No. 622,483. Patented Apr. 4, 1899.

J. JACKSON.

BOTTLE FILLING APPARATUS.

(Application filed July 1, 1896.)

No Model.) 3 Sheets—Sheet 1.

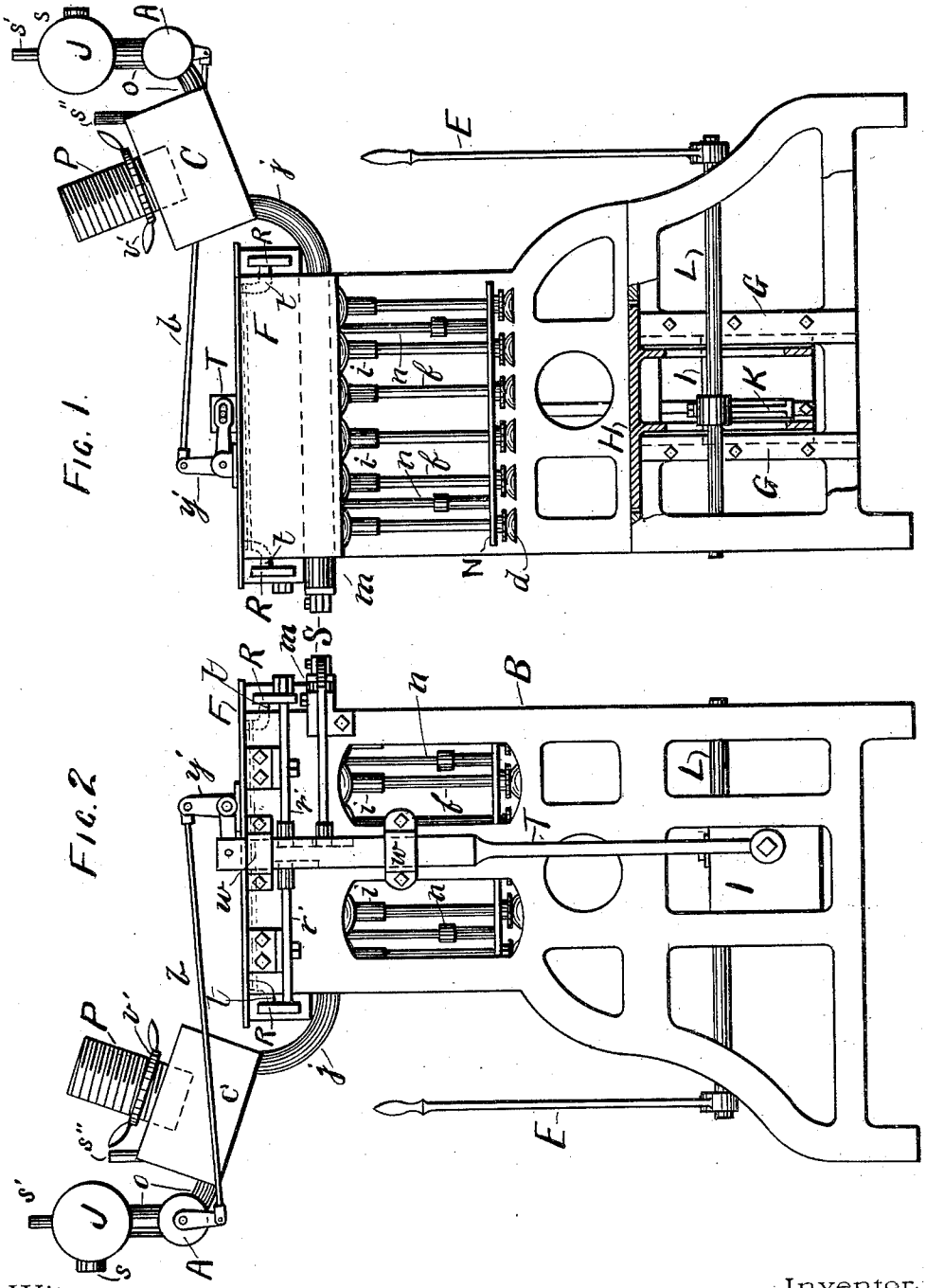


FIG. 1.

FIG. 2.

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(No Model.) 3 Sheets—Sheet 2.

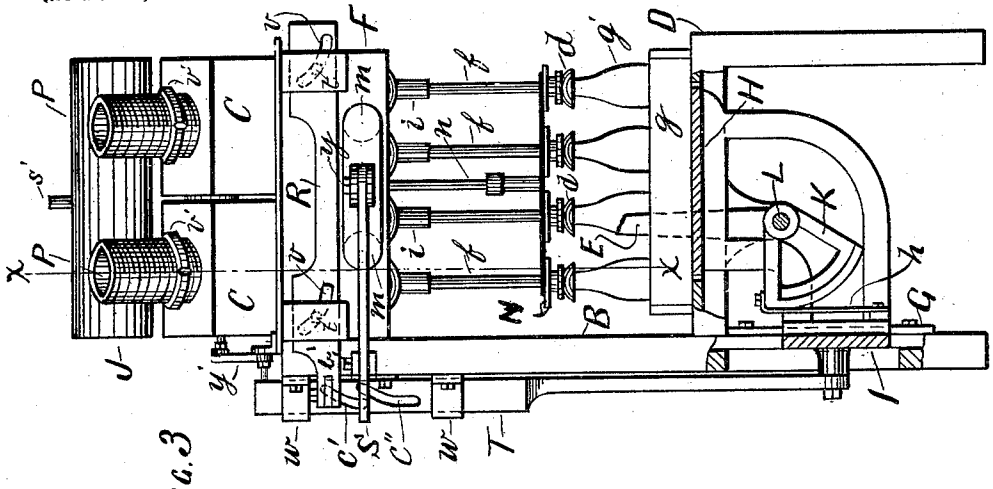


FIG. 3

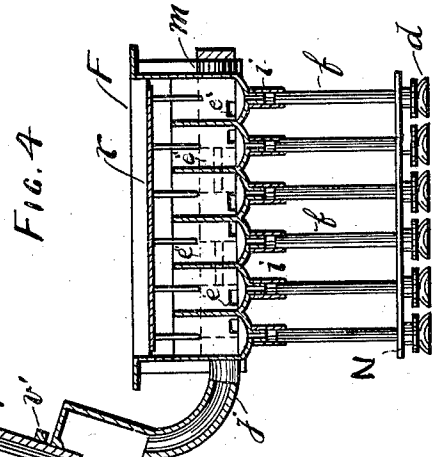


FIG. 4

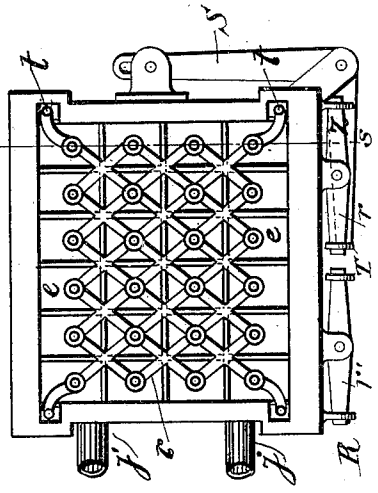


FIG. 5

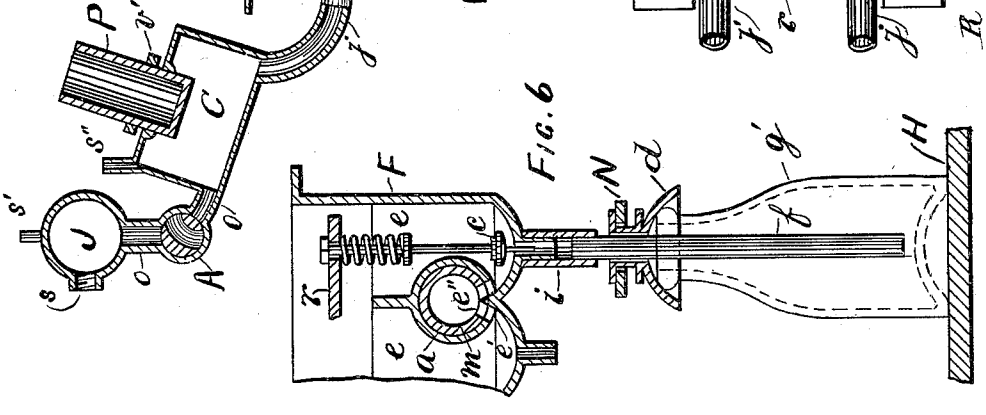


FIG. 6

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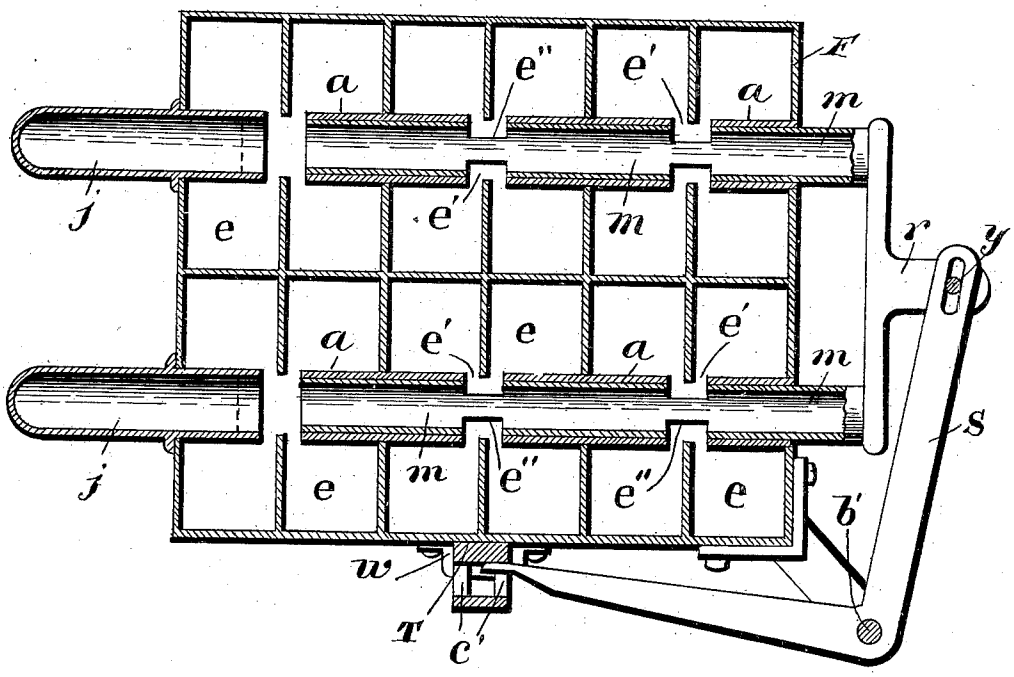
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BOTTLE FILLING APPARATUS.

(Application filed July 1, 1896.)

(No Model.) 3 Sheets—Sheet 3.

Fig. 1.



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UNITED STATES PATENT OFFICE.

JOHN JACKSON, OF LONSDALE, RHODE ISLAND, ASSIGNOR OF ONE-THIRD TO DANIEL F. LOGAN, OF PROVIDENCE, RHODE ISLAND.

BOTTLE-FILLING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 622,483, dated April 4, 1899.

Application filed July 1, 1898. Serial No. 697,711. (No model.)

To all whom it may concern:

Be it known that I, JOHN JACKSON, of Lonsdale, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Bottle-Filling Apparatus; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to that class of machines devised for the purpose of filling bottles collectively and with uniform quantities of liquids, it being an improvement upon the invention disclosed in Patent No. 502,969, issued to me August 8, 1893. It is fully explained and illustrated in this specification and the accompanying drawings.

Figure 1 shows a front elevation of the apparatus, a part of the frame in front being broken away to show the lifting-table. Fig. 2 is a back elevation of the apparatus. Fig. 3 is an elevation of the end to the left in Fig. 1. Fig. 4 shows a vertical section of the upper part of the apparatus, taken on line *x x* in Fig. 1. Fig. 5 is a top view of that part of the apparatus that apportions the liquid to the bottles. Fig. 6 is a vertical section, enlarged, of one of the measuring-divisions with a bottle in process of filling on line *z z*, Fig. 5. Fig. 7 is a horizontal sectional view of one of the sliding tubes that supply the dividing-tank. Fig. 8 is a horizontal section taken through the valves.

The improvements are intended to facilitate the operation of filling the bottles and determining the amount of liquid put in them by providing means for readily varying the amount put in each bottle and in constructing the apparatus so that a simple forward-and-backward motion of a lever will accomplish the whole process, to the end that unskilled labor can be employed and lessen the cost of the filling, and, further, that the liquid can be deposited in the bottles with less foaming, which with some kinds of liquor is very desirable.

The apparatus consists of a back frame B, preferably of cast-iron, with side frames D D secured to it so as to project out in front to form a bench on which the bottles are placed to be filled and which supports the operating shaft and lever. To the top of this back frame B the receiving, measuring, and distributing parts of the apparatus are attached, which consist of the following devices: first, a receiver J, which is connected at *s* with the barrel or tank containing the liquid and also by a small pipe at *s'* to the same barrel to allow the air to escape from the receiver to the barrel. The receiver J is connected by pipes *o o* to a closed receptacle C a little lower down, which has a regulated capacity for the amount of liquid required to be put in one set of bottles. The pipes *o o* are intersected by a rotary valve A, (shown in section in Fig. 4,) that governs the admission of the liquid from the receiver J to the receptacle C. Next below is the dividing-tank F, that forms the top of the apparatus and is divided into chambers *e*, (see Fig. 5,) to apportion the liquid equally to be delivered into the bottles. There is one chamber *e* for each bottle of the set that is to be filled at one time, and each chamber has a discharge-opening at its lower end, which is closed by a valve *c* held on the lower end of a stem that connects it with a grate *r*, by which all the valves can be raised at once. At the outside of the opening of each chamber *e* a tube *f* is attached by a short section of rubber tube *i* to allow the tubes *f* freedom of motion to adjust themselves to the bottles. To steady the lower ends of the tubes *f* and hold them at a proper distance apart so as to enter the bottles, a rack N is suspended on sliding rods *n* from the under side of the tank F on a level with the lower ends of the tubes, and a bell-shaped collar *d* for each bottle is attached to the rack N to receive the neck of the bottle, and in these collars the ends of the tubes hang loosely.

A plate I is held to slide up and down in guides G, fast on the inside of the back frame B, and arms H project out front from it to form a table on a level with the side frames D to receive a rack *g*, with bottles *g'*, Fig. 3, to be filled. To raise and lower the plate I and the bottles, a shaft L is held in bearings attached to the under side of the side frames

D and a segment-wheel K made fast on it, and a flexible strap *h* made fast at one end to the periphery of the segment and at its other end to the plate I, that when the shaft and segment are turned by the lever E the plate and the bottles will be raised or lowered.

The chambers *e e* receive the liquid from the receptacle C through the pipes *j j* and tubes *m m*, fitted to slide in passages *a a*, made between each two rows of chambers and having openings *e'*, which agree with like openings *e''* in the tubes *m* when they are slid out to the left, (see Fig. 7,) and when slid in they close the openings *e'* into the chambers and cut off the flow of the liquid from the receptacle C and from each other. To lift the grate *r* and all the valves *c* connected with it, arms are extended out from it into each recessed corner of the tank F, (see Fig. 5,) and pins *t* are carried down from these extensions to the inclined slots *v* in the sliding bars R, held in brackets on each end of the tank F, and when these bars are slid endwise by the levers *r' r'* (see Fig. 2) the slots *v* will raise the grate *r* by the pins *t*. (See Fig. 5.) To operate the sliding tubes or valves *m m*, a knee-lever S is held on a stud *b'*, fast in a bracket on the corner of the tank F, and one end of this lever is slotted to work on a stud *y* in a bracket fast on the outer ends of the tubes *m* and the other end is moved as will be explained.

The combined operation of the working parts is effected as follows: A bar T is made fast at its lower end to the sliding plate I, which is held to slide up and down by brackets *w w*, (see Fig. 2,) fast on the frame B. The bar T has inclined slots *c' c''* (see Fig. 3) to receive the ends of the knee-lever S and levers *r' r'*, and as the bar rises and falls with the plate I the ends of the levers will be moved in and out by the slots *c' c''*. The movement of the different parts, as brought about by simply moving the lever E forward and back, is as follows: Suppose a rack of empty bottles *g*, placed on the table H, as seen in Fig. 3, and the chambers *e* of the tank F full of liquid, the receptacle C empty, and the valve A closed. By moving the lever E over to the front the segment K and strap *h* will raise the plate I and table H, with the rack *g* and bottles *g'*. At the same time the plate I will raise the bar T and by the lower inclined slot *c''* will move the lever S to push in the sliding tubes *m m*, so as to close the openings *e'* into the chambers *e*, and the bar T will also cause the knee-lever *y'* to open the valve A by the rod *b* and allow the liquid to flow from the receiver J and fill the receptacle C, and the upper inclined slot *c'* in the bar T will cause the levers *r'* to slide the bars R and raise the crate *r* and valves *c* and allow the liquid in the chambers *e* to run into the bottles. The tubes *f* by this time having nearly reached the bottoms of the bottles the liquid will be delivered under the surface of what first flows in, and the usual foaming will in great degree be prevented, which in bottling some kinds of liquor will be a great advantage. When the contents of the chambers *e* have run into the bottles, the lever E is moved back again, letting down the table H and the full bottles, and as the bar T moves down with the plate I the inclined slot *c'* causes the levers *n'* to push back the bars R and let the grate *r* and valves *c* down to close the outlets of the chambers *e*, and the knee-lever *y'* will close the valve A, the receptacle C having filled up, and the slot *c''* in bar T will move the lever S to push in the sliding tubes *m* and open the passages into the chambers *e* to allow them to fill again from the receptacle C, ready to fill another set of bottles by repeating the foregoing operations.

The amount of liquid measured by the receptacle C each time it is filled is equally divided among the chambers *e*, and this quantity may be made more or less by means of the cylinders P P, which have a screw-thread made on them fitting in a thread in the openings in the receptacle C, and by screwing the cylinders down in the capacity of the receptacle will be lessened and by screwing them out it will be increased, thus accurately determining the quantity put in each bottle. Screw-collars *v'*, with handles to turn them by, serve as check-nuts to hold the cylinders when set and to hold a packing to keep the joint tight.

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

1. The tank F, divided by partitions into a series of chambers, each of which has an outlet at its bottom, horizontal passages extending through the tank and provided with openings through which the fluid escapes into the chambers, tubular perforated valves sliding back and forth through the passages, and an angular lever, connected to the outer ends of the valves, combined with a vertically-moving bar which operates the lever at one end, and a mechanism for operating the rod, substantially as described.

2. A tank divided into a series of chambers, each of which has an outlet at its bottom, a vertically-moving valve for each outlet, a grate to which all of the valves are connected; arms extending from the grate into recessed corners of the tank, and pins extending down from the arms, combined with slotted sliding bars with which the pins connect, levers for moving the bars, and a mechanism for moving the levers, substantially as set forth.

3. In a bottle-filling apparatus, a chamber or receptacle from which the fluid flows, a tank divided into a series of chambers, each of which has an outlet at its bottom, a valve for each outlet, a grate to which each valve is connected, arms extending from the grate, pins extending from the arms, slotted sliding bars to operate the grate, through the pins, and levers to move the bars, combined with sliding valves, an angular lever for operat-

ing the valves, a vertically-sliding bar which operates the angular lever and the levers which operate the grate at the same time, a vertically-moving table on which the bottles are placed, and means for operating both the table and the rod, substantially as specified.

4. In a bottle-filling apparatus, a measuring receptacle, a dividing-tank connected thereto, a valve for each outlet to the tank an operating-shaft, a segment secured thereto, a plate connected to and operated by the segment, a vertically-movable table on which the bottles are placed to be filled, the operating-levers for controlling the flow of the liquid and the valves and a vertically-moving bar connected at its lower end to the plate, and which bar at its upper end operates the levers which control the flow of the liquid to the tank and operate the valve, substantially as shown.

In testimony whereof I have hereunto set my hand this 27th day of June, A. D. 1896.

JOHN JACKSON.

In presence of—

JANUS W. RICHARDSON,

BENJ. ARNOLD.