

(No Model.)

2 Sheets—Sheet 1.

W. CHILDS, Jr. & S. S. CHILDS.
BOTTLE FILLING APPARATUS.

No. 456,400.

Patented July 21, 1891.

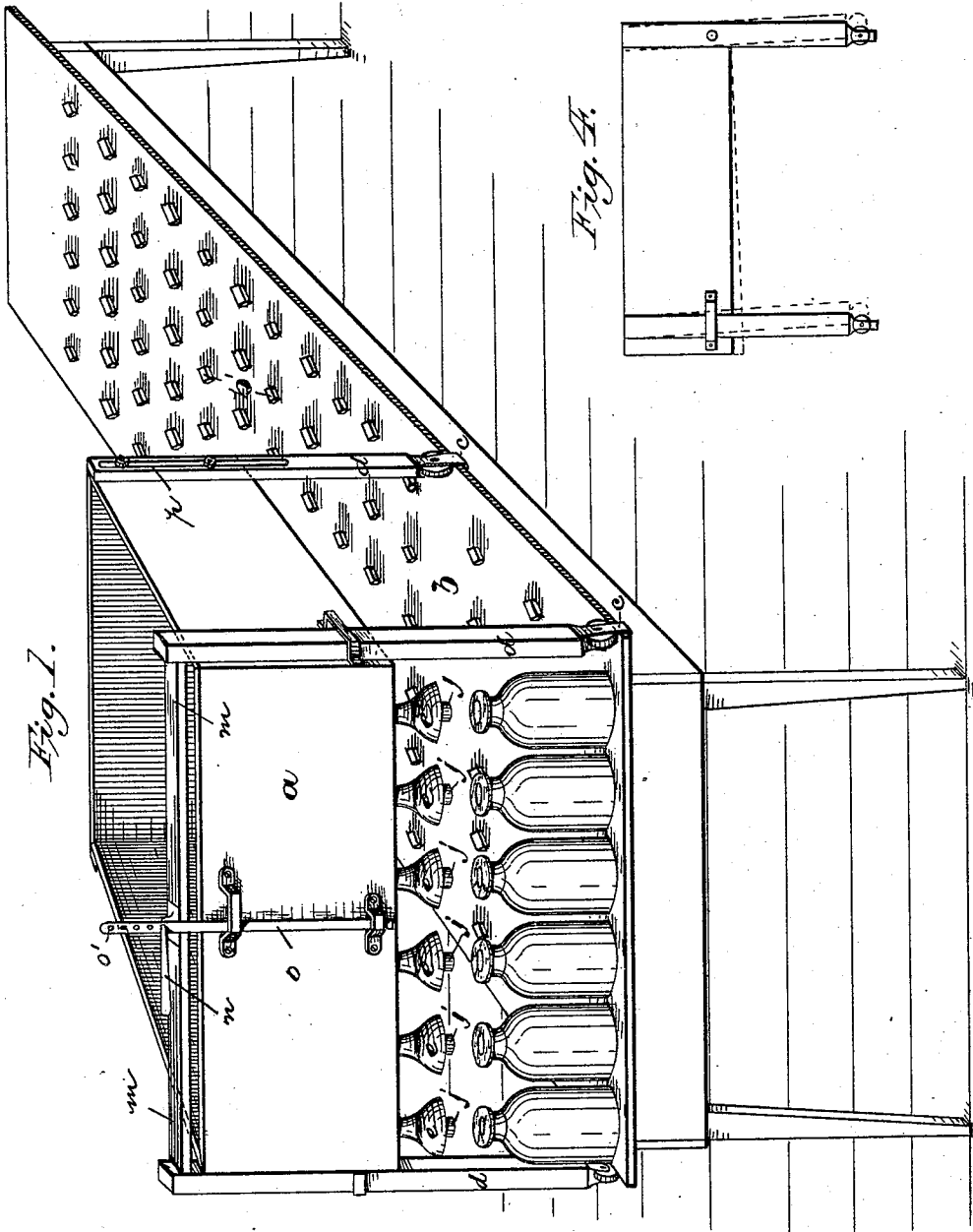


Fig. 1.

Fig. 2.

Witnesses

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By Drake & Co Atty's

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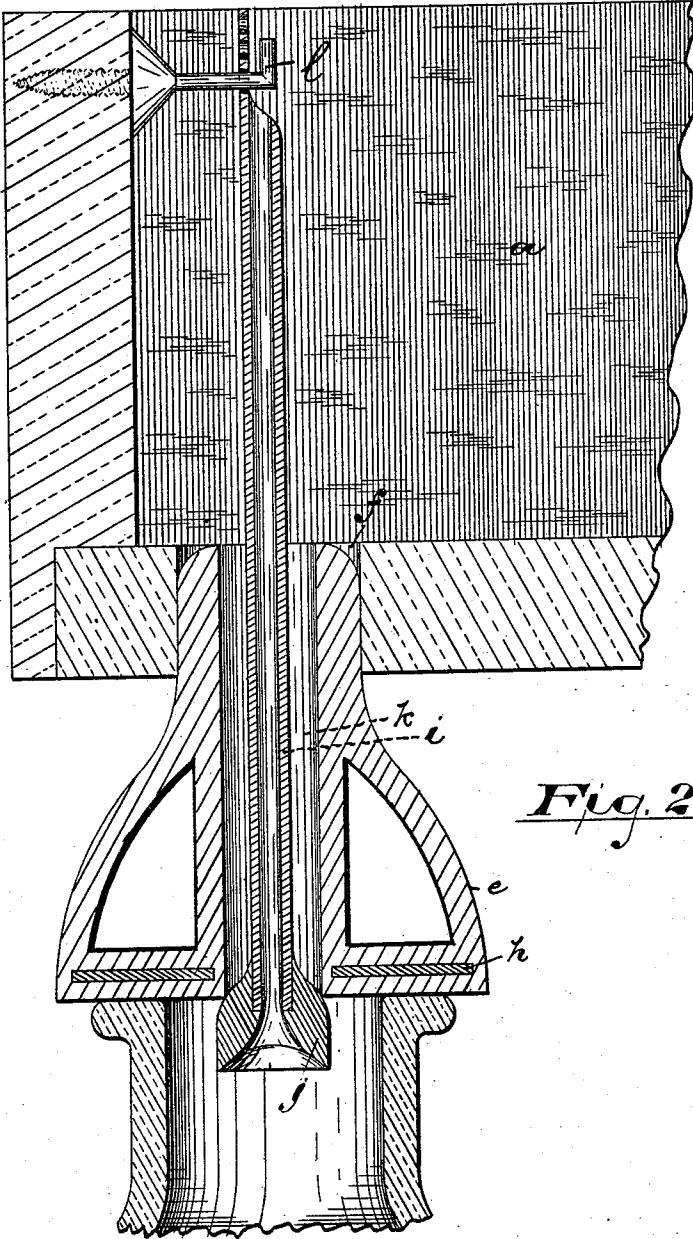


Fig. 2.

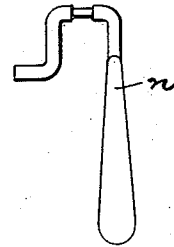


Fig. 3.

Witnesses:

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UNITED STATES PATENT OFFICE.

WILLIAM CHILDS, JR., AND SAMUEL S. CHILDS, OF BROOKLYN, NEW YORK.

BOTTLE-FILLING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 456,400, dated July 21, 1891.

Application filed November 13, 1890. Serial No. 371,375. (No model.)

To all whom it may concern:

Be it known that we, WILLIAM CHILDS, Jr., and SAMUEL S. CHILDS, citizens of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Bottle-Filling Apparatus; and we 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 letters of reference marked thereon, which form a part of this specification.

The object of this invention is to facilitate the operation of bottling milk or other liquids, to render the operation more easy and convenient, to reduce the cost of manufacturing the apparatus, to secure a uniform result in filling, and to obtain other advantages and results, some of which will be hereinafter set forth in connection with the description of the working parts.

The invention consists in the improved bottling apparatus or machine and in the arrangements and combinations of parts thereof, substantially as will be hereinafter set forth, and finally embodied in the clauses of the claims.

Referring to the accompanying drawings, in which like letters indicate corresponding parts in each of the several figures, Figure 1 is a perspective view of the improved bottling mechanism, showing a single row of bottles therein. Fig. 2 is an enlarged detail section showing the construction of certain valves. Fig. 3 is a detail of a lever for forcing the valves against the bottles, and Fig. 4 is a view indicating or illustrating the operation of the tank.

In said drawings, *a* indicates a wheeled or movable tank arranged on a bottling-table *b* of any suitable construction, the said table being preferably provided with centering-blocks *b'* or other devices for bringing the bottles into proper relation with certain stoppers, and thus facilitating the operation of filling. The tank is movable longitudinally over the table, its movement being controlled by tracks, guides, or other mechanisms, whereby the tank will be prevented from moving laterally from a direct course as it is drawn

or pushed successively from series to series of bottles. The particular arrangement preferred for this purpose is the one shown in the drawings, in which *c c* are guides secured to the legs *d d* of the tank, made of strips of iron and extending downward from said legs, and below the latter furnishing bearings for said wheels. From said bearings the said strips are continued downward and engage the sides or edges of the table, so as to slide on the same and prevent lateral displacement. The extremities of the strips are bent or turned to extend beneath the table and engage the under side of the same, and thus prevent the tank-holding frame from being lifted when pressure is brought to bear on the bottles in the operations hereinafter described. The tank is elevated above the table to form a space beneath, the space being greater than the height of the bottles. Said tank is provided with a series of depending stoppers, which are of peculiar construction and are provided with outlet-valves to allow the milk or liquid to flow into the bottles at the proper moment. Said depending stoppers *e* are adapted to rest on the tops of the bottles, and where pressure is exerted to form impervious joints therewith or joints through which the milk cannot flow and be wasted.

The valved stoppers are arranged in a row at the forward part of the tank and correspond in number to the number of bottles in each series extending across the table. A number of such series are placed on the table, sufficient in number to carry all the milk of the tank, and the operator, beginning at one end, fills the series successively, all the bottles in each series being filled simultaneously, as will be understood.

The valve employed is shown in detail in Fig. 2, in which *e* indicates a bell-shaped rubber casting, the small upper end of which is nicely secured in an opening *f* in the bottom of the tank. The larger lower end is substantially flat on the under side and is of a size sufficient to cover the mouth of the bottle, as indicated, the soft elastic rubber being pressed against the mouth of the bottle, forming an impervious joint therewith.

A metallic washer or ring *h* is preferably cast into the rubber over the flat bearing for

the bottle, to serve as a stay or stiffener and effect a more perfect and certain closing or stopping of the bottle. The center of the rubber casting is vertically perforated, a channel or duct *k* being formed to allow a copious flow of fluid from the tank into the bottle beneath. Through said channel in said stopper a tubular vent *i* extends upward through the milk-chamber in the tank to a point above the line of fluid in said tank. At the lower end of said tubular vent, which lies at or in the mouth of the bottle to receive and carry off the air therein as the bottle fills with liquid, the said vent is provided with an enlargement or plug *j* of sufficient size to close the channel *k* and prevent the milk or fluid from flowing therethrough. Said enlargement extends into the mouth of the bottle and occupies considerable space therein, and thus, when removed from the filled bottle, the milk is lowered considerably and of a uniform distance or degree below the edge of the bottle, an end deemed to be desirable.

The vent-tube *i* is held from moving vertically by a hooked holder *l*, adapted to allow of the removal of the same for cleansing or other purposes, and when the stopper *e* is brought to bear on the bottle and downward pressure is exerted the elastic stopper is raised from engagement with the plug, or the plug is lowered from engagement with the stopper, so that the valve is opened and the fluid is allowed to flow freely through the channel into the bottle until the latter is full. When relieved of pressure, the stopper springs again into engagement with the plug, automatically closing the channel, after which the stopper is raised from the bottle, ready to be brought into engagement with another. It may be noted that the operation of closing the channel and that of raising the stopper from the bottle involve but a single exertion on the part of the operator and are practically simultaneous.

The forward end of the tank is vertically movable in relation to the supporting-frame, consisting of the front legs and a horizontal connecting-bar *m*. To said frame, which is held to the table by the bent guides before referred to, is fulcrumed a hand-lever *n*, which is connected to a pivoted bar *o*, fastened to the tank, but allowed a short pivotal movement thereon. By turning the lever, which is shown in detail in Fig. 3, on its fulcrumal bearings on the frame the tank is either raised from the bottles, so that the device can be wheeled to the next series, or by turning the lever in the opposite direction the said tank is lowered, the elastic stoppers are brought to bear on the bottles, forming impervious joints therewith, and the channels are opened, as heretofore described. The pivoted bar *o* is or may be provided with a series of perforations *o'* to allow of adjustment to suit bottles of larger or smaller sizes, and at the rear of the tank the legs may be slotted, as at *p*, and adjustably fastened to the tank-body,

as will be understood. Outside of the central duct the elastic block is hollow to reduce the pressure necessary to close the bottle. 70

We are aware that various changes may be made in the device without departing from the scope of this invention.

In operating the device, when the same is of the construction shown in the drawings, to fill the bottles with milk or other liquid the bottles are first arranged in order on the table, the same being in a series of rows, the number in each row corresponding with the number of valves depending from the bottom of the tank. At the first row in the order of filling the handle *n* is operated and the tank forced slightly downward in ordinary practice from one-half to one inch, more or less, thus bringing the valves into engagement with the tops of the bottles, closing the same and opening the valves, so that the liquid quickly flows into the bottles, and the air therein passes off through the vents, leaving the bottle free from froth or air-bubbles. When the first row is thus filled, the hand-lever is reversed and the forward part of the tank is again raised in its relation to the bottles and the valves closed automatically, the bearings or supports and guides of the tank being constructed to admit of the operations described under the operations of the handled lever. The valved tank is then wheeled to the next row of bottles and the operations are repeated, and this wheeling and filling are continued until the bottles are all full or the liquid is exhausted. 85 90 95 100

Having thus described the invention, what we claim as new is—

1. In combination with the table, an elevated tank movable thereover, having depending from the bottom thereof a series of rubber blocks, each of which is perforated and is provided with a vented plug, substantially as and for the purposes set forth. 105 110

2. The improved milk-bottle-filling apparatus herein described, combining with a table a tank movable toward or from the bottles and elevated above said table and provided with depending elastic blocks *e*, plugs *j*, and vent-tubes fastened to the tank, substantially as and for the purposes set forth. 115

3. The improved milk-bottle-filling apparatus herein described, combining with a table having guides or ways and centering devices a wheeled tank controlled in its movements by said guides or ways and at one end being vertically movable and provided with automatic valves adapted to be opened by the downward pressure of the tank on the bottles, substantially as set forth. 120 125

4. In a bottle-filling device, the valve herein described, combining with a perforated elastic block or casting a vent-tube having a plug secured thereto and adapted to close the perforations, substantially as set forth. 130

5. In combination with the table *b*, a frame *d d m* and slotted rear legs, a tank adjustably secured to said rear legs and held by said

frame, but vertically movable therein, and a lever *n*, fulcrumed on said frame, but carrying said tank by means of a pivoted rod *o*, said tank being provided with a series of
5 valves, substantially as and for the purposes set forth.

6. In combination with a table, a valved tank, and a wheel-frame *d d m*, having means for forcing the tank downward and the valves
10 of the tank into engagement with the bottles and having guides *c* bent to hold the frame to the table when said tank-forcing means are operating, substantially as set forth.

7. In combination with the table, a wheeled
15 frame held to the table, a tank having valves, and a lever fulcrumed on said frame and

adapted to press the tank down and to press the valves into impervious contact with the bottles, substantially as and for the purposes
20 set forth.

8. In a bottle-filling apparatus, the combination of the tank, elastic block *e*, vent *j* and plug, and a hook *l*, adapted to support said
vent, substantially as set forth.

In testimony that we claim the foregoing
25 we have hereunto set our hands this 7th day of November, 1890.

WM. CHILDS, JR.
SAMUEL S. CHILDS.

Witnesses:

CHARLES H. PELL,
OSCAR A. MICHEL.