservoir, spring actuated levers normally closing the
50 short legs of the siphons, inclined bearings movable with the rotatable support, slides connected with said levers adapted to be actuated by bottles placed over the long legs of the siphons, means to hold bottles on the
55 inclined bearings, means actuated by the movement of the rotatable support to withdraw the bottle holding means, receptacles pivotally mounted below the bottle supports, and means to incline the receptacle simultaneously with the withdrawal of the bottle holding means.

13. In a machine for filling bottles, the combination with a rotatable support, of a reservoir mounted thereon, a plurality of siphons communicating with the reservoir, spring actuated levers normally closing the
65 short legs of the siphons, inclined bearings movable with the rotatable support, slides connected with said levers adapted to be actuated by bottles placed over the long legs of the siphons, means to hold bottles on the inclined bearings, means actuated by the movement of the rotatable support to withdraw the bottle holding means, receptacles
75 pivotally mounted below the bottle supports, means to incline the receptacle simultaneously with the withdrawal of the bottle holding means, said receptacle being capable of automatically assuming an upright position during the rotation of the support, and means to support the receptacle in said upright position.

In testimony that we claim the foregoing as our invention, we have signed our names
85 in presence of two subscribing witnesses.

FRANTS CHRISTIAN STOCKEL.
JONAS LUDVIG THEODOR POPP.

Witnesses:

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