

No. 829,839.

PATENTED AUG. 28, 1906.

H. G. BROWNELL.
FILLING MACHINE.

APPLICATION FILED OCT. 12, 1904.

2 SHEETS—SHEET 1.

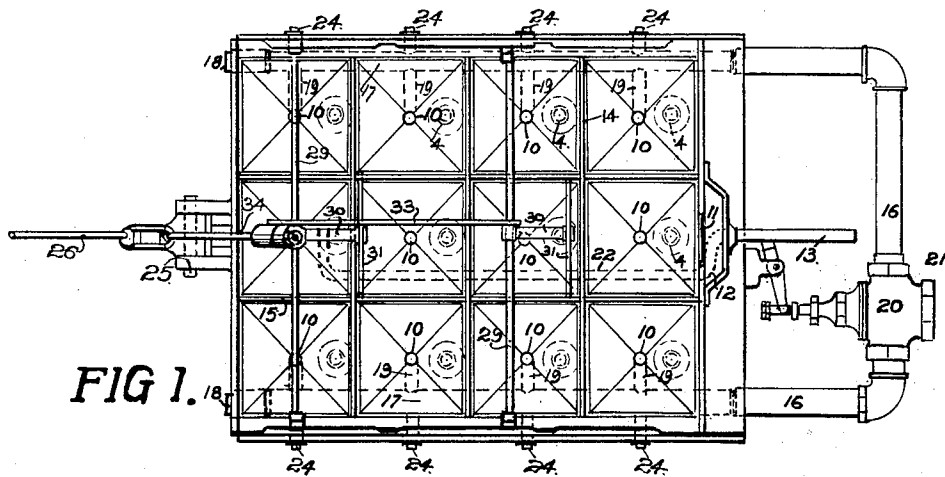


FIG 1.

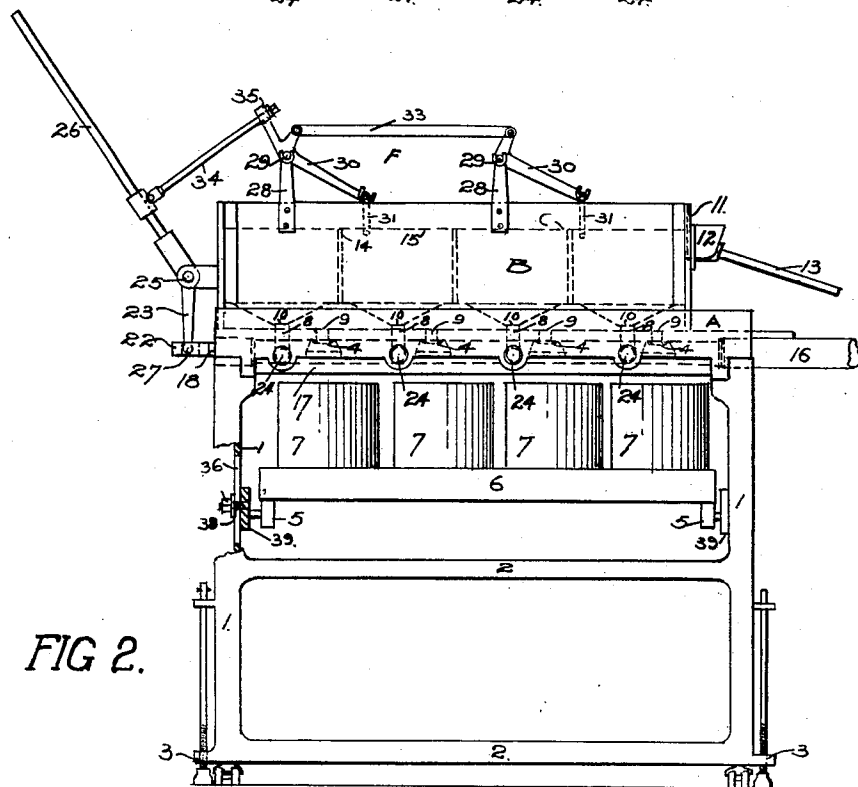


FIG 2.

WITNESSES

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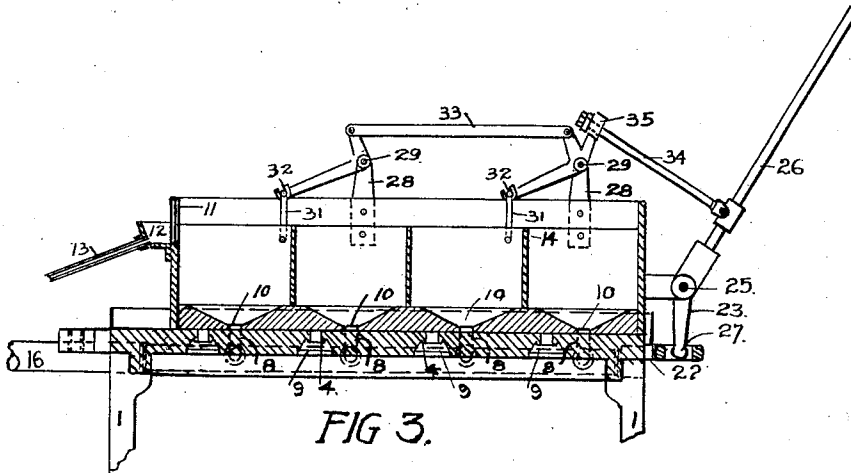


FIG. 3.

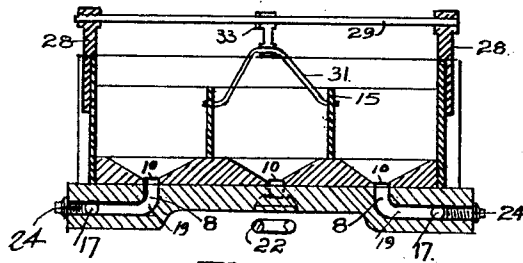


FIG. 4.

WITNESSES

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UNITED STATES PATENT OFFICE.

HARRY G. BROWNELL, OF LOUISVILLE, KENTUCKY.

FILLING-MACHINE.

No. 829,839.

Specification of Letters Patent.

Patented Aug. 28, 1906.

Application filed October 12, 1904. Serial No. 228,160.

To all whom it may concern:

Be it known that I, HARRY G. BROWNELL, a citizen of the United States, residing in Louisville, in the county of Jefferson and State of Kentucky, have invented a new and useful Improvement in Filling-Machines, of which the following is a specification.

My invention relates to improvements in filling-machines used for filling bottles, cans, jars, or other receptacles with liquid or semi-liquid matters.

The objects of my improvements are, first, to provide a mechanism for filling the reservoir easily, regularly, uniformly, and in conjunction with the operation of the machine; second, to provide a means for starting or stopping the flow of the matter being filled into the reservoir, said means operating simultaneously and in conjunction with the device used for shifting the reservoir; third, to provide a simple and convenient means for raising and lowering the partition-cells; fourth, to provide a convenient overflow to the reservoir which serves to prevent overfilling of reservoir and at the same time may be used as a gage by the operator for regulating the inflow of matter proportionate to the capacity of receptacles being filled; fifth, to provide the legs or supports of the machine with convenient means for adjusting the machine to a perfect level and with means for easily raising or lowering the roller which supports the trays containing the bottles, cans, or other receptacles being filled, and, sixth, to provide means whereby the waste in filling is reduced to a minimum and the necessity for receptacles to catch the drip is eliminated.

I attain the objects of my invention by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a top plan view of my machine. Fig. 2 is a side view in elevation of my machine. Fig. 3 is a vertical longitudinal sectional view of said machine through the center. Fig. 4 is a front view of vertical cross-section through center of said machine.

Table A has legs 1 made of cast-iron or other material and steadied by cross-piece 2. It is necessary to keep the machine perfectly level when in operation, and in order to adjust same upon any floor-surface whether smooth or uneven the legs are provided at the bottom with ears at 3, into which threaded leveling-rods are screwed vertically, so that the legs may be raised or lowered, as desired.

The legs may be provided at the bottom with casters for convenience in moving machine. The legs are slotted centrally and vertically, as shown at 36, and in these slots bolts 38 of strips 39 extend, these strips carrying rollers 5.

The tray or packing-case 6 in Fig. 2 containing the bottles, jars, or receptacles 7 to be filled is inserted at the side and by means of rollers 5 is conducted into position for filling, and the strips, by means of nuts 37, supporting the rollers, are adjustable to suit the height of bottles or receptacles in the tray.

Mounted upon the legs 1 is the top of the table upon which rests the reservoir B, so that the upper face of top of table and the lower face of bottom of reservoir come in perfect contact and present opposing flat and smooth surfaces. The top of the table is provided with two series of ports 8 and 9. The ports 8 connect with the chambers 17 by channels 19 and are alined longitudinally on either side, and ports 9 are arranged in rows at uniform distances from each other.

The bottom of the reservoir is provided with a series of ports 10 corresponding in number and position to those of series 9 in top of table and its outer longitudinal rows with those of series 8 in top of table when in register. The reservoir is provided with means for giving it a reciprocal sliding motion upon top of table, so that its ports may be placed in register alternately with the corresponding ports in table-top or may be shifted out of register, so that the ports of both the reservoir and the top of table may be closed mutually by the imperforate portion of opposing member. When it is desired to fill the reservoir, it is shifted until the outer longitudinal rows of ports 10 register with ports 8 of top of table, and when it is desired to discharge the matter from the reservoir into bottles or other receptacles being filled it is shifted so that ports 10 register with ports 9 of top of table, and the ports are closed by throwing them out of register.

The ports in the reservoir and the discharge-ports 9 in table-top are counterbored or reamed out in such a manner and depth that the surface of port to which matter being filled can cling is exceedingly small, and drip is practically obviated, and the thin annular lip 4 at under edge of discharge-ports 9 prevents the little drip from running. By providing annular lip 4, which practically constitutes a knife-edge, the surface to which the liquid matter may cling is greatly de-

creased, and consequently when the ports are moved out of register the liquid matter in the lower port will be immediately "severed," so to speak, by the knife-edge, whereas were the surface flat the liquid matter would cling and drip. This arrangement eliminates the necessity for receptacles for catching and carrying away the drip or waste. To allow an overflow if reservoir is overfilled, a notch is cut in the back of reservoir at 11, opposite the lever extending down the back of reservoir a small distance, and may be partially or entirely closed by a vertically-sliding gate. This notch and conveniently-movable gate act as a gage to indicate to the operator the proper depth to which the reservoir shall be filled, and if the matter does not run over there is a little outside reservoir 12, with outlet drain-pipe 13, from which overflowing liquid may be conducted away by a rubber tube or other convenient means.

Within the reservoir is the frame C, composed of strips 14 and 15, arranged transversely and intersecting each other in planes, so as to form a series of partition-cells of equal size and corresponding in number with the number of ports in reservoir. The ends of the intersecting cross-pieces 14 and 15 abut the walls of the reservoir, so that the walls of the reservoir form two sides of each corner-cell and one side of each other marginal cell. These partition-cells serve to equalize and distribute the flow from the discharge-ports, and thereby insure discharge of equal quantities of matter being filled into bottles or other receptacles placed beneath discharge-ports. The frame C is raised when reservoir is being filled and lowered when it is being emptied through discharge-ports.

The means for filling the reservoir consists of chambers 17, cast longitudinally in or under the lower surface of table, channels 19, of uniform size, leading into sides of table and connecting chambers 17 with ports 8 in tabletop, and a receiving-pipe 16, screwed into rear ends of chambers 17 and leading into same. In end pipe 16 as a sectional part thereof is a cross or globe valve 20, which cuts off or admits the flow of matter through pipe connection 21. The valve is normally held closed by a spring, but is opened and closed by means of a slide-rod 22, extending underneath bottom of machine and connected with lower extension 23 of lever in Fig. 2 and operating concurrently with movements of lever. When it is desired to use the machine, the matter to be filled is placed in a tank which has a suitable pipe connecting it with machine at pipe connection 21 in valve. This tank is elevated above the top level of machine, and by raising or lowering the tank the pressure necessary for filling the reservoir may be regulated as desired. In the forward ends of chambers 17

are inserted detachable plugs 18, and in the ends of channels 19 are detachable plugs 24. When it is desired merely to drain out the chambers, it may be done by removing plugs 18 and conducting waste away by convenient means; but to clean the machine more thoroughly the plugs 24 are removed and the whole then flushed with water.

The movable parts of my machine are operated in unison by simple and convenient means. The lever is hinged at 25 to a bracket projecting from front of reservoir in the center and has a lower extension 23 forming an angle with its upper portion 26, the lower end of said extension operating with free longitudinal play in slot 27 in the forward end of slide-rod 22. The means F for raising and lowering frame C consists of brackets 28, attached to sides of reservoir and supporting in their bearings rock-shafts 29, extending across above top of reservoir. Upon the center of rock-shafts are mounted bell-cranks 30, and frame C is provided with bails 31, which engage catch-notches in arms 32 of bell-cranks. The bell-cranks are connected by connecting-rod 33, and the forward bell-crank is in turn connected to lever by connecting-rod 34, this rod passing through a collar 35 upon forward bell-crank and having the upper end threaded and provided with a nut for adjusting same to the proper length. Simply by operating the lever the reservoir is shifted as desired for throwing its ports in or out of register with ports in top of table, the frame C is raised or lowered as required when reservoir is being filled or emptied, and the lower extension of lever in connection with connecting-rod 22 opens and closes cross or globe valve 20 for admitting or cutting off the flow of liquid or semiliquid matter from supply-tank.

In the practical operation of my machine the bottles, cans, or other receptacles to be filled are placed in a tray, packing-case, or other convenient means of carriage, which is slid over the rollers on roller-frame until there is one bottle, can, or receptacle under each of emptying-ports 9. The liquid or semiliquid matter to be filled is placed in an elevated tank, so that it can gravitate downward at sufficient pressure to force it through into reservoir. The reservoir being in position so that its ports are closed, the lever is drawn forward by operator. The first part of movement imparts backward motion to slide-rod 22, which opens valve 20, and upon rod 22 being pulled outwardly to its limit the reservoir moves forward until its outside rows of ports are almost in register with inlet-ports 8. Then the partition-cells begin to rise. By concluding the forward movement of lever the partition-cells are entirely raised and the corresponding ports come into register, and the matter being filled having already passed through valve 20 into receiv-

ing-pipe 16 and from that to chambers 17 and into channels 19 now passes through registering ports into reservoir until same is filled to the extent desired. The operator then shoves the lever backward. At the first movement the lower extension of lever imparts a forward movement to slide-rod 22 and closes valve and stops the flow of matter and at the same time partially lowers partition-cells. A little further motion lowers partition-cells entirely by reason of the fact that the slot in slide-rod in which lower extension of lever works is large enough to allow free backlash, which allows completion of motion of cell-partitions before reservoir is moved. Then the movement of lever is completed, rod 22 having reached the limit of its inward movement, and the reservoir is shifted with said rod as a point of fulcrum for the lever until its ports register with ports 9 of table-top, whereupon the reservoir discharges through the registering ports, and the bottles, cans, or receptacles underneath are filled, and the process may be repeated as desired. If the reservoir contains more matter than the capacity of the bottles or cans requires, then the discharge can instantly be cut off by shifting the reservoir laterally until ports are out of register.

What I claim as new, and desire to protect by Letters Patent, is—

1. In a device of the type set forth, a table, the top of which is formed with inlet-ports, chambers and channels, the latter leading into the sides of the top and connecting said ports and chambers, outlet-ports in the table-top, a receiving-pipe leading into said chambers, a valve in the pipe, and a reservoir on the top having ports in its bottom adapted to register with said ports of the table-top.

2. In combination with a table-top having inlet and outlet ports, a reservoir on the top having ports to register with said first-named

ports, a lever pivoted to the reservoir, means for supplying the liquid to said inlet-ports, means for controlling said means, a rod connected to said controlling means and having connection with the lower end of said lever, movable partition-cells in the reservoir, and means operated by said lever whereby said cells are raised out of and lowered into said reservoir during the movements of said lever.

3. In combination with a top having inlet and outlet ports, a reservoir slidable on the top and having ports to register with those of the top, a pipe for supplying the liquid to said inlet-ports, a valve in the pipe, means to control the valve, and means connected to each of said valve and reservoir to operate the same.

4. In combination with a table formed with two sets of ports, a reservoir formed with one set of ports adapted to register alternately with said table-sets, means to supply and control the supply to one of the table sets, a lever connected to said controlling means and said reservoir for operating each of the same.

5. In combination with a table formed with two sets of ports, a reservoir formed with one set adapted to register alternately with said table sets, a pipe leading into one set of said table-ports, a valve in the pipe, a rod for operating the valve, movable partition-cells in the reservoir, a lever having its lower end connected to said rod, and means connecting said lever with said cells whereby movement of the lever will be communicated to said cells.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

HARRY G. BROWNELL.

Witnesses:

EUGENE R. ATTKISSON,
C. M. FLOOD.