

F. J. HERD.
 BOTTLING MACHINE.
 APPLICATION FILED MAR. 21, 1910.

1,010,909.

Patented Dec. 5, 1911.

2 SHEETS-SHEET 1.

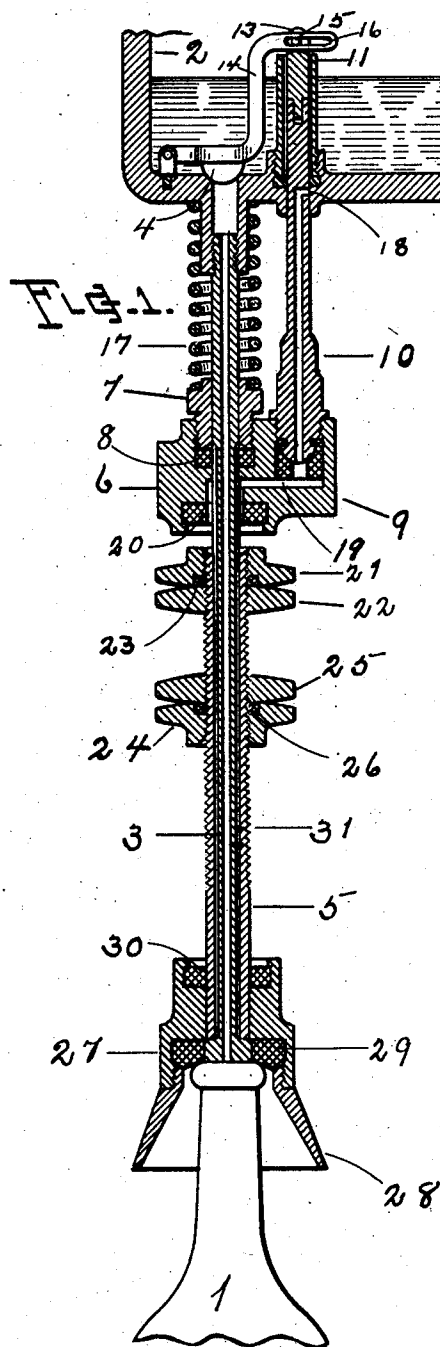
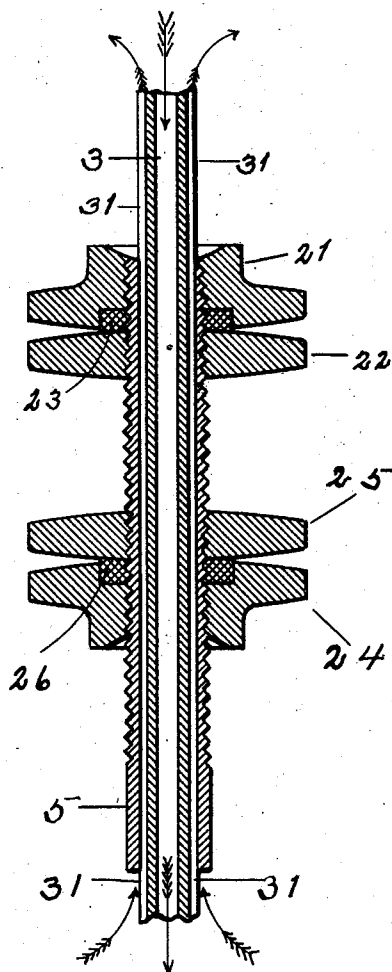


Fig. 2.



Witnesses
 John S. Orrell.
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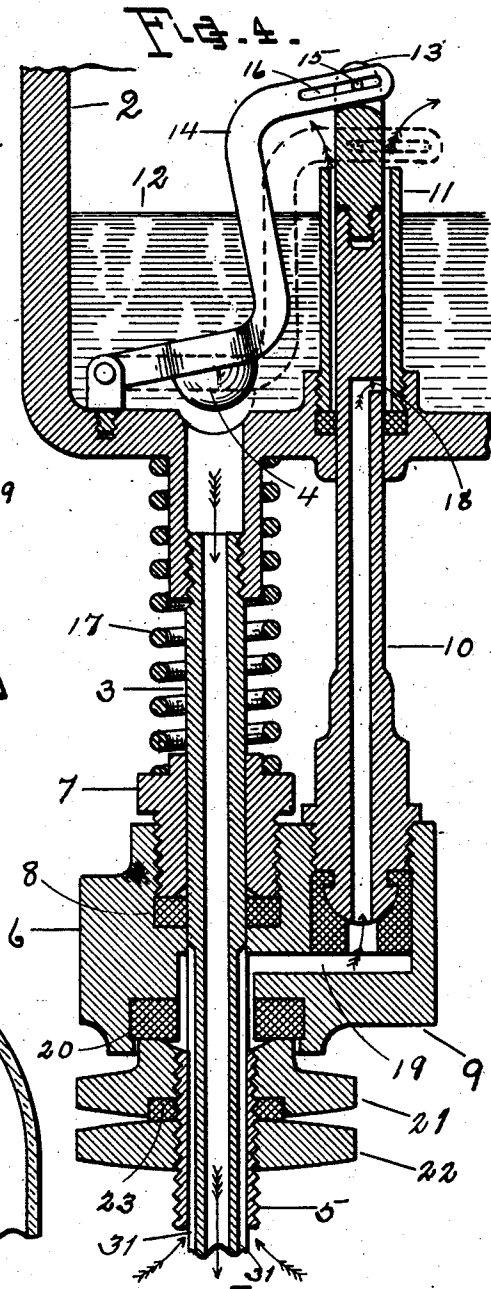
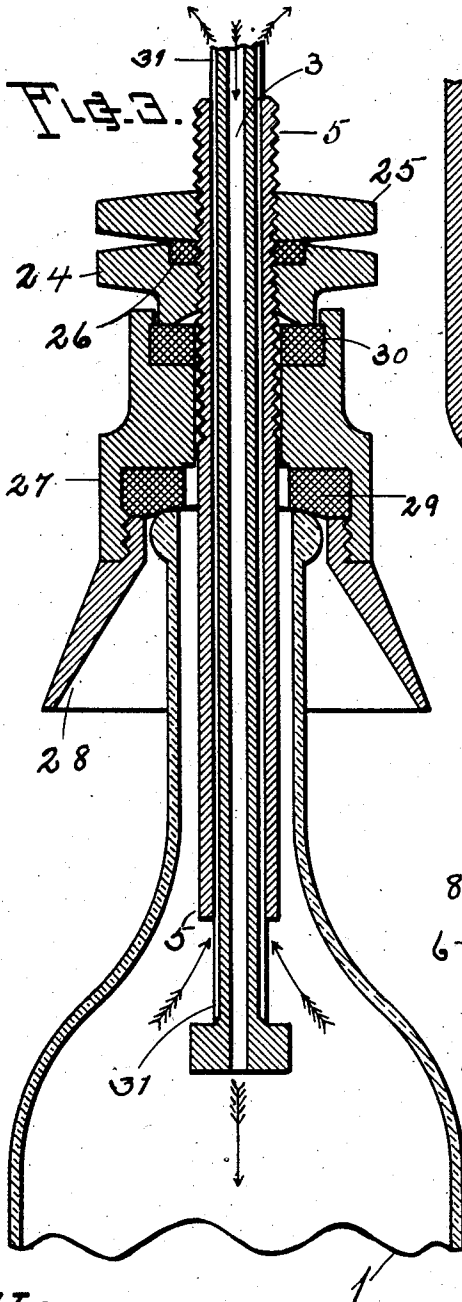
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Witnesses
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UNITED STATES PATENT OFFICE.

FRANK J. HERD, OF POINT RICHMOND, CALIFORNIA, ASSIGNOR OF ONE-FOURTH TO ALMOND R. MORROW, OF SAN FRANCISCO, CALIFORNIA, ONE-FOURTH TO SIEGFRIED BERNDT, OF POINT RICHMOND, CALIFORNIA, AND ONE-FOURTH TO DONALD ROBERTSON, OF OAKLAND, CALIFORNIA.

BOTTLING-MACHINE.

1,010,909.

Specification of Letters Patent.

Patented Dec. 5, 1911.

Application filed March 21, 1910. Serial No. 550,741.

To all whom it may concern:

Be it known that I, FRANK J. HERD, of Point Richmond, California, have invented certain new and useful Improvements in Bottling-Machines, of which the following is a specification.

My invention relates to bottling machines of the class in which the liquid filling flows through a tube which is projected into the bottle for that purpose.

The bottling machines which I am using are of the rotary class, and the whole operation of placing, filling and removing the bottles is automatically performed. In these machines, as heretofore constructed, the bottles are filled to the top of the neck, or virtually so, and it is necessary to displace a portion of the contents to make room for the cork and expansion in pasteurizing. This displaced portion is commonly wasted, and in the aggregate of a large number of bottles, amounts to a serious loss. By my present invention the filling operation is automatically stopped at a certain definite and predetermined point below the top of the neck of the bottle, which point may be varied by adjustments of the mechanism, and the loss referred to is avoided.

The mechanism by which I carry my invention into effect, will be best understood from the accompanying drawings forming a part of the following specification, and in which I have shown an embodiment of my invention in what I consider its best form, and have illustrated same in two different scales, viz:—Figure 1 is of a reduced scale, while the remaining figures are made on a larger scale to bring up better its novel features.

Fig. 1 is a sectional elevation of the filling nozzle and contiguous parts, with the upper part of a bottle and the tank valve in elevation, the parts occupying the position which they have when the bottle is just entered into position below the nozzle, and before the filling operation begins. Fig. 2 is a sectional elevation of a portion of Fig. 1, showing particularly the means whereby the filling operation is regulated in the bottle. Fig. 3 is a sectional elevation showing the lower part of the devices of Fig. 1, but with the bottle pushed up into filling position, and the parts in the

relation which they occupy when the filling is in progress. Fig. 4 is a similar sectional elevation to Fig. 3, but showing the upper part of the devices shown in Fig. 1.

In the figures:—1 represents a bottle, to be filled with wine or other liquid, from the filling tank 2.

3 is a tube extending from the tank downward to the bottle, through which the wine passes from the tank to the bottle.

4 is a valve to control the passage of wine to the tube.

A second tube 5, which for convenience I will call the air tube, the tube 3 being the wine tube, is sleeved upon the wine tube and is somewhat shorter than the latter, and is capable of sliding up and down thereupon. The air tube 5 is threaded exteriorly on a portion of its length, and upon this threaded portion I place nuts, which will be more specifically referred to hereinafter, and which serve, *inter alia*, for adjusting the height to which the bottle is filled, as will be explained further on.

Sleeved upon the wine tube 3, so as to be capable of sliding thereon, is a head 6, provided with a suitable gland 7, and packing 8, about the tube. Projecting upward from an offset 9 on head 6, is a tubular finger 10, which extends through a suitably packed opening formed in tank 2 into jacket 11 which projects within the tank above the wine 12 therein and screwed or otherwise fastened to the bottom of the tank opposite the opening, and above the jacket the tubular finger is provided with a fork 13 in which the goose neck arm 14 is adjusted and held in position by means of pin 15 on the finger 10 which engages an elongated slot 16 on the arm 14 and works freely therein, so as to open and close the valve 4 when the head 6 is raised or lowered. A spring 17 serves to depress the head 6 when it is otherwise free. The upper part of the tubular finger 10 has a screwed section to permit the adjustment of the arm 14 with fork 13 and its interior portion opens into the jacket 11 and consequently in tank 2 through an opening 18, when the finger is pushed up into the jacket, and, at its lower end, communicates with a channel 19, extending to the bottom of head 6. In the bottom of the head, and surrounding the exit of chan-

nel 19, is a packing 20. When the air tube 5 is pushed up, on wine tube 3, its upper end, or a nut 21 thereon, comes against the packing at 20, which forms a tight joint at that point, and pushes the head 6 upward.

22 is a jam nut on the air tube, applied to nut 21, and serving also to tighten a packing 23 between them, around the tube, and prevent any leakage of the air between the threads of the tube and those of the nut 21.

Upon the threaded portion of air tube 5, and below the nuts 21 and 22, are two other nuts 24 and 25, which are adapted to jam each other tight and at the same time tighten the packing 26 between them, around the air tube, and prevent leakage of the air between the threads of the tube and those of the nut 24. The purpose of these nuts will presently appear. Below the last mentioned nuts, is a sliding head 27, sleeved upon the air tube. This head has a flaring mouth 28, adapted to receive the top of a bottle, as 1, and guide it to a seat against a packing 29, and in line with the tubes 3 and 5, so that they may be projected into the bottle. At the upper end of the head 27, is a packing 30, which comes against nut 25 when the head is pushed up thereagainst, and prevents leakage at that point.

If desired the nut 21 may be secured permanently to the air tube 5 and nut 25 adjusted thereon with a set screw thus dispensing the threads on the air tube, jam nuts 22 and 24 and packings 23 and 26.

The exterior of the wine tube 3 is channeled as at 31, with one or more grooves, through a portion of its length, which grooves constitute vents connecting the interior of the bottle with the air channel 19, in head 6.

The operation of the above described mechanism is as follows, viz:—The bottle 1 is first inserted into the flaring mouth of the sliding head 27, and pressed upward, moving with it that head until the latter comes in contact with the nut 25. This movement causes the tubes 3 and 5 to enter into the neck of the bottle. The further upward movement of the bottle carries head 27 and tube 5 with it, until nut or shoulder 21 contacts with head 6, from which point head 6 is moved upward with the other parts, and valve 4 is pushed open by the finger 10 and arm 14. The parts are now in the positions shown in Figs. 3 and 4. Wine 12 now passes down through the wine tube 3, into the bottle, and the air in the bottle, which is displaced thereby, passes up through the vent channels 31, into air channel 19, in head 6, and through the latter

and the tubular finger 10 into the jacket 11 and in wine tank 2. The tank may thus be a closed tank, as the wine which flows out of it, is supplanted by the equal volume of air flowing in. When the wine flowing into the bottle, reaches the end of air tube 5, it thereby shuts off the escape of air, and the flow of wine into the bottle ceases. The bottle is then moved downward, the various parts following it, in the reverse order to that in which they followed its upward movement, and the air vents are closed by tube 5 sliding down into the ungrooved part of tube 3. Valve 4 is closed by the same operation, and the filled bottle is removed and an empty one substituted, when the same cycle of operations is repeated. The height to which the bottle is filled is accurately fixed or limited by the projection into it of air tube 5, and this projection is determined by the adjusting nuts 24 and 25.

Having thus described my invention, what I claim as new is:—

1. In a bottle filling machine, a tank, a jacket secured to the bottom of said tank and extending upward, a filling tube connected to the tank, an air tube slidably encompassing the filling tube and adapted to enter the mouth of a bottle, a head slidably engaging the filling tube, said head having an air vent therethrough adapted to register with the vent of the air tube, a finger secured on said head and having an air vent therethrough in registration with the vent in said head, said finger extending upward through said jacket, a lever pivoted to said tank and operably connected to said finger above said jacket, said lever having thereon a valve for closing the filling tube.

2. In a bottle filling machine, a tank, a filling tube connected with the tank and adapted to enter the mouth of a bottle, a cylindrical jacket fixed to the bottom of said tank and extending upward, a head slidably engaging the tube, a finger on the head extending upward through said jacket, a lever pivoted to the tank and carrying a valve for closing the filling tube, said lever extending upwardly and laterally above the top of the jacket and having sliding engagement with the finger for raising the valve, substantially as shown.

In testimony that I claim the foregoing invention I have hereto set my hand in the presence of witnesses this 28 day of August, 1909.

FRANK J. HERD.

Witnesses:

A. S. PARÉ,
ALFRED FUHRMAN.