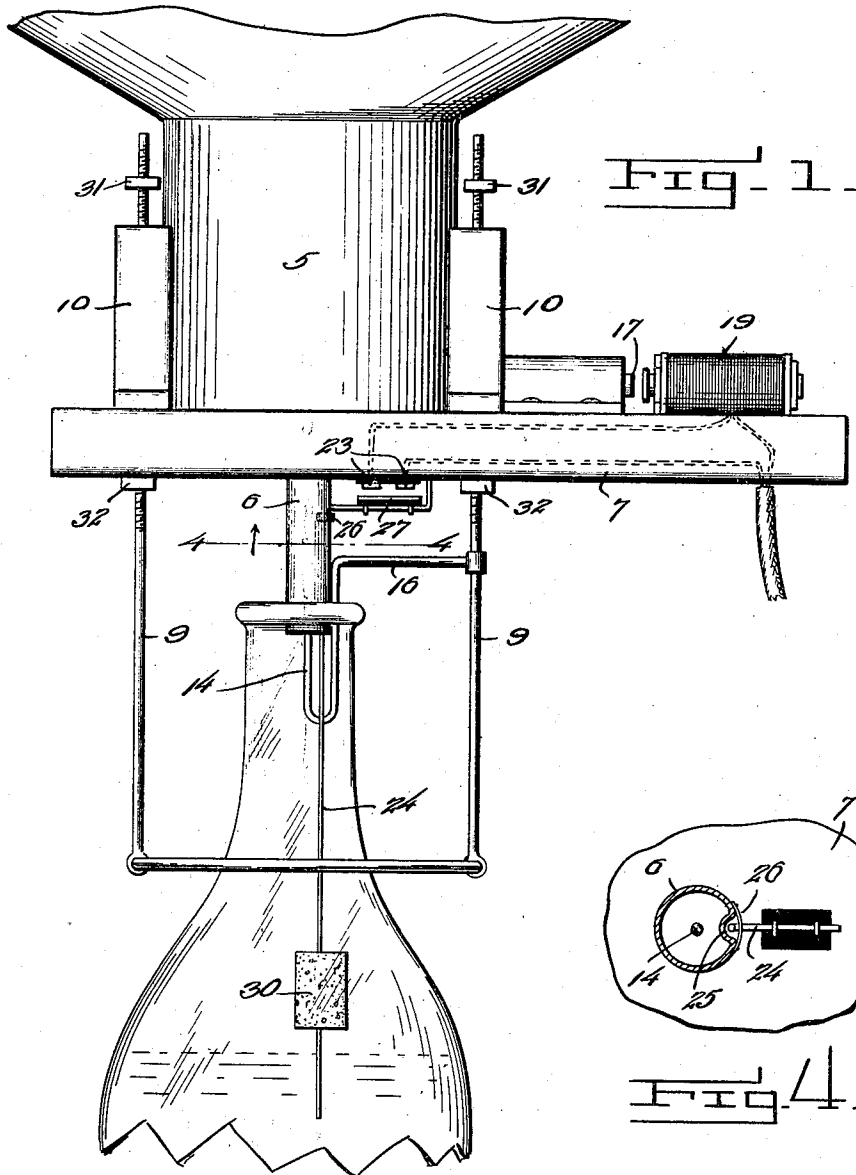


W. J. BEALS.
BOTTLE FILLING MACHINE.
APPLICATION FILED AUG. 2, 1916.

1,242,313.

Patented Oct. 9, 1917.
2 SHEETS—SHEET 1.



WITNESSES

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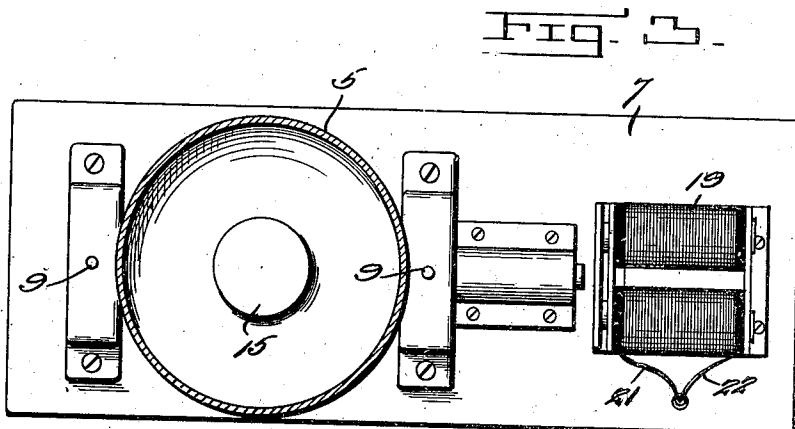
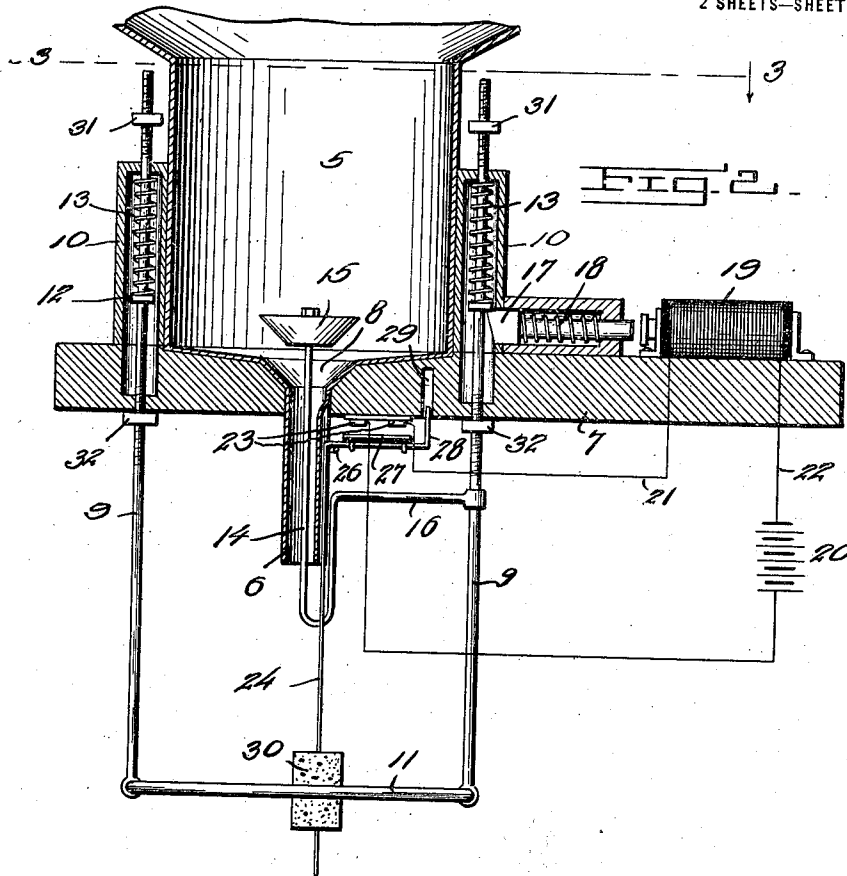
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WILLIAM J. BEALS, OF BELOIT, WISCONSIN.

BOTTLE-FILLING MACHINE.

1,242,313.

Specification of Letters Patent.

Patented Oct. 9, 1917.

Application filed August 2, 1916. Serial No. 112,778.

To all whom it may concern:

Be it known that I, WILLIAM J. BEALS, a citizen of the United States, residing at Beloit, in the county of Rock and State of Wisconsin, have invented certain new and useful Improvements in Bottle-Filling Machines, of which the following is a specification.

This invention relates to bottle filling machines, and particularly to automatic cut-offs therefor.

The primary object of the invention is to provide means for use in connection with the filling nozzle of a bottle filling machine which operates automatically upon the liquid level in the bottles attaining a predetermined height to cut off the flow of liquid from the nozzle.

A further object of the invention is to provide a device of this character which is capable of being readily adjusted whereby the same may be applicable to bottles or jars varying in heights or shapes.

A still further and particular object of the invention is to provide a device of the above mentioned character which is of simple construction, which is composed of but few readily assembled parts, all so constructed and arranged as to prevent wear, breakage or derangement of the same, which is positive in operation, and which will prove thoroughly efficient in the attainment of the ends for which it is designed.

With these objects in view, together with others which will appear as the description proceeds, the invention resides in the novel formation, combination and arrangement of parts, all as will be described more fully hereinafter, illustrated in the drawings, and particularly pointed out in the claims.

The invention will be best understood with reference to the accompanying drawings, wherein:—

Figure 1 is a fragmentary side elevation of a bottle filling machine, and illustrating the practical application of a cut-off device constructed and arranged in accordance with the invention;

Fig. 2 is a sectional view taken vertically through the mechanism, and illustrating the cut-off mechanism in open position;

Fig. 3 is a transverse sectional view taken substantially upon line 3—3 of Fig. 2;

Fig. 4 is a similar view on line 4—4 of Fig. 1.

The invention resides generally in the pro-

vision of a sliding frame adjacent the cut-off spout or nozzle of the filling machine, which frame is adapted to be engaged by and lifted during the insertion of an empty bottle beneath the nozzle. As the frame is lifted, a valve within the nozzle is opened, whereupon liquid within the tank or reservoir flows from the same and into the bottle. Associated with the frame is a latch which normally maintains the frame and valve carried thereby in open position, and an electromagnet is provided near the catch for withdrawing the same when the liquid level within the bottle has reached a predetermined height. An adjustable float extends within the bottle, the said float being adapted when moved in one direction to close a circuit to withdraw the latch and to permit the frame and the valve to move to closing position.

Referring now more particularly to the drawings, the lower or discharge end of the liquid tank or reservoir is indicated at 5, and is provided with a reduced filling outlet or nozzle 6. This nozzle extends downwardly through a base or block 7, the latter being either secured to the tank or upon suitable supports adjacent the filling table. The walls of the tank bottom at the juncture of the nozzle therewith form a valve seat, as indicated at 8.

Arranged for sliding movement toward and away from the discharge nozzle is a frame 9. This frame is of substantially inverted U-shape and has its legs projecting upwardly through suitable housings 10 on opposite sides of the discharge nozzle. The bight portion of the U-frame comprises a loop indicated at 11, and which is adapted to engage over the neck portion of a bottle. Each of the legs of the U-frame carries a shoulder or stop member 12, the latter constituting an abutment for an expansion spring 13 located within the housing encircling the leg of the frame, and being arranged in such manner as to normally force the frame downwardly.

Extending through the discharge nozzle 6 and centrally of the latter is a valve stem 14, the latter being equipped at its upper end with a valve 15 adapted to seat upon the seat 8 and to prevent flow of liquid from the nozzle. The stem 14 projects below the discharge end of the nozzle and is bent or twisted laterally as shown at 16, and is connected to one of the legs of the U-frame 9.

Arranged adjacent one of the legs of the frame 9 is a latch or catch member 17, the latter being held normally in the path traversed by the stop member 12 upon the adjacent leg by an expansion spring 18. The outer face of the latch is beveled inwardly and downwardly as shown so that the stop 12 may pass upwardly within the housing 10 but will be arrested in its downward travel by engagement with the outer upper extremity or shoulder of the latch member, as will be readily understood.

From this construction, it is apparent that the frame 9 and the valve associated therewith are capable of sliding upwardly to open position, and are held against downward movement by the catch member 17. Upon retraction of the latch, the stop 12 on the frame leg will be released, and the spring 13 will operate to force the frame and valve downwardly into closed position. Associated with the latch 17 for withdrawing the same from engagement with the stop 12 at certain times, is an electromagnet 19. This electromagnet is mounted upon the base or block 7 in close proximity to the rearmost end of the latch and when the same becomes energized, the latch will be attracted to release the U-frame. The electromagnet may be supplied with electric energy by means of the source indicated at 20, the wires 21 and 22 forming conductors for the same. These wires extend adjacent the discharge nozzle of the reservoir, and are connected to spaced contacts 23. These contacts are preferably located upon the base 7 directly beneath the reservoir.

A vertical sliding rod 24 is arranged upon the discharge nozzle 6, and projects below the lowermost end of the same. The discharge nozzle is provided with a longitudinally extending groove portion 25, which houses the rod 24, and a stop or limiting member 26 is arranged upon the nozzle to limit the lower movement of the rod. This rod is provided adjacent its upper end with an angularly extending portion which carries a contact plate 27, the latter being insulated from the rod, and being of a length sufficient to bridge the contacts 23 when moved into engagement with the same. The outer extremity of the angular portion of the rod 24 is bent upwardly as at 28 and slides within similarly disposed grooves or openings 29. The lower extremity of the rod carries a float, such as a cork 30, and the latter is preferably arranged upon the rod in such manner as to be adjustable vertically upon the same.

The nozzle 6 is of such diameter as will permit of the mouth and neck portion of the bottle inclosing the same. The float 30 is also adapted to extend within the bottle opening, and must, therefore, of necessity be of narrow diameter. In filling a bottle,

the latter is inserted beneath the tank and within the looped portion 11 of the U-frame. The cork and rod 24 extend within the bottle neck, as does the lower end of the nozzle 6. Sliding upward movement of the bottle in this position causes the shoulder portion thereof to engage and move the loop portion 11 of the frame upwardly, whereupon the valve 15 is opened or raised from its seat, and the stop 12 passes above the latch 17. The bottle may then be seated upon the table and the liquid flows into the same. When the liquid level reaches a height within the bottle to float the cork 30, the rod 24 carried thereby moves upwardly and bridges the contacts 23, whereupon the circuit in which the electromagnet is located is closed, and the said magnet energized. The latch 17 is withdrawn against the tension of the spring 18, and the U-frame is released and drops under impulse of the springs 13. This operation closes the valve 15 as is obvious. By adjusting the float 30 upon the supporting rod 24, it is obvious that the device may be rendered applicable to bottles varying in sizes, shapes and constructions.

The legs of the frame 9 are preferably provided with spaced adjustable stop members 31 and 32 respectively, the former limiting the downward movement of the frame, while the latter limits the upward movement of the same. As illustrated in the drawings, these stops may be in the form of nuts threadedly engaged upon the legs 9 of the U-frame. By adjusting these nuts, it is apparent that the extent of movement of the frame may be readily regulated.

While the above is a description of the preferred embodiment of the invention, it is apparent that various changes in the minor details of construction and arrangement of parts may be resorted to, if desired, without departing from the spirit of the invention or exceeding the scope of the claims.

What is claimed is:—

1. In a bottle filling machine, the combination with the filling nozzle, of a valve in said nozzle, a sliding frame adjacent said nozzle, a connection between said frame and valve, the said frame being adapted when moved in one direction to open said valve and to close the same when moved in the opposite direction, means for normally forcing said frame to valve closing position, a catch for holding said frame in valve opening position, a float, an electromagnet adapted when energized, to retract said catch, and means governed by movement of said float for closing an electric circuit through said electromagnet, substantially as described.

2. In a bottle filling machine, the combination with the filling nozzle, of a valve in said nozzle, a sliding frame, a connection

between said sliding frame and said valve, means tending normally to hold said frame in valve closing position, a catch for locking said frame with said valve open, an electromagnet associated with said catch and adapted when energized to move the same to frame releasing position, a float, and a bridge member controlled by the movements of said float for closing a circuit through said electromagnet, substantially as described.

3. In a bottle filling machine, the combination with the filling nozzle, frame legs arranged upon opposing sides of said nozzle and capable of sliding longitudinally of the same, a valve in said nozzle, a rod extending through said nozzle and connecting said valve and one of said legs, a loop connecting the lower ends of said legs and adapted to engage over a bottle neck, housings inclosing the upper portions of said legs, stops on said legs within said housings, springs interposed between said stops and said housings to normally force said legs downwardly, adjustable stops on said legs for limiting the upward and downward movement, a latch adapted to cooperate with one of said stops to maintain said frame in upward position, an electromagnet adapted

when energized to withdraw said latch, a rod associated with said nozzle and capable of moving inwardly and outwardly thereof, a float at the lower end of said rod, a bridge plate carried by said rod, and contacts adapted to be engaged by said bridge plate when said rod is moved upwardly, the terminals of an electric circuit including said magnet being secured to said contacts, substantially as described.

4. In a bottle filling machine, the combination with a filling nozzle, of a valve in said nozzle, a sliding frame, a loop portion carried by said frame and being disposed below and concentric with said nozzle, the said portion being adapted to be engaged by a bottle, a connection between said frame and valve whereby the latter will be controlled by movements of the former, means for holding said frame with said valve open, a float, and means governed by the movements of said float for releasing said frame, substantially as described.

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

WILLIAM J. BEALS.

Witnesses:

F. E. SOUTHWORTH,
IDA I. WARD.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."