(No Model.) 2 Sheets—Sheet 1.

M. P. HEDDY.

LIQUID BOTTLING MACHINE.

No. 490,020. Patented Jan. 17, 1893.

Fig. 1.

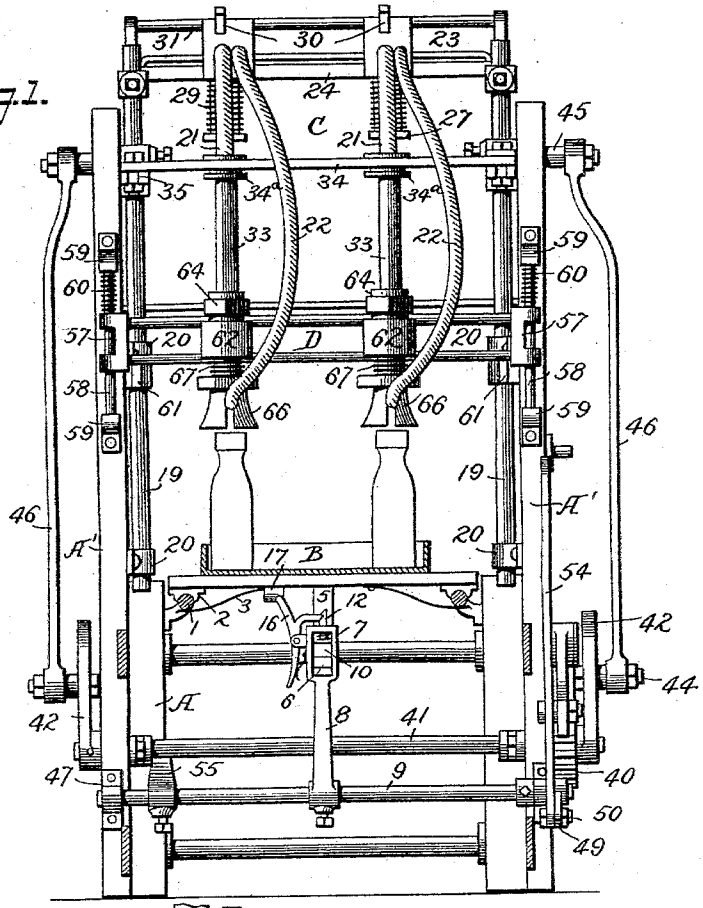

Fig. 4.

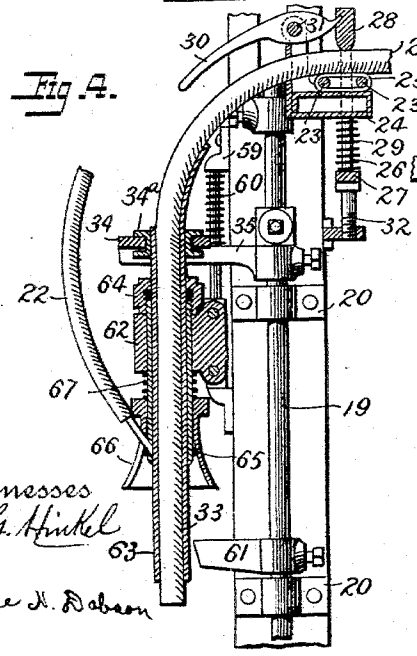

Fig. 5.

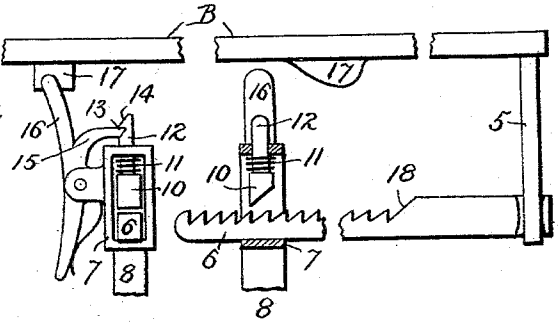

Fig. 6.

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(No Model.) 2 Sheets—Sheet 2.

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LIQUID BOTTLING MACHINE.

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Fig. 2.

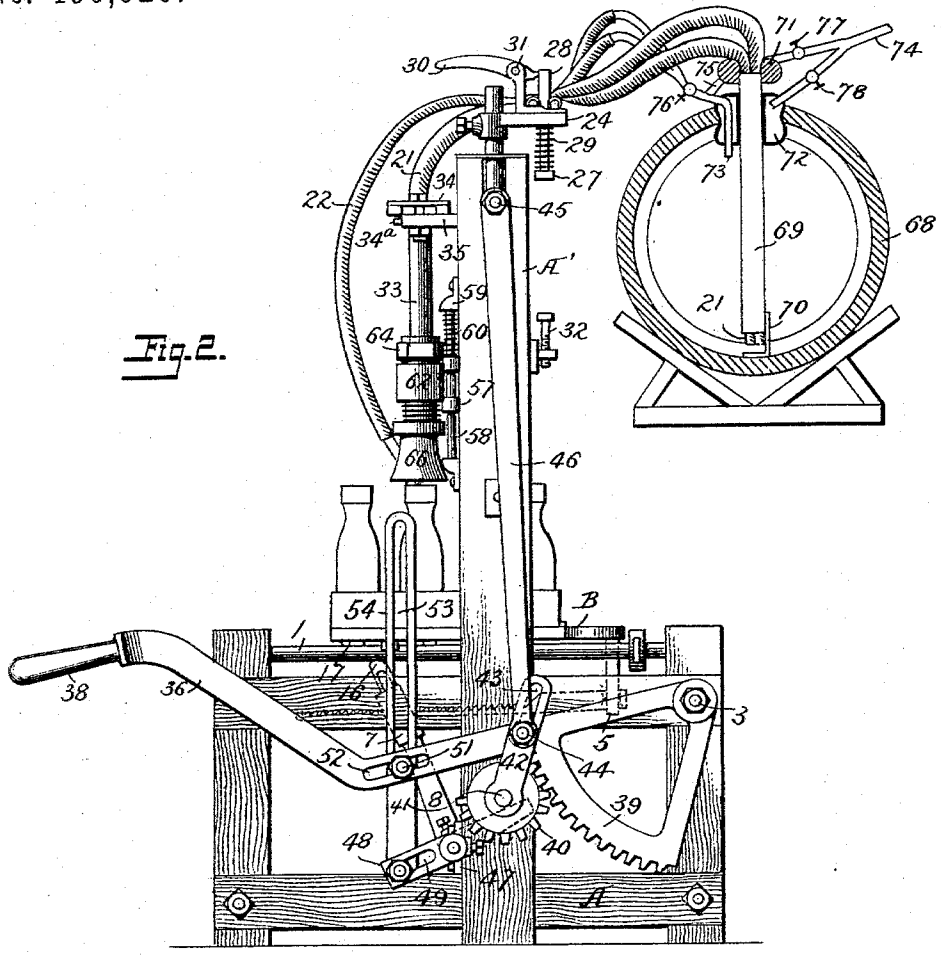
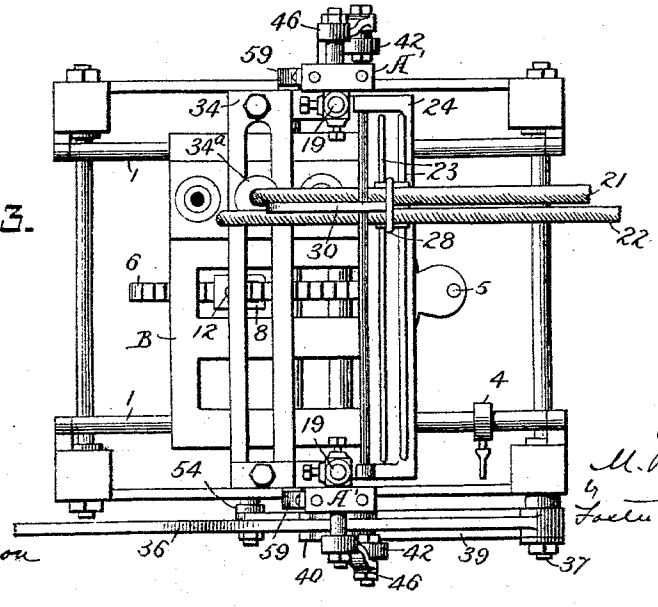


Fig. 3.



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UNITED STATES PATENT OFFICE.

MILLER P. HEDDY, OF HILLBURN, NEW YORK.

LIQUID-BOTTLING MACHINE.

SPECIFICATION forming part of Letters Patent No. 490,020, dated January 17, 1893.

Application filed May 21, 1892. Serial No. 433,917. (No model.)

To all whom it may concern:

Be it known that I, MILLER P. HEDDY, a citizen of the United States, and a resident of Hillburn, Rockland county, New York, have invented certain new and useful Improvements in Liquid-Bottling Machines, of which the following is a specification.

My invention relates to machines for bottling liquids and it consists in an improved mechanism in which the movement of a single lever acting upon a system of automatic devices causes a succession of rows of bottles to be filled, a row at a time, with great rapidity and without any difficulty due to the gases or foam present in the liquid.

Reference is made to the following specification for a detailed description of my invention and to the accompanying drawings in which—

Figure 1, is a front view of my improved bottling machine. Fig. 2, is a side view of the same. Fig. 3, is a plan view. Fig. 4, is a sectional view of a portion of the machine showing the position of the parts when the bottles are being filled, and Figs. 5 and 6, are detail views of the devices for feeding the table.

The main frame of the machine A, consists of a suitable arrangement of posts and cross pieces or braces securely bolted together and adapted to sustain the various portions of the mechanism.

The table B, upon which the bottles to be filled rest slides backward and forward in the machine upon a pair of parallel rails 1, the table being provided with guides 2, which rest upon the rails, and spring clips 3, which pass under the rails and prevent the table from being accidentally displaced. Upon one of the rails is an adjustable stop 4, to limit the rearward motion of the table. The bottles to be filled are arranged upon the table in a series of parallel rows running across the machine. As shown in the drawings there are four rows with two bottles in each row and there are two fillers so that all of the bottles in a row may be filled at the same time. The bottles are preferably arranged in boxes or cases of proper size and the case placed upon and removed from the machine.

I will now describe the mechanism for moving the table after each row of bottles is filled the proper distance to present the next row of bottles to the fillers. At the rear end of the table is a downwardly projecting stud 5, in which is loosely pivoted the rear end of a ratchet bar 6. The free end of the ratchet bar passes through a loop 7, upon the end of a pawl lever 8, which is mounted upon a rock-shaft 9. A pawl 10, within the loop 7, is forced normally into engagement with the rack by a spiral spring 11, which is wound around the shank 12, of the pawl. The shank of the pawl extends through the upper side of the loop and at its upper end is formed with a notch 13, and a beveled end 14. A spring catch 15, having a beveled end adapted to enter the notch 13, is pivoted upon the upper end of the lever 8, and a releasing lever 16, which is attached to the catch 15, projects upwardly nearly to the under side of the table when the pawl lever 8, is vertical.

In Fig. 6, the table is shown in its rear position and the lever 8, is shown swinging backward in the direction of the arrow to feed the table forward after the first row of bottles has been filled. The pawl is locked out of engagement with the rack, but as the lever 8, swings backward the releasing lever 16, comes in contact with a projecting cam 17, upon the table which withdraws the catch and permits the pawl to engage the rack. After the table is fed forward the requisite number of times to fill all of the bottles the pawl rides up the incline 18, near the end of the rack and is locked in an elevated position by catch 15, so that the table may be pushed backward to begin a new series of bottles, the ratchet bar sliding freely beneath the pawl which is locked out of engagement with the ratchet teeth.

A vertically moving frame C, is provided with side rods 19, which slide in guides 20, fastened to uprights A', of the main frame. The flexible filling tubes 21, and vent tubes 22 pass over a pair of cross-bars 23, of the frame C. Beneath the bars 23, is a base piece 24, and around the bars beneath the tubes I preferably place a flexible band 25. Passing through the base piece upon each side of each pair of tubes is a rod 26, and these rods are joined at their lower ends by foot pieces 27, and at their upper ends they are connected to wedge shape valves 28. The valves are

normally drawn down so as to compress the tubes against the base piece by springs 29, coiled around the rods 26, and interposed between the base piece 23, and the foot piece 27. Each valve is provided with a lever 30, pivoted on a rod 31, of the frame C, for opening the valve when it is desired to do so. The valves are opened and closed automatically at the proper times when the machine is in operation. As shown this is accomplished by the foot pieces 27, coming in contact with studs 32, upon the main frame when the frame C, is depressed to its lowest limit. The filling tubes extend forward from the valves and pass down through the metal tubes 33, which are held at their upper ends between bars 34, by means of a perforated movable collar 34ª of the frame C, the bars 34, being connected at their ends to brackets 35, upon the side rods 19. As the frame C, is reciprocated it therefore carries the filling tubes up and down with it, the valves being closed excepting when the frame is in its lowest position in which position the filling tubes extend nearly to the bottoms of the bottles.

The mechanism for reciprocating the table and the frame C, is as follows:—A lever 36, is pivoted at 37, near the rear end of the machine and is provided with a handle 38, in a convenient location in front of the machine. Connected to the lever is a segmental gear 39, which meshes with a mutilated pinion 40, upon a shaft 41, passing through the uprights A′. Upon the ends of the shaft 41, is a pair of cranks 42, having slots 43, in which are bolted crank pins 44. The crank pins 44, are connected to arms 45, upon the frame C, by connecting rods 46, and the throw or travel of the frame C, is regulated by adjusting crank pins 44, in the slots 43. The rock shaft 9, is mounted in bearings 47, at the lower ends of the uprights A′, and upon one end of the rock shaft is an arm 48, having a slot 49, in which is bolted a stud 50. A stud 51, is adjustably fastened in a slot 52, of the operating lever 36, and it passes through a slot 53, in the upper portion of a lever 54, which is pivoted upon the stud 50. An arm 55, is adjustably fastened upon the rock shaft 9, under the shaft 41, to limit the movement of the rock shaft in one direction.

D, is a secondary sliding frame composed of a pair of rods 56, having their ends fastened in heads 57, which slide upon vertical guide rods 58, which are held in supports 59, upon the front side of the uprights A′. The frame D, is normally pressed down against the lower supports 59, by springs 60, which abut against the upper supports; and it is raised periodically by arms 61, upon the side rods of the frame C. Upon the rods 56, of the frame D, are brackets 62, which have vertical perforations to receive tubes 63, said tubes being free to slide vertically in the perforations. The tubes 63, are surmounted by packing nuts 64, which rest upon the brackets and at their lower ends they are beveled to enter the bottles and surrounded by flexible rings 65, which stop up or fill the necks of the bottles. A flaring mutilated cap 66, is also attached to the tube 63 to guide it into the neck of the bottle. The tube 63, and its connected parts, which I shall hereinafter refer to collectively as a stopper, is free to move vertically to a limited extent, in the bracket and it is held normally depressed by a spring 67, interposed between the bracket and the mutilated cap 66, which spring serves to press the stopper into the bottle with a yielding pressure. The tubes 33, slide freely through the stoppers and extend nearly to the bottoms of the bottles when the latter are being filled. The packing nuts 64, inclose packing material 64ª, thus forming air tight joint between the tubes 33 and 63. The vent tubes 22, connect with the annular space between the tubes 33 and 63, near the bottom of the latter and draw the air and gases from the bottles as they are being filled.

The barrel 68, from which the liquid is to be drawn is preferably supported at a height somewhat above the table so that the liquid may be siphoned into the bottles. A metal tube 69, passes through the bung and nearly to the opposite side of the barrel, it being provided with a foot piece 70, to hold it away slightly from the opposite side of the barrel and prevent it from being closed thereby. The tube 69, is provided with an air tight rubber cap 71, and the filling tubes 21, are passed through this cap and through the tube 69, nearly to the lower side of the barrel. An annular inflated air bag 72, surrounds the tube 69, and completely closes the bung hole. Through the air stopper 72, a vent tube 73, passes the outer end of which is connected to vent tubes 22. A pipe 74, supplies air under pressure from a suitable source to inflate the air stopper and a branch pipe 75, connects with the vent tube 73. Valves 76, 77 and 78, control the passage of air through the various pipes. When it is desired to inflate the air stopper the valve 78, is opened and the valve 77, closed; and when it is desired to start the flow of liquid through the pipes 21, before the siphonage is created the valves 76, and 78 are closed and the valve 77, opened thereby admitting air under pressure to the interior of the barrel.

I will now describe briefly the operation of the machine. It is to be noted that the frame C, is to support as many filling tubes as may be desired although I have only shown two in the accompanying drawings. A case of bottles is placed upon the table and the table is then pushed back against the stop 4, which brings the front row bottles under the stoppers. This is done while the handle is in its lowest position. The handle is then raised to its highest position during which operation the stoppers first close the mouths of the bottles, the filling tubes then pass down into the bottles and finally the valves are opened automatically and the liquid passes into and fills

the bottles. At the same time the pin 51, reaches the upper end of the slot 53, and draws the link 54, upward thereby vibrating the rock shaft 9, and throwing the pawl 10, backward over a portion of the ratchet bar during which movement of the pawl is released by the lever 16, and cam 17. When the operating lever is drawn down, the frame C rises, first permitting the valves to close automatically next withdrawing the filling tubes from the bottles and then raising the stoppers from the bottles. The table being now free to move the stud 51, strikes the bottom of the slot 53, and presses the link 54 downward thus rocking the shaft 9, and drawing the table forward to present the next row of bottles to the fillers.

The various parts of my improved machine are made adjustable so that it may be adapted to fill bottles of different sizes when they are set close together in the cases. By varying the position of the crank pin 44, in the crank 42, the movement of the frame C, may be adapted to bottles of different heights. The brackets 62, supporting the stoppers and filling tubes are adjustable laterally upon the rods 56, so that they may be brought closer together if desired. By varying the position of the studs 50 and 51, any required movement of the rock shaft and consequently of the table may be attained. The arm 55, upon the rock shaft is adjusted to come in contact with the shaft 41, at the proper time and thus form a stop to limit the movement of the rock shaft and the forward movement of the table. The studs 32, are also adjustable vertically so that the opening and closing of the valves may be under control. When it is desired to open one of the valves without opening the others, its thumb lever 30, may be depressed.

Without limiting myself to the precise construction and arrangement of parts shown and described, I claim:—

1. The combination with a receptacle containing liquid to be bottled, a table or support for one or more bottles, of a vertically sliding frame, a filling tube leading from the receptacle and supported by said frame, a single valve for closing the filling tube and mechanism for opening the said valve automatically when the frame is lowered, substantially as described.

2. The combination with a support for one or more bottles, of a stopper arranged to fit the neck of a bottle, a movable support for the stopper constructed to carry it to and from the bottle, a filling tube sliding within the stopper a vertically moving support for the filling tube, a valve for the filling tube, arms upon the filling tube support for raising the stopper support, and a stud upon the main frame for opening the valve automatically by the downward movement of the filling tube support, substantially as described.

3. The combination with a series of filling tubes and normally closed valves therefor, and mechanism for raising and lowering the tubes and automatically opening the valves when the tubes are lowered, of a power lever a sliding table and mechanism for shifting the table when the filling tubes are raised to present new bottles to be filled the said mechanisms being connected and all operated from the power lever, substantially as described.

4. The combination with a sliding table, of a ratchet bar connected thereto, a reciprocating pawl carrier having a pawl for engaging with the teeth of the ratchet bar, a catch for holding the pawl out of engagement with the ratchet-bar a releasing lever connected to the catch, and a cam upon the table for operating the releasing lever, substantially as described.

5. The combination with the table and the cam connected to the table, of the ratchet bar having an inclined surface 18, near its rear end, the pawl carrying arm, the pawl having a shank with a notch and a beveled end, a pivoted catch for engaging the notch, and a releasing lever arranged to engage the cam upon the table and withdraw the catch substantially as described.

6. The combination with the main frame, the rails, the table adapted to slide upon the rails, and the ratchet bar connected to the table, of a rock shaft beneath the table, an arm upon the rock shaft carrying a spring pawl, means for raising the pawl and locking it out of engagement with the ratchet bar when the table reaches its forward limit, and means for automatically releasing the pawl when the table is in its rearward position, whereby the pawl is prevented from interfering with the rearward movement of the table but automatically comes into action to draw the table forward, substantially as described.

7. The combination of the table, the ratchet bar, the rock shaft, the pawl carrying arm, the spring pawl upon the arm, the arm 49, the slotted link 54, pivoted to the arm 49, the slotted lever 36, and the adjustable stud 51, substantially as described.

8. The combination with the vertically sliding frame C, carrying the filling tubes and means for moving the same, of a secondary sliding frame D, carrying the stoppers, said frame D, being normally at rest in its lowest position, and arms 61 upon the frame C, arranged to engage and raise the frame D, as the frame C, rises, substantially as described.

9. The combination with the tubular stopper fitting within the bottle neck, the flaring mutilated cap surrounding the stopper, the vent tube communicating with the interior of the stopper, the filling tube arranged to slide vertically within the stopper, the bracket in which the stopper slides vertically and the movable frame supporting the bracket, substantially as described.

10. The combination with a stud 32, upon the main frame, of a vertically movable frame C, a flexible filling tube carried by said movable frame, a valve also carried by said frame and normally spring pressed upon said tube, said valve having a foot piece adapted to en-

gage the stud when the frame C, is lowered, whereby the valve is held open when the filling tube is in its lowest position, substantially as described.

11. The combination with the base piece 24, and cross bars 23, connected to a movable frame, of a flexible band 25, surrounding the bars 23, a filling tube 21, supported upon the band, a valve 28, rods 26, connected to the valve and springs 29, arranged to hold the valve normally closed, substantially as described.

12. The combination with the sliding frame, the filling tubes carried by the frame, the spring operated valves normally closing the filling tubes, fixed studs upon the main frame which engage and open the valves when the frame is lowered and thumb levers 30 upon the frame and connected to the valves, substantially as described.

13. The combination with a barrel or receptacle containing liquid to be bottled, of a tube 69, extending into the barrel, filling tubes 21, passing into said tube 69, and surrounded by an air tight cap 71, an inflated stopper surrounding the tube 69, and closing the bung hole, and a vent tube passing through said stopper, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

MILLER P. HEDDY. [L. S.]

Witnesses:
CHAS. N. HOGAN,
GEORGE FREEMAN.