



# UNITED STATES PATENT OFFICE.

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## BOTTLE-FILLING MACHINE.

SPECIFICATION forming part of Letters Patent No. 676,402, dated June 11, 1901.

Application filed July 24, 1899. Serial No. 724,969. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM P. TRUDEN, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Bottle-Filling Machines, of which the following is a specification.

One object of my improvements is to provide an apparatus of the kind stated especially adapted to filling milk into jars or bottles, which may be economically manufactured, easily operated, and quick and effective in performing its work.

Further objects are to so construct and arrange the various parts that they may be readily and thoroughly cleansed, making them simple in form, few in number, and easily accessible and to avoid the foaming of the milk as it falls into the bottle, the latter being a serious fault common to machines of this class.

The form, arrangement, and combination of my improvements in a milk-filling machine are illustrated in the accompanying drawings, which form a part of this application, in which—

Figure 1 is a side elevation, partly in section, of a machine complete. Fig. 2 is a detail, on a larger scale, of the milk-tube and valve arrangement constituting the bottle-filler proper. Fig. 3 shows the valve open and the manner in which the milk flows into the bottles.

Referring to the drawings, A represents a bottling-table arranged to hold a certain number of jars or bottles in determinate positions and supported on suitable legs. On each side of the table A and extending beyond its ends is a rail or piece  $a^2$ , on the upper and lower edges of which are secured metal tracks  $a' a'$ . Upon these tracks run the grooved wheels  $b' b'$ , which are mounted in the legs  $b$  of the milk-car B, the flanges of the wheels preventing the car from leaving the track and the lower or under wheels preventing the raising of the car in a manner well understood. The car B is built of wood, rectangular in shape, with sides and ends, but without bottom. Supported within the car by pivots  $c$  working in suitable bearings in the sides of the car at points near the rear end

is the milk-tank C, from which the milk is conducted to the bottles. Further support is given this tank at its front end by a pinion  $d$ , mounted on a pinion-shaft secured at one side of the car near its forward end, said pinion meshing with a segmental gear  $e$ , secured to the front end of the milk-tank C. In addition to serving as a support said pinion and gear effect the raising and lowering of the tank by means of a lever D, secured to the pinion-shaft and provided with a suitable handle. In order to secure the tank at any desired position, a spring-catch  $d$  is secured to the lever, the pin of which engages holes in a plate  $d'$ , secured to one side of the car B.

Fixed in the bottom of the tank C are a number of air-tubes  $c'$ , the lower ends of which pass through the bottom of the tank, and their upper ends extend to within a short distance of the upper edge of the tank or above the milk-line.

Secured in the bottom of the milk-tank are a number of downwardly-extending milk-tubes E, each of said tubes being set near an air-tube  $c'$ , as clearly shown in Fig. 2. The lower end of each of said milk-tubes is closed by means of a plug  $e^2$ , screwed into the end of the tube and provided with an annular washer  $e^3$  of greater diameter than the tube or the plug. On each side of the milk-tube at a point just above the washer is an opening  $e'$ , from which the milk flows into the bottles when said holes are uncovered. Normally these holes are covered by a valve F, which is in disk shape, has a downwardly-extending flange  $f$ , and a central or hub portion  $f'$ , which is externally threaded and receives on its lower portion a threaded collar  $f^2$  and on its upper portion a similarly-threaded collar  $f^3$ , by means of which a tight joint is maintained between the milk-tube and said valve. Secured at one side of the said collars is an air-tube  $c^2$  of slightly less diameter than the air-tube  $c'$  in order that it may easily slide with in the latter as the milk-tank is raised and lowered. The valve F is held in position over the holes  $e'$  by spiral spring 3, the lower ends of which bear against said valves and the upper ends against the bottom of the tank. As the tank is lowered by depressing the lever the rim or edge of the mouth of the

jars will force upwardly the valve, thus uncovering the holes *e'*, and permit the milk to escape into the bottles or jars in lateral streams, which strike the sides of the bottles and by thus breaking the force of the stream and distributing the milk over a larger area prevent any foaming.

The vertical movement of the tank is such that it can be used for filling bottles of varying heights. Should any solids or impurities lodge in the tube below the holes *e'*, same may be readily removed by taking out the plugs. Gaskets *g* may be inserted in the valves to provide a cushion for the mouths of the bottles and also to effect a tight joint therewith.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a bottle-filling machine, the combination of a tank adapted to hold liquids and having air-escape tubes and liquid-distributing tubes fixed therein, valves for said liquid-distributing tubes adapted to fit over the mouth of a bottle and having air-escape tubes secured thereto, said latter tubes being adapted to slide within the fixed air-tubes substantially as set forth.

2. In a bottle-filling machine, the combination of a tank adapted to hold liquids, means for raising and lowering said tank, air-escape tubes, and liquid-distributing tubes fixed in the tank, valves adapted to fit over the mouth of a bottle, and to open and close the openings in said liquid-distributing tubes, and air-vent tubes secured to said valves and adapted

to slide within the fixed air-escape tubes, substantially as set forth.

3. In a bottle-filling machine, the combination of a tank to hold liquids, air-vent tubes fixed in said tank, liquid-distributing tubes secured in said tank and having lateral openings near their lower ends, spring-held valves adapted to slide over said liquid-distributing tubes and to open and close said openings therein, and air-vent tubes passing through said valves and adapted to slide within the fixed air-vent tubes, substantially as set forth.

4. In a bottle-filling machine, the combination of a tank provided with air-vent tubes and liquid-distributing tubes, the latter having lateral openings therein, of valves provided with air-vent tubes adapted to slide within the like tubes fixed in said tank, said valves having portions to normally close the openings in the liquid-distributing tubes, and springs for holding said valves in their normal position, substantially as set forth.

5. In a bottle-filling machine, a tank for holding liquids, air-vent tubes and liquid-distributing tubes fixed therein, valves controlling the openings in said liquid-distributing tubes and air-vent tubes secured to said valves and adapted to slide within the fixed air-vent tubes, as set forth.

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

WILLIAM P. TRUDEN.

Witnesses:

THOS. MEINEMA,  
A. E. KLUNDER.