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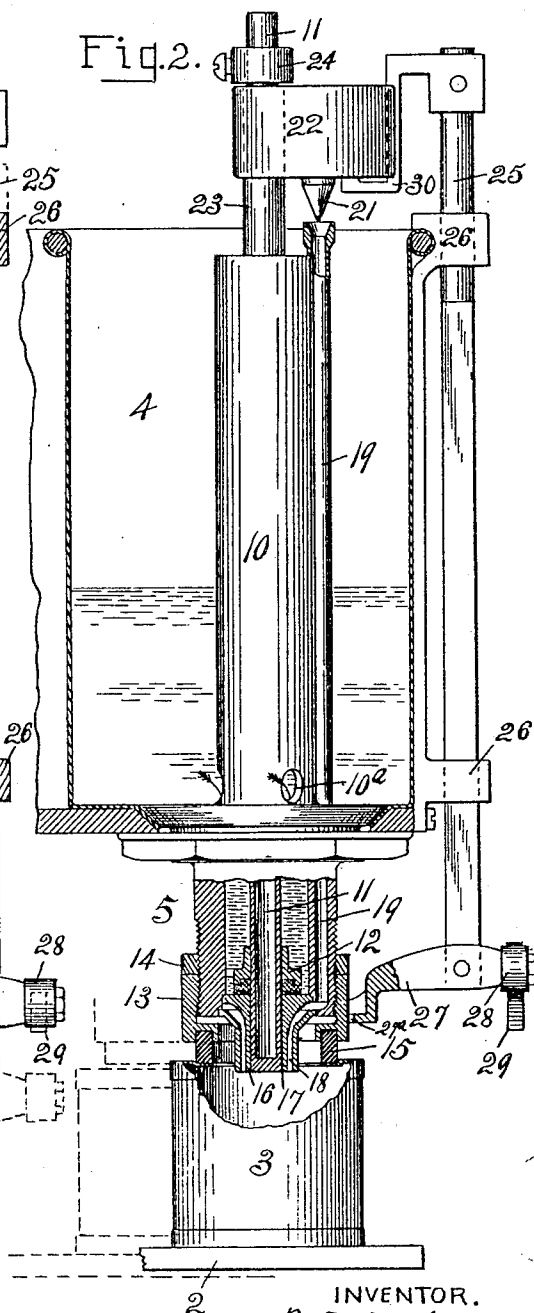
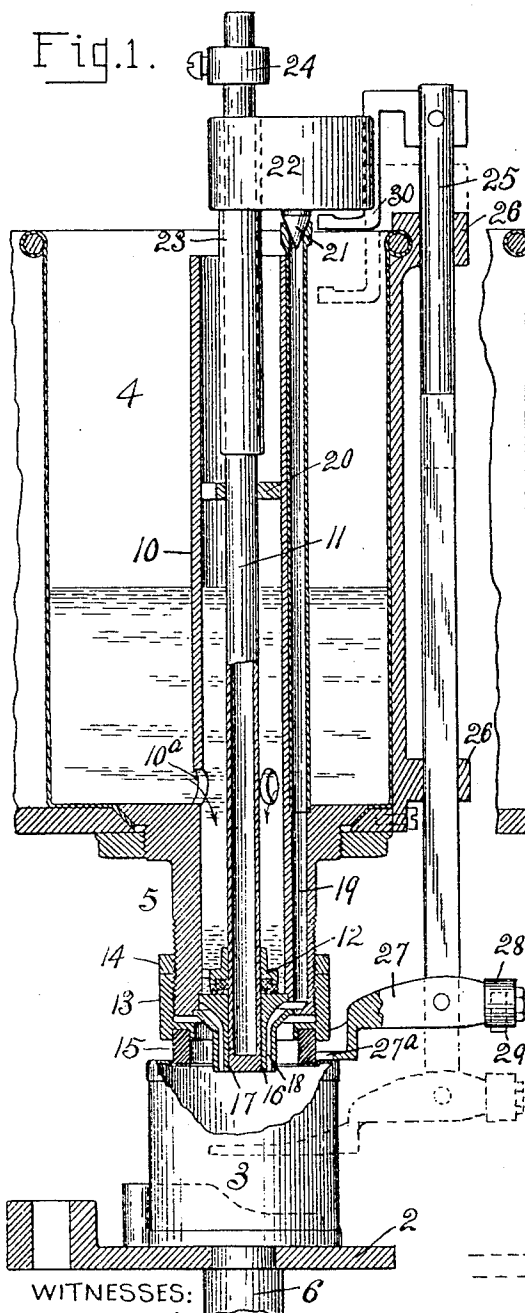
No. 874,874.

PATENTED DEC. 24, 1907.

B. E. TAYLOR.
FILLING NOZZLE FOR CANNING MACHINES.

APPLICATION FILED MAR. 7, 1907.

2 SHEETS—SHEET 1.



WITNESSES:

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Hazel B. Kett

INVENTOR.

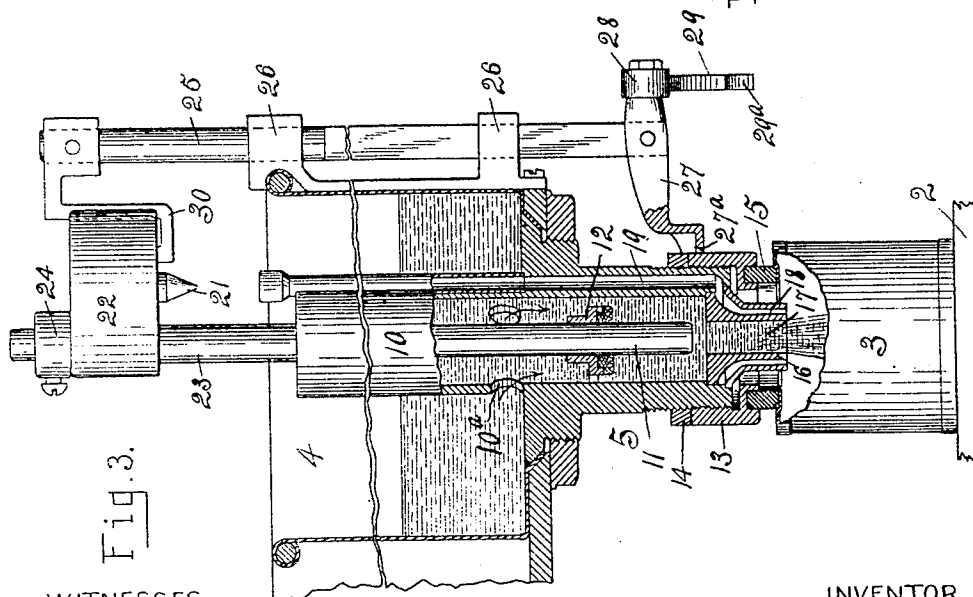
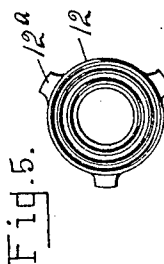
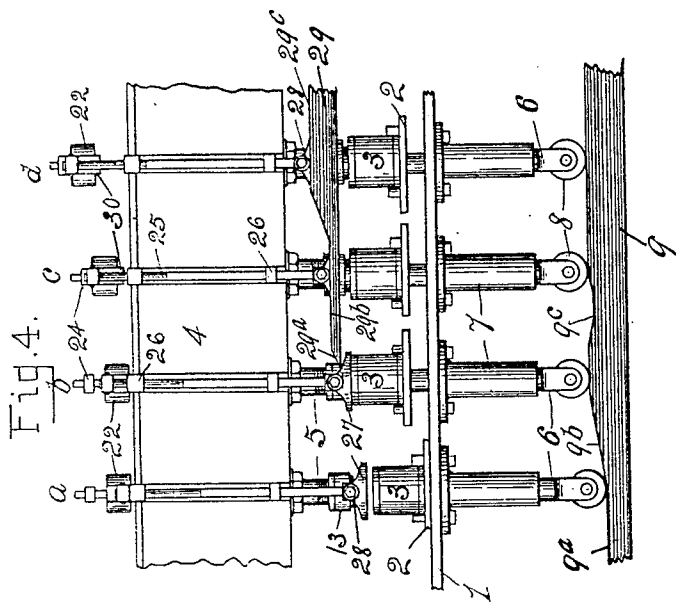
B. E. Taylor,
By Owen & Owen,
his attorneys

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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

BURT E. TAYLOR, OF WAUSEON, OHIO, ASSIGNOR TO C. D. CHEWNING, OF RANDOLPH, NEW YORK.

FILLING-NOZZLE FOR CANNING-MACHINES.

No. 874,874.

Specification of Letters Patent.

Patented Dec. 24, 1907.

Application filed March 7, 1907. Serial No. 361,184.

To all whom it may concern:

Be it known that I, BURT E. TAYLOR, a citizen of the United States, and a resident of Wauseon, in the county of Fulton and State of Ohio, have invented a certain new and useful Filling-Nozzle for Canning-Machines; 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, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

My invention relates to the class of machines employed for supplying liquid to cans, bottles or the like, and has particular reference to the filling valves or nozzles of such machines.

The object of my invention is the provision of a valve or nozzle of the type described, which is highly efficient in its operation, simple in its construction, and intended to obviate the difficulties and imperfections incident to the use of the forms of valves heretofore employed.

Further objects of the invention, as well as the operation, construction and arrangement of the parts thereof will be apparent by reference to the following detailed description, and a preferred embodiment of the invention is shown in the accompanying drawings, in which,—

Figure 1 is a vertical section of a portion of a tank and associated filling nozzle embodying my invention, with a can elevated in position to be filled and the liquid and air-valves of the nozzle closed. Fig. 2 is a similar view of the tank with the lower portion of the nozzle in section, a can in position to be filled and the air-valve open. Fig. 3 is a similar view of the tank, nozzle and can with both valves open and the liquid discharging into the can. Fig. 4 is a partial side elevation of a machine embodying my invention showing the four successive positions of a can and associated valve operating mechanism from the time a can is fed to the machine until the valve is completely open, and Fig. 5 is a bottom view of the liquid valve of the nozzle.

Referring to the drawings, 1 designates the rotary can-carrying table of a filling-machine with which I have shown my invention as

being associated; 2 the vertically movable can-carrying pockets, which are arranged around the edge of a circular table; 3 the cans to be filled; 4 the rotary liquid tank which is mounted over the table and relatively fixed to have an even turning movement therewith, and 5 the filling valves or nozzles, which comprise the features of my present invention, one of which is carried by the tank above each pocket 2 of the can-carrying table.

The can-carrying pockets 2 are fixed to the upper ends of short shafts 6, which are mounted for vertical movement within sleeves 7 secured to the under side of the table 1, and carry idler-rolls 8 at their lower ends. These rolls travel on a stationary track 9 beneath the table, said track having its surface fashioned to impart the requisite vertical movements to the pockets and cans carried thereby, as will be hereinafter more fully described.

Each filling-valve or nozzle 5 comprises a vertically-disposed tubular valve-chamber or casing 10, which is tapped through the bottom of the tank 4 in any suitable or convenient manner, and has its lower end projecting below the tank to form a nozzle and its upper end preferably extended substantially to the top of the tank or a sufficient height therein to form a guide for the plunger 11 carrying the valve-member 12 adjacent its lower end, as shown. The chamber 10 is provided with lateral openings 10^a at the bottom of the tank through which the liquid in the tank is intended to pass. Threaded to the lower end of the valve-chamber 10 is a nipple 13, which is secured against movement relative to the chamber by a locking-nut or collar 14 and has its lower end formed with an intumed annular flange to the under side of which is suitably secured the gasket ring 15 of rubber or other suitable material for contacting and hermetically sealing the top of a can 3 at the margin of its filling opening when the can is raised for the purpose of being filled. The lower end of the valve-chamber 10 is closed by a plug 16, except for an axial opening 17 therethrough in which the portion of the plunger disposed below the valve 12 closely fits when the plunger is down, as shown in Figs. 1 and 2. This plug forms the nozzle end and is of sufficient length to project a short distance

within the can, or to a point therein at which it is desired to fill it, and is provided in its casing with an annular channel 18, which communicates at its upper end with a tube or channel 19 located at one side of the chamber 10 and leading to the top of the tank. This vent or passage serves as a means of escape from the can of the air displaced by the discharge of liquid therein. It will be apparent that as soon as the liquid rises to a sufficient height to submerge the mouth of such vent the further escape of air will be prevented and the flow of liquid into the can automatically stopped.

The valve 12 comprises a disk-like member, which is fixedly secured to the plunger 11 in position to seat upon the upper or inner end of the plug 16 and is faced on its under side with a suitable soft metal, such as Babbitt or the like, the surface of which is annularly corrugated to insure a close, perfect and lasting fit between it and its seat. This valve-member is formed with a plurality of radial ears 12^a, shown in Fig. 5, which are intended to slidably coact with the wall of the valve-chamber 10 to maintain the valve and lower end of the plunger centered therein when in open position, as shown in Fig. 3. The upper end of the plunger is centered within the chamber by a spider 20, which is fixed to the plunger and slidably operates within the chamber.

The upper end of the air-vent or passage 19 is formed with a conically-ground seat in which a conical valve 21 is normally intended to seat to close said passage against the admittance of air. This valve is carried at the under side of a weight 22, which in turn is carried by a sleeve 23 slidably mounted upon the plunger 11 above the spider 20. At a predetermined point in the raising movement of the weight 22 it is intended to coact with a fixed collar 24 on the plunger 11 and cause a raising of said plunger and the attached valve 12 to open the passage through the nozzle 5 for the purpose of permitting a discharge of the liquid into the associated can.

A raising of the weight 22 for the purpose of opening each valve 12 and 21 at the proper times during a revolution of the can-carrying table 1 and liquid tank 4 is effected through the medium of the vertically reciprocatory rod or member 25, which is movably carried without the tank by guides 26 fixed to the side of said tank and has a foot 27 secured to its lower end, which carries an idler-roll 28 for traveling on the stationary cam track 29. Secured to the upper end of the rod 25 is a lifting-finger 30, which is fashioned to extend over the rim of the tank and down into the same a short distance, and terminates with a horizontally bent portion, which is intended to coact with the under side of the weight 22 and effect a raising thereof when

the rod is raised. The vertical or downwardly extending portion of the finger 30 slidably operates within a registering groove in the end of the weight 22 to prevent a turning of the weight relative to the plunger 11, and is of sufficient length to permit the rod and finger to have a limited raising movement before the terminal of the finger engages and raises the weight, as shown by dotted lines in Fig. 1. The foot 27 on the rod 25 has its inner end forked and freely straddling the associated nozzle, as shown at 27^a, to adapt it to be engaged by the marginal portion of a can top so that it is raised from the position shown in dotted lines to that shown in full lines in Fig. 1 by the elevating of the can to its filling position. It will be noted by reference to Fig. 1 that the idler-roll 28 of the foot 27 is normally below the plane of the track 29 so that should the feeding of a can to one of the pockets 2 of the machine be missed the roll 28 will pass under the track and the associated valve will consequently remain closed during that revolution of the table and tank, thus preventing a discharge of the liquid upon the table.

In Fig. 4 is illustrated the four different positions which a can and the associated valve operating means of my machine successively assume during a revolution of the rotary parts. In this figure position *a* shows the parts as they are when a can is first fed to the machine; position *b* corresponds to that shown in full lines in Fig. 1, with the can raised in contact with its nozzle, and the foot 27 and its attached parts elevated by the can in position for the idler-roll 28 to contact with the inclined nose 29^a of the track 29; position *c* corresponds to that shown in Fig. 2, with the idler-roll 28 traveling on the straight horizontal portion 29^b of the track 29 and the weight 22 raised sufficient to open the valve 21 but not to raise the plunger 11 and attached valve 12; and position *d* corresponds to that shown in Fig. 3, with the idler-roll 28 operating on the highest plane 29^a of the track 29 and both valves 12 and 21 open to permit a discharge of liquid into the can.

The operation of my invention during a running of the machine is as follows: As the table 1 and tank 4 revolve a suitable can feeding mechanism, not shown, feeds a can 3 to each pocket 2 as it passes such mechanism and while its idler-roll 8 is traveling on the lower plane 9^a of the track 9. The roll 8 then travels up an incline 9^b of the track 9, which effects an elevation of the can so that its top will have contact with the gasket-ring 15 and will also engage the foot 27 of the valve operating rod 25 whereby to raise said foot and rod sufficiently for the idler-roll 28 to strike the inclined nose 29^a of the track 29. As the roll 28 travels up such incline to the plane 29^b of the track the weight 22 and

its attached valve 21 are raised sufficiently to open the upper end of the air-vent tube 19 so that the liquid held in the mouth or lower end of the air passage from the last can filled will be released and permitted to drop into the can. While the idler-roll 28 is on the plane 29^b of the track, the idler-roll 8 drops within a slight depression 9^c in its track to permit an instantaneous lowering of the can from contact with the nozzle so as to permit the air displaced by the dropping of the liquid into the can from the vent passage to escape therefrom between the can top and gasket 15. This instantaneous lowering action of the can is an important feature in the proper operation of the machine and is claimed in my application No. 361,185, and filed March 7, 1907. The liquid having been released from the vent passage, the idler-roll 28 travels to the highest plane of its track, thus raising the plunger 11, valve 12 and weight 22 to the full open position shown in Fig. 3 to permit a discharge of the liquid contents of the tank into the can. When the liquid has risen to a sufficient height in the can to submerge the end of the nozzle or plug 16 which projects a short distance therein, the annular mouth 18 of the air passage is closed, thus preventing the further escape of air from the can and stopping the discharge of liquid therein. After a can has been filled and at a predetermined point in the revolution of the rotary parts, the track 29 terminates with a declining surface, not shown, and the surface of the track 9 drops to the lower plane 9^a thereof, so that the plunger 11 and valves 12 and 21 first drop by gravity to their normal positions to close the nozzle 5 and stopper the air-vent, after which the can drops from its contact with the nozzle to permit its removal from the machine.

While I have shown and described my improved filling-valve as associated with a particular type of filling-machine, I do not wish to restrict myself to such use, as it is apparent that it may be employed in any connection to which it may be adapted or appropriate; and I wish it to be understood that I do not desire to be limited to the exact details of construction shown and described, for obvious modifications will occur to a person skilled in the art.

Having thus described my invention, what

I claim as new and desire to secure by Letters Patent, is,—

1. The combination with a tank, of a filling-nozzle having a discharge opening and an air-vent channel having an annular mouth surrounding the discharge-opening, a valve associated with the vent, a valve for closing the discharge-opening, a movable element associated with said two valves and adapted when raised to effect an opening first of the vent valve and then the other valve, a reciprocatory member having a finger to coast with said element for raising it, a roller carried by the member, a cam track for the roller, said track being fashioned to effect a movement of the member to open the valves, a foot carried by the member for coasting with the receptacle whereby a raising of the receptacle will elevate the roller in position to engage the track, and a gasket on the nozzle with which the receptacle abuts.

2. In combination, a valve chamber having its lower end provided with a restricted discharge-opening, an annular air-vent mouth and an inner valve seat, a valve stem projecting down within the casing and normally having its lower end projecting within the discharge opening, a disk-like valve member carried by the stem to seat on the inner valve seat of the chamber when the stem is down, an air-vent tube leading from the annular mouth to adjacent the upper end of the valve chamber, a weighted member slidingly carried by the stem and having a part fashioned to close the upper end of the vent tube when the member is down, a stop for limiting the upward movement of the member on the stem, and mechanism for imparting an initial raising movement to the member to open the upper end of the vent and then a continuing movement thereof to cause the member to engage the stop and raise the valve from its seat and the stem free from the discharge opening, substantially as described.

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

BURT E. TAYLOR.

Witnesses:

C. W. OWEN,
HAZEL B. HIETT.