

(No Model.)

2 Sheets—Sheet 1.

W. CHILDS, Jr. & S. S. CHILDS.
BOTTLING MACHINE.

No. 512,432.

Patented Jan. 9, 1894.

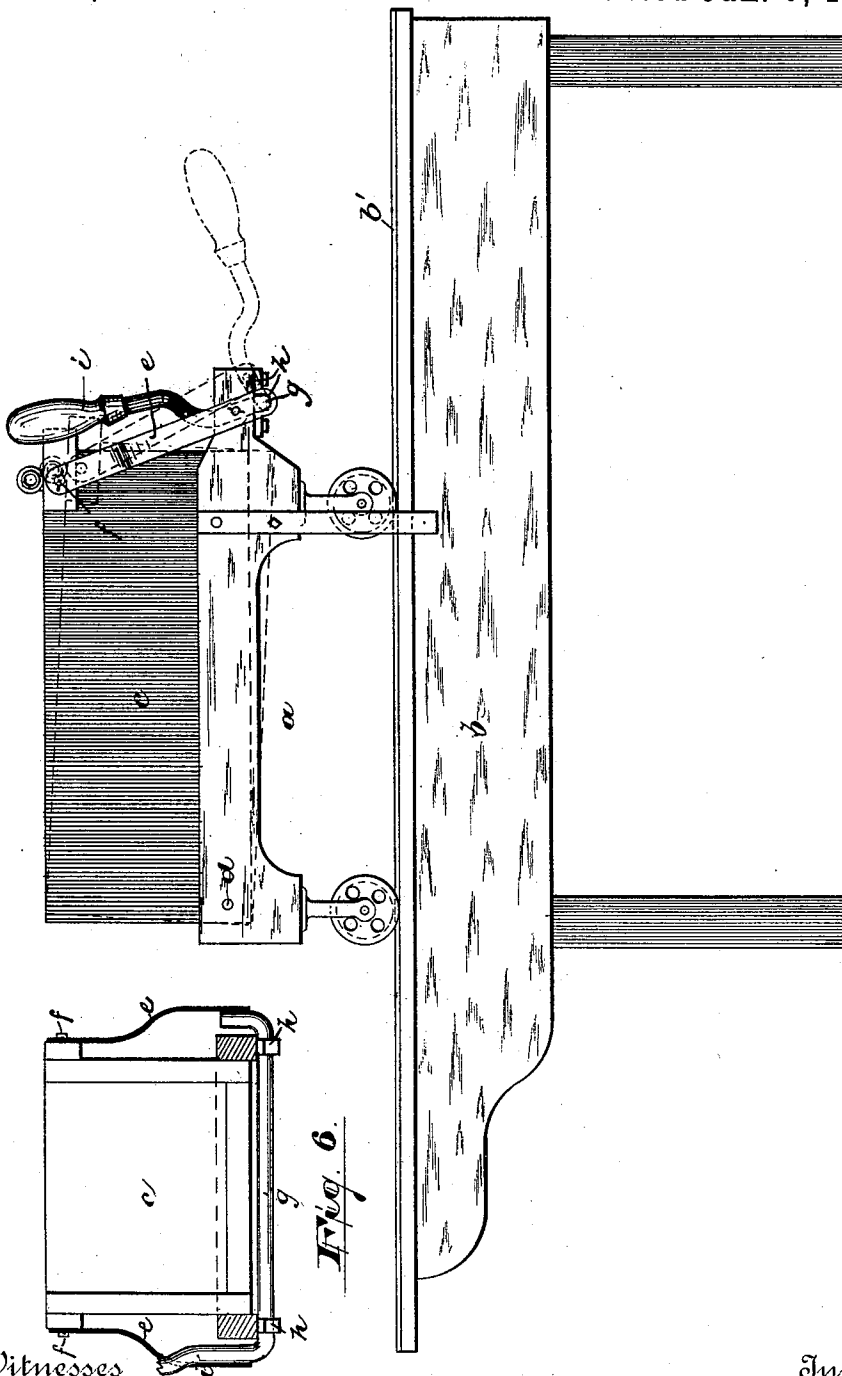


Fig. 1.

Fig. 6.

Witnesses

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By *Drake & Co.* Attys.

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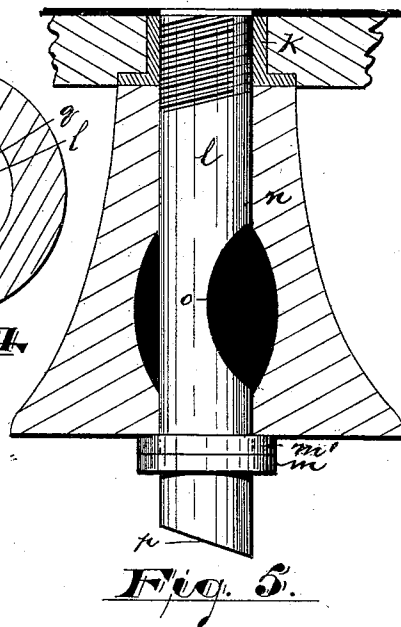
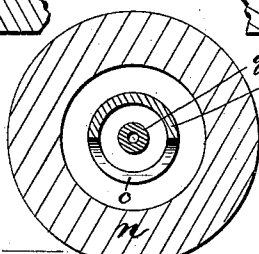
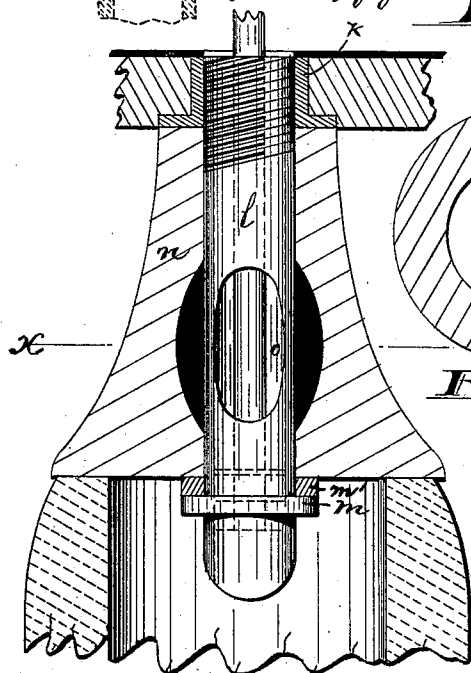
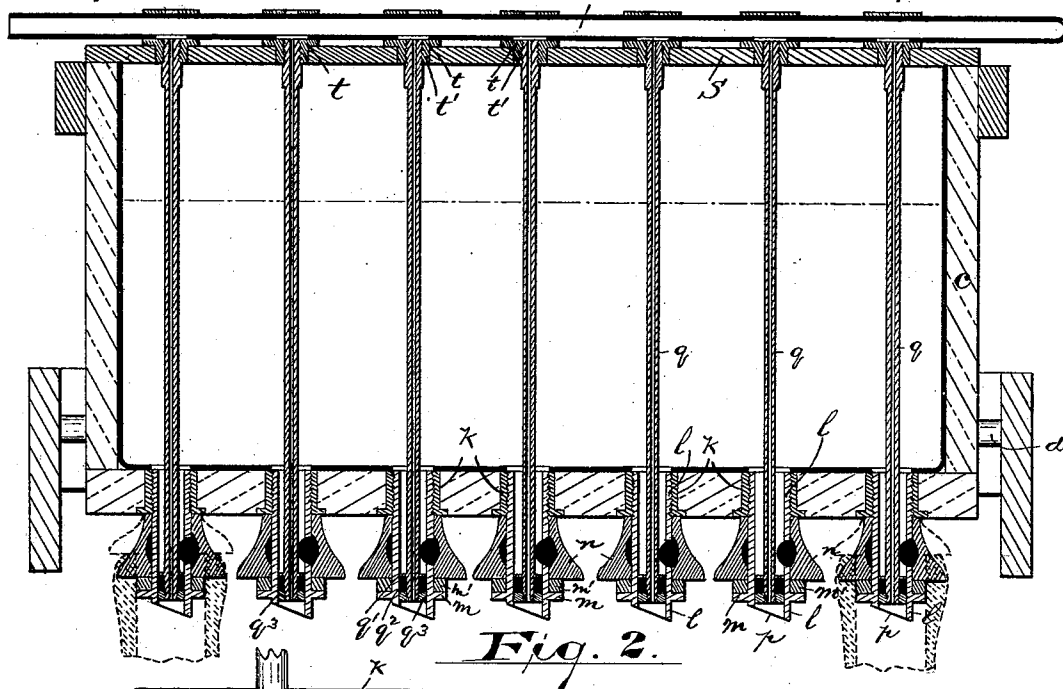


Fig. 3.
Witnesses

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UNITED STATES PATENT OFFICE.

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

BOTTLING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 512,432, dated January 9, 1894.

Application filed November 10, 1892. Serial No. 451,499. (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 Bottling-Machines; 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.

This invention relates more particularly to certain improvements in that class of bottle filling apparatus represented by our prior patent, No. 456,400, dated July 21, 1891.

The objects of the present improvements are to enable the bottles to be filled with milk, without tendency to obstruction, in cold weather when the foam of the milk in the venting passages of the machine tends to prevent the escape of air; to reduce the cost of construction; to provide a machine of greater convenience and simplicity, and to secure other advantages and results, some of which will be referred to in connection with the description of the working parts.

The invention consists in the improved bottle filling apparatus and in the arrangements and combinations of parts of the same all substantially as will be hereinafter set forth and finally pointed out in the clauses of the claim.

Referring to the accompanying drawings, in which like letters indicate corresponding parts in each of the several views, Figure 1 is a side elevation of the improved bottling apparatus or machine. Fig. 2 is a vertical section of the same taken through the axial centers of certain vent tubes. Figs. 3, 4 and 5 are sectional details of certain automatic valves illustrating the improved construction more clearly, Fig. 4 being a section taken on line *a*, Fig. 3, and Fig. 6 is a detail view of a certain hand lever and accompanying parts, showing the relations of the same to one another more clearly.

In said drawings, *a* indicates a wheeled carriage arranged to move horizontally on a table, *b*, to bring the valves from one series

of bottles to the next. On said carriage is arranged an adjustable tank, *c*, adapted to receive the milk, or liquid, and to be lowered into engagement with the bottles and allow an outflow of said liquid into said bottles by means of certain automatic valves. The tank, *c*, is pivoted upon the carriage at *d*, and at the opposite end, at which the automatic valves are stationed, the said tank is vertically adjustable and is supported by side bars, *e*, secured, at *f*, to the tank at or toward the top thereof and to a crank shaft, *g*, at points thereon eccentric to the bearings, *h*, of said crank shaft, on the carriage *a*. Said crank-shaft is provided at one end with a bent handle, *i*, by means of which the tank may be raised or lowered with considerable force without much exertion on the part of the operator, the bend limiting the movement of the handle by engaging the bars *e*. By turning the handled crank shaft or lever, as indicated in dotted outline the tank is lowered and the valves are forced into impervious contact with the upper ends of the bottles and opened to allow the outflow of fluid into the bottles. The arrangement of the side bars, *e*, in connection with the tank and crank shaft extending horizontally from one side to the other of the tank provides a more certain and effective sealing of the bottles than by the means disclosed in our former patent above referred to, and, withal, this construction conduces to increased convenience, simplicity and strength.

To enable the fluid, milk more especially, to be served to the bottles with greater freedom in winter, or when the fluid or the foam thereof thickens because of atmospheric conditions or otherwise, and to enable the vent tubes to be cleaned from air bubbles and to admit a free exit of air from said bottles and an unobstructed inflow of milk, we have constructed the valves as shown in Figs. 2, 3, 4 and 5, where *k, k*, indicate a series of threaded bushings secured in the bottom of the tank at the vertically adjustable end thereof. *l, l*, are tubular valve sections removably secured in said bushings by screwing or otherwise and depending from the bottom of the tank and provided with shoulders, *m*, for holding rubber or elastic valve sections, *n*, in place and also provided at the sides thereof with exits,

o, for the fluid from the tank and with beveled lower extremities, *p*, adapted to cause the bottle to slip from engagement with said tube should the latter, when forced downward with the tank, impinge on the edge of the bottle. The inclination or bevel on the extremity of the valve tube is not in the form of an annular bevel extending around the tube, the lowest point being at the vent, but, on the contrary, the lowest point of the bevel lies away from the vent, so that the drippings will flow away from said vent and not obstruct the same. *q*, *q*, are the vent tubes, extending upward from the closed lower extremities of the tubular valve sections through said tubular sections and the milk chamber of the tank and into connection with a transverse air tube, *r*, stationed at the top of the tank, as indicated in Fig. 2, the air passages in said vertical vent tubes, all opening into said transverse tube as indicated. The transverse tube connected with the open upper ends of the vent tubes, is distinct from the tank, being small of bore so that the air from the mouth of the operator will be directed across the open ends of the vent tubes, the force of the air being, in a sense, concentrated upon said open ends to secure a positive current in said vent tubes to free the same of obstructions simultaneously. The ends of the vent tubes are open to admit of being blown through.

The vertical and transverse tubes or passages may be joined in any suitable manner, but the preferred construction is shown in Fig. 2, where the tank is shown to be provided with a transverse top piece, *s*, which is perforated and into the perforations are inserted a series of T-couplings, *t*, which lie in line to admit the passage of the transverse tube there-through and the downward extensions, *t'*, receive the threaded extremities of the vent tubes. The lower extremities of the vent tubes are provided with heads or means for closing the lower ends of the tubular valve sections so that the milk will be prevented from passing directly downward, but will flow laterally outward through the opening *o*. The shoulder, *m*, is sufficiently small to enter the mouth of the bottle, as indicated in Fig. 3, and the elastic valve section projects laterally beyond said shoulder to engage the upper edge of said bottle, as in Fig. 3. The bottles being arranged in parallel rows upon the table, *b*, the carriage is moved on the track or way, *b'*, to bring the series of valves into vertical line with the open mouths of the bottles. The handle, *z*, is then turned as indicated in outline, and the tank lowered. The laterally extending flanges of the elastic valve sections, *n*, are thus pressed down upon the bottle and compressed vertically, so that the openings, *o*, are uncovered and allow a free exit of milk into the bottle. When pressure is removed the elastic valve sections automatically assume a normal condition and close the lateral openings. Should the vent tubes clog, as they are liable to do when the temperature is reduced, the same

may be quickly cleared by simply blowing through the tube *r*. This action is sufficient to produce a vertically downward draft in the vent tube and to clear the same of clogging bubbles. The lateral openings in the tubular sections cause the milk to flow outwardly against the sides of the bottles. This produces a film on the sides of the bottle and presents a greater surface to the air. The milk is thus aerated more thoroughly so as to clear it of absorbed odors, such as that of onions, and at the same time a central passage, or chamber, is formed in the bottle adjacent to the vent tube openings, so that said tubes are kept clear of air bubbles and the escape of air is not prevented or reduced. To take up space in the filled bottles, or to enable the amount of air space at the top of the bottles to be varied at will, we have interposed removable washers, *m'*, preferably of rubber. These are interchangeable, admitting a larger or smaller one to be substituted for the one first in place. They also serve to take up wear in the rubber blocks *n*. To enable the vent tubes to be adjusted in relation to the tubular sections, and to enable the latter to be readily removed from the vent tubes, for cleansing or other purposes, we prefer to close the ends of the said tubular sections as shown in Fig. 2, where the said vent tubes are provided with heads resembling ordinary piston heads, *q'* being shoulders formed on said vent tubes, *q²* packing for making impervious joints and *q³* threaded followers for compressing the packing.

The operations of the several parts having been described in connection with the description of said parts, further description of the operations is deemed to be unnecessary.

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

1. The combination with the valved tank and wheeled carriage, of bars *e*, *e*, secured to the said tank at their upper ends, and a handled shaft arranged on said carriage and having at opposite ends eccentrics on which the lower ends of said bars *e*, *e*, are secured, substantially as set forth.

2. The combination with the valved tank and wheeled carriage, of bars *e*, *e*, connected with the tank at one end and a handled crank shaft arranged in bearings of the carriage and receiving the other end of the bars at the opposite ends of said crank shaft substantially as set forth.

3. The combination with the wheeled carriage, a pivoted tank provided with a series of valves at the under side, connecting bars *e*, *e*, a crank shaft having a handle bent to engage one of said bars to limit the movement of said handle, substantially as and for the purposes set forth.

4. In combination with the vertically movable tank having a series of automatic valves adapted to enter into contact with a series of milk bottles, a wheeled carriage carrying a shaft *g*, having eccentrics at their opposite

ends and having a handle at one of its ends, rods *e, e*, connecting the eccentric shaft to the tank, one of said rods serving as a stop to limit the movement of the handle and lock the tank in position, substantially as set forth.

5. In combination with the tank having at one end a series of automatic valves adapted to rest upon a corresponding series of bottles, said tank being at said end vertically movable, a carriage for horizontally carrying said tank, a handled shaft having bearings on said carriage, and provided with an eccentric and a bar connected with said tank and said eccentric, the handle being limited in its shaft-turning movement, to automatically lock the tank in position substantially as set forth.

6. The improved bottle filling apparatus, comprising a tank arranged upon a wheeled carriage and horizontally movable therewith, said tank, at one end, being vertically movable with relation to the carriage and bottle supporting table, and being thereat provided with a series of valves, comprising tubular sections having lateral openings, *o*, and elastic blocks, *n*, normally closing said openings, *o*, and adapted to close the mouths of the bottles, the said elastic blocks being adapted to close the mouths of the bottles when the tank is pressed down and to become compressed and uncover the said lateral openings and said bottle supporting table, substantially as set forth.

7. In a bottle filling apparatus, the combination with the tank, of a tube depending from the bottom of said tank, and having a lateral opening and closed end, and an elastic block, also arranged to depend from the bottom of the tank, and arranged around said tube and over said lateral opening, the tube being adapted to enter the bottle and the block to engage the top of the same and to be compressed to uncover the lateral opening, substantially as set forth.

8. In combination with the tank, bushings, *k*, arranged in the bottom of said tank, tubular valve sections arranged in said bushings and projecting downward from the tank and provided with lateral openings for the fluid from the tank, and an elastic covering for said openings adapted to be pressed from a covering position with reference to said openings by the bottles, when the tank is forced downward, substantially as set forth.

9. In combination with the vertically movable tank having at the bottom a series of valves, said valves each comprising a projecting tubular section, *l*, having a lateral opening to throw the outflowing fluid against the sides of the bottle, and an elastic block

flaring to provide a bearing for the top of the bottle and normally covering said opening and adapted to be forced to uncover said opening substantially as set forth.

10. In combination with a tank, a vent tube and a valve section having a lateral opening and beveled end, the beveled end being below and at a distance from the lateral opening and a covering valve section for closing said lateral opening substantially as set forth.

11. In combination with the tank, a series of tubular sections projecting from said tank and provided with lateral openings and inclined extremities, and rubber blocks arranged around said sections to cover said lateral openings and having broad bearings for the tops of the bottles back from said beveled bearings, substantially as set forth.

12. In combination with the tank, a section *l*, having an exit opening, and an elastic block, *n*, to engage the top of the bottle, the shoulder *m* and ring *m'*, to take up wear and displace fluid, substantially as set forth.

13. In combination with the tank, automatic valves and vent tubes, a transverse tube *r*, connecting the upper ends of said tubes and adapted to allow the operator to blow through said transverse tube and over the connected ends of said tubes, substantially as set forth.

14. In combination with the tank, automatic valves at the bottom of said tank and vent tubes extending through said tank to the top of said tank, a transverse tube, *r*, other than the tank itself, connecting with said vent tubes, substantially as set forth.

15. In a bottle filling machine, the combination with the tank and the automatic valves at the bottom thereof, of vent tubes adapted to allow an outflow of air from the filling bottle, T-couplings at the top end of said tubes and a transverse tube connecting said vent tubes and T-couplings, substantially as set forth.

16. In combination with the tank, tubular sections having outflow passages, *o*, and vent tubes threaded and shouldered at the lower ends and having packing and followers for compressing said packing and imperviously closing the ends of said tubular sections, substantially as set forth.

In testimony that we claim the foregoing we have hereunto set our hands this 25th day of October, 1892.

WILLIAM CHILDS, JR.
SAMUEL S. CHILDS.

Witnesses:

CHARLES H. PELL,
OSCAR A. MICHEL.