(No Model.) 2 Sheets—Sheet 1.

N. SMITH & A. B. MARCY.

BOTTLE FILLING MACHINE.

No. 457,229. Patented Aug. 4, 1891.

Fig. 1.

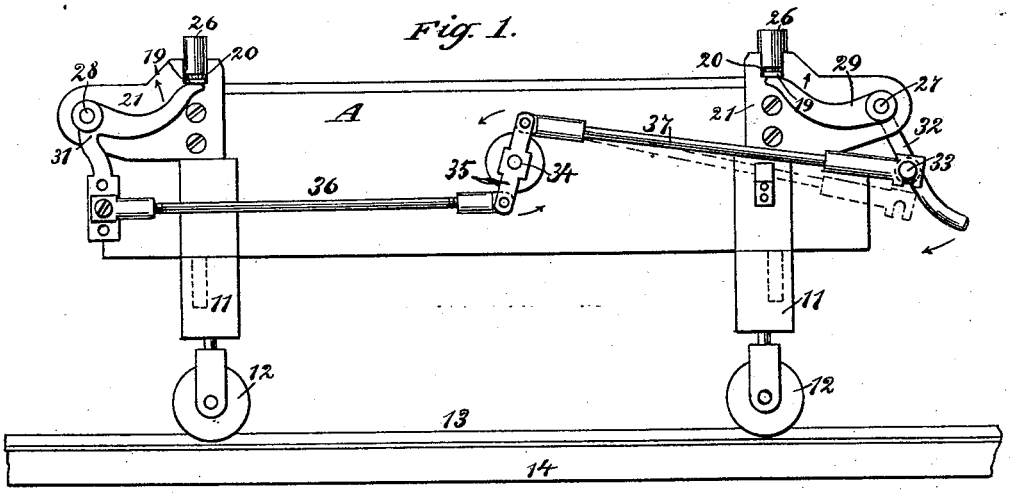
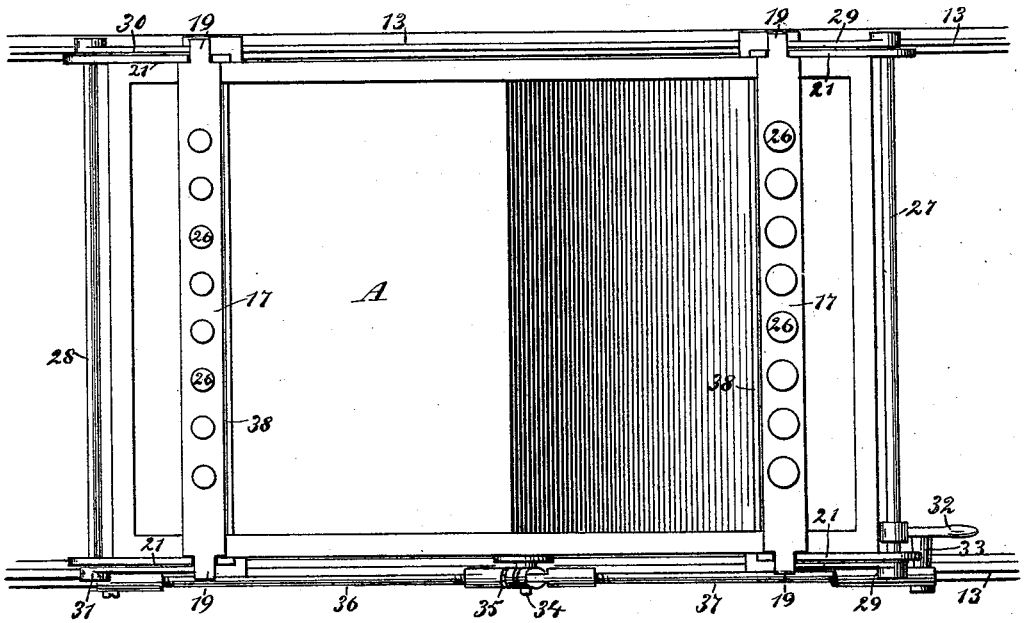


Fig. 2.



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(No Model.) 2 Sheets—Sheet 2.

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Fig. 3.

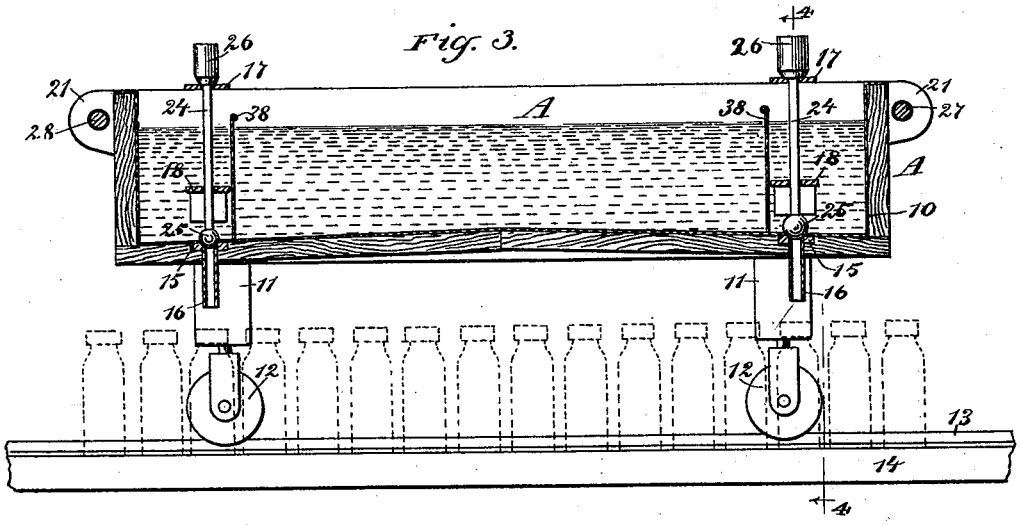


Fig. 4.

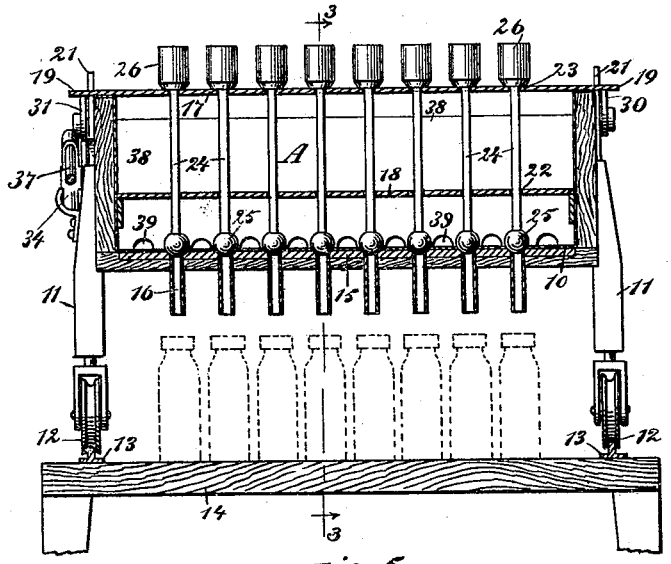
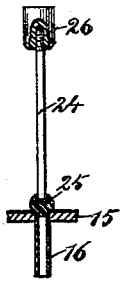


Fig. 5.



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UNITED STATES PATENT OFFICE.

NELSON SMITH AND ALVIN B. MARCY, OF WALLKILL, ASSIGNORS TO THE NEW YORK CONDENSED MILK COMPANY, OF NEW YORK, N. Y.

BOTTLE-FILLING MACHINE.

SPECIFICATION forming part of Letters Patent No. 457,229, dated August 4, 1891.

Application filed March 24, 1891. Serial No. 386,207. (No model.)

To all whom it may concern:

Be it known that we, NELSON SMITH and ALVIN B. MARCY, of Wallkill, in the county of Ulster and State of New York, have invented a new and Improved Bottle-Filling Device, of which the following is a full, clear, and exact description.

Our invention relates to an improvement in bottle-filling devices, especially to that class of devices utilized for filling receptacles with milk.

The object of the invention is to provide a device in the shape of a car so constructed that the receptacles will be partially filled from one end of the car and any wantage of material that may exist in the receptacles will be supplied from the opposite end of the car.

A further object of the invention is to provide a means whereby the flow of milk from the car will be as regular when it is nearly empty as when it is nearly full.

A further object of the invention is to provide valves at each end of the car which shall be held closed by gravity, and also to provide a means whereby both sets of valves may be worked concertedly or independently.

The invention consists in the novel construction and combination of the several parts, as will be hereinafter fully set forth, and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar figures and letters of reference indicate corresponding parts in all the views.

Figure 1 is a side elevation of the device. Fig. 2 is a plan view thereof. Fig. 3 is a longitudinal section taken practically on the line 3 3 of Fig. 4. Fig. 4 is a transverse section taken practically on the line 4 4 of Fig. 3, and Fig. 5 is a detail view of one of the valves.

The body of the device consists of a tank A, preferably rectangular, having an open top and having a lining 10 of copper or other suitable material, although the lining may be omitted if found desirable. The tank A is preferably provided with four downwardly-extending pedestals 11, located two at each side, one near each end, and to the pedestals peripherally-grooved wheels 12 are attached, which wheels are adapted to travel upon tracks 13 laid preferably upon a table 14 or equivalent elevated support. It will thus be seen that the entire body of the device is in the nature of a car.

In the floor of the tank near each end a metal bar 15 is transversely embedded, and each bar is provided with a series of apertures adapted to receive the upper ends of tubes 16, which tubes extend through the bottom of the body some distance below the same. When the lining 10 is employed, the said lining is provided with apertures immediately over the upper ends of the tubes 16, and the tubes at the forward end of the body are preferably of greater diameter than those at the rear end. The bottom of the tank-section of the body is inclined from the center downward in direction of its ends, as is best shown in Fig. 3. By securing the tubes 16 to the bars 15 the tubes are firmly held in position, and should they come in engagement with an obstacle while the device is being drawn forward or carried backward the tubes are not liable to be broken or displaced.

Immediately above each set of tubes 16 two transverse and spaced guide-bars 17 and 18 are located. The lower guide-bars 18 are removably secured to the side walls of the tank, and the upper guide-bars 17 simply rest upon the top side edges of the tank and are provided at their extremities with tongues 19, which extend beyond the outer side faces of the tank into recesses 20, produced in brackets 21, said brackets being secured to the outer side faces of the tank. The upper guide-bars 17 are capable of free vertical movement. The lower guide-bars are provided with a series of preferably rectangular or polygonal openings 22 and the upper guide-bars with corresponding openings 23, the latter openings being preferably circular. The openings 22 and 23 of the guide-bars correspond in number and location to the number and location of the tubes 16.

Through each set of vertically-aligning openings 22 and 23 a valve-stem 24 is passed, and each valve-stem at its lower end is pro-

vided with a ball 25, secured thereto, made of any approved material, the said balls being adapted to normally close the mouths of the upper ends of the tubes 16. Each valve-stem at its upper end has secured thereto a weighted cap 26. The said caps, when the balls 25 close the mouths of the tubes 16, are in close proximity to the upper guide-bars 17, so that the valves may be quickly opened when the bars are lifted. The caps 26 may be screwed or otherwise attached to the valve-stems, and if in practice it is found desirable the stems may be polygonal or rectangular in cross-section throughout their length, in which event the openings 23 in the upper guide-bars 17 are made to correspond.

The brackets 21 are carried, preferably, beyond the ends of the tank. In the projecting portion of the forward brackets a shaft 27 is journaled, and in the corresponding portion of the rear brackets a shaft 28 is journaled. The forward shaft 27 has secured to each extremity an arm 29, the said arms being carried inward from the shaft and made to terminate immediately beneath the tongues 19 of the forward guide-bars 17. The shaft 28 at one of its extremities is provided with a like arm 30, engaging with one tongue of the rear upper guide-bar 17, and at the opposite end of the shaft 28 an angled arm or elbow-lever 31 is secured, the horizontal member whereof normally engages with the opposite tongue of the rear guide-bar. The forward shaft 27 has secured thereto a lever or handle 32, whereby the shaft is rocked, the said lever or handle being located near one side of the tank. The lever or handle is provided upon its outer face with a stud 33, and at or near the center of the side of the tank near which the handle or lever 32 is located a horizontal spindle 34 is secured, upon which spindle a lever 35 is centrally fulcrumed. The lower end of the lever 35 is pivotally connected to the vertical member of the elbow-lever 31 by means of a link or rod 36, the said link or rod being adjustably connected to the elbow-lever, whereby the upward throw of the rear guide-bar 17 may be regulated. A second link or rod 37 is pivotally attached to the upper end of the lever 35, and the outer end of the link or rod 37 is removably attached to the stud 33 upon the forward lever or handle 32.

In order that the milk or liquid contained in the tank may flow through the tubes 16 when opened as readily when the tank is nearly empty as when it is full, transverse partitions 38 are detachably located within the tank, one opposite and in front of each row of valves, the lower edges of the partitions being provided with a series of openings or recesses 39, through which the liquid flows to the tubes. These partitions are very essential, as, if they were not employed and but a small quantity of liquid were contained in the tank, when the said tank is moved forward or backward the liquid will be thrown violently against the ends of the tank and pass over the tubes 16 without properly or steadily flowing through them. When the partitions 38 are introduced, however, the said partitions receive the agitated liquid and break the force thereof, while the liquid at the bottom of the tank will flow smoothly through the apertures in the bottom of the partitions and enter the tubes as evenly as though the tanks were filled.

In operation the bottles or receptacles to be filled are placed in rows upon the table 14 between the tracks 13. In starting to fill the bottles the link or rod 37 is disconnected from the handle or lever 32. The car is then drawn forward until the front tubes are over the first row of bottles. When this position is reached, the car is stopped, and the operator, by pressing the handle or lever 32 downward, lifts the forward guide-bars 17 and consequently the valves connected therewith, and the liquid flowing through the forward tubes enters the receptacles. As these tubes are quite large, the milk upon entering the vessels foams to a great extent, and consequently the valves must be allowed to drop before the receptacles can be completely filled with clear liquid. When the foam reaches the tops of the receptacles, the lever 32 is drawn upward by the operator, which shuts off the flow of liquid, and the valves are not again opened until the next row of receptacles is reached. Thus in each receptacle filled wantage exists, and this wantage is supplied from the rear end of the tank through the rear tubes 16, said wantage being suppled at the same time that empty receptacles are being filled. This is accomplished as follows: Just prior to the rear tubes 16 reaching the first row of bottles filled the link or rod 37 is connected with the stud 33 upon the hand-lever 32, and consequently when the hand-lever is depressed to raise the forward set of valves through the medium of the link or rod connection with the rear lifting arms or levers 30 and 31 the rear set of valves is opened simultaneously with the forward set. Thus while one of the forward rows of empty vessels is receiving its supply of fluid one of the rows of vessels previously filled is receiving sufficient liquid to compensate for any wantage that may exist, the rear tubes 16 being made of sufficient size to accomplish this result.

It will be observed that all of the mechanism contained in the tank is removable, and the tubes 16 may be made detachable also. Thus all portions of the device brought in engagement with the liquid may be conveniently and expeditiously cleaned.

Having thus described our invention, we claim as new and desire to secure by Letters Patent—

1. The combination, with a car the body of which constitutes a tank, the said tank being provided with a bottom inclined from the center in direction of its ends, a series of openings near its ends, and tubes inserted in the openings and extending below the tank, of guide-

bars located above the openings, gravity-valves carried by the said guide-bars, shafts located at opposite ends of the tank, arms attached to the said shafts and engaging with the valve guide-bars and adapted to operate the same, and a detachable connection between the forward and rear shafts, as and for the purpose set forth.

2. The combination, with a car the body of which constitutes a tank, the said tank being provided with a bottom inclined from its center in the direction of its ends, and a series of apertures produced in the bottom near said ends, and tubes introduced into the apertures and extending below the tank, one set of tubes being of less diameter than the other set, of movable guide-bars located above the apertures of the tank, gravity-valves carried by the guide-bars and adapted to normally close the apertures in the tank, a shaft journaled at each end of the car, lifting-arms attached to the said shafts and engaging with the valve guide-bars, a hand-lever attached to one shaft, an adjustable and removable link or rod connection between one shaft and the hand-lever, and partitions located in the tank in front of the valves, said partitions being provided with openings in their lower portions, as and for the purpose specified.

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