No. 652,820. Patented July 3, 1900.

J. W. TUTTLE.

MACHINE FOR FILLING LIQUIDS INTO CANS.

(Application filed Apr. 3, 1900.)

(No Model.) 3 Sheets—Sheet 1.

Fig. 1.

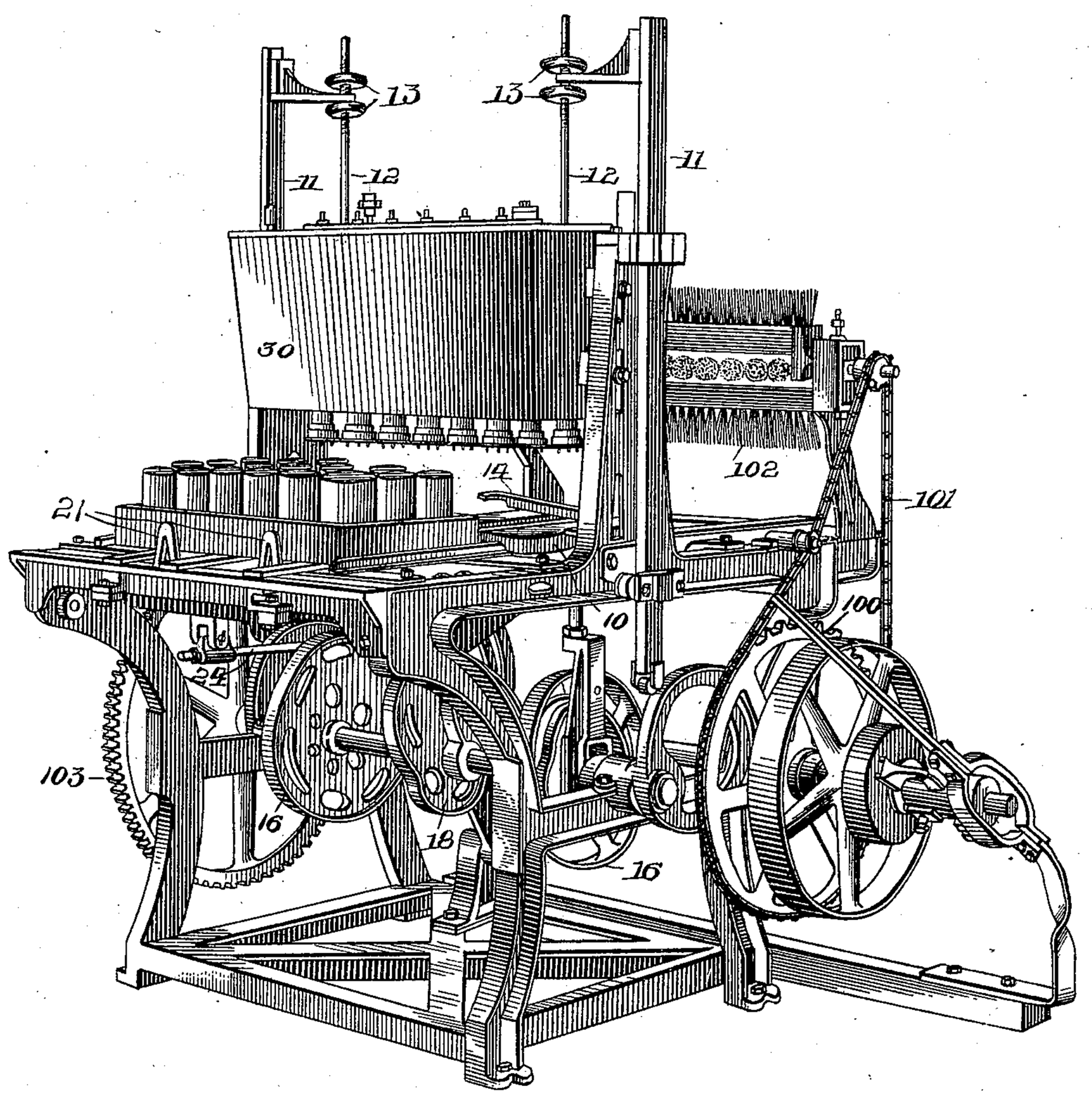

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Fig. 4.

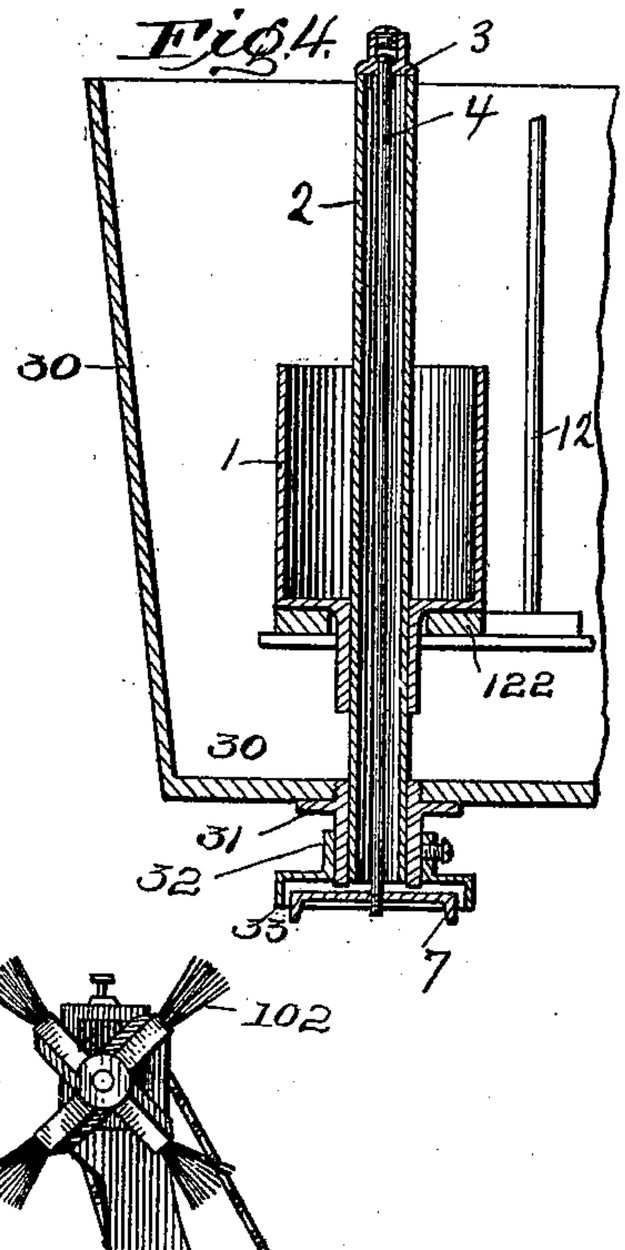

Fig. 2.

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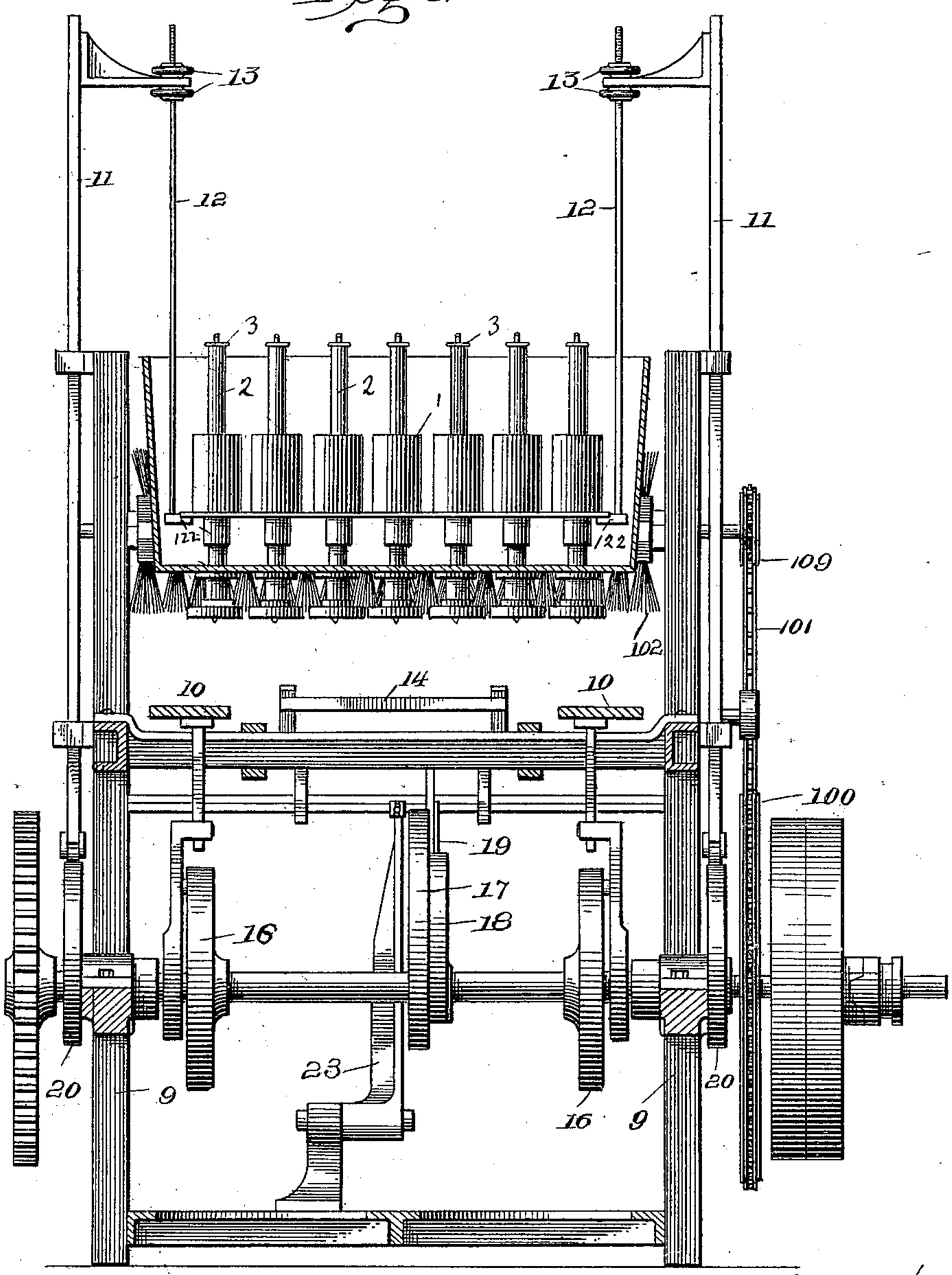
Fig. 3.



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UNITED STATES PATENT OFFICE.

JAMES W. TUTTLE, OF BALTIMORE, MARYLAND, ASSIGNOR TO THE SINCLAIR-SCOTT COMPANY, OF SAME PLACE.

MACHINE FOR FILLING LIQUIDS INTO CANS.

SPECIFICATION forming part of Letters Patent No. 652,820, dated July 3, 1900.

Application filed April 3, 1900. Serial No. 11,349. (No model.)

To all whom it may concern:

Be it known that I, JAMES W. TUTTLE, a citizen of the United States, residing at Baltimore, in the State of Maryland, have invented certain new and useful Improvements in Machines for Filling Liquids into Cans, of which the following is a specification.

The object of my invention is to devise a machine which shall fill syrup or brine into cans which have previously been filled with fruits or vegetables and which are subsequently to be hermetically sealed. The apparatus, as I have shown it, is more especially designed for filling tin cans having circular apertures in the top through which access is had to the interior, and which apertures are subsequently covered with caps, which are then soldered to the cans.

In a general way my machine consists of a horizontal bed-plate on which a tray of cans is placed. This tray is pushed forward by a reciprocating platform or impelling device sliding in the bed-plate until it occupies a position under the brining-reservoir. The brining-tank is constructed with a series of tubes which are secured to apertures in its bottom and which tubes extend well above the normal surface of the brine. The tops of these tubes are closed with valves, which are operated by means of rods projecting through the centers of the tubes, and which rods terminate in spiders which project below the bottom of the reservoir. Surrounding the tubes on the inside of the reservoir there is a series of cups, which are raised and lowered at proper times by means of cams on opposite sides of the machine. The tray of cans below the reservoir being raised against the bottom of the reservoir by reciprocating tables and the cups surrounding the tubes being at the same time raised to the top of these tubes, the valves at the top of the tubes are opened by the pressure of the cans against the spiders on the rods through their centers, and the brine or syrup in the cups thus flows down through the tubes and into the cans. The cans being again lowered onto the bed-plate and another tray of cans having in the meanwhile been placed behind the first tray, the impelling device forces both trays of cans forward, that last on the bed-plate being pushed under the brining-reservoir, and the tray before referred to, whose cans are filled with brine, being transferred to a tilting table. While the second tray of cans is being filled with brine the first tray of cans is tilted at a slight angle by the tilting table, so as to let some of the brine run out of the cans. This is necessary, since cans that are completely filled with brine cannot be subsequently successfully capped. A third tray of cans being now placed on the bed-plate all three trays are pushed forward by the impelling device. The second and third trays are acted upon by the tilting table and the brining device, respectively. The first tray, which has just left the tilting table, passes under a rotary brush, which acts as a cleaning device to remove superfluous brine or syrup from the top of the can. This tray of cans is now ready to have the cap soldered thereto.

The general principles of my invention will now be understood. I need at this point merely to remark that I attach great importance to the construction in accordance with which the cans are pressed upwardly against the bottom of the brining-reservoir, and thus open the valves at the top of tubes running up into the reservoir. This construction, in connection with the vertically-movable cups surrounding the filling-tubes, enables me to feed a regulated quantity of syrup into the can, and it avoids all of the objections which reside in constructions in which the valves are at the bottom of the reservoir. Valves in such locations are liable to become clogged with the material from the inside of the can. Such material floats against the valve and sometimes gets on the upper surface of the valve and acts to clog it. As the brine is kept very hot, such obstructions cannot be removed without emptying the reservoir.

In the drawings, Figure 1 is a perspective view of my brining-machine. Fig. 2 is a longitudinal vertical section. Fig. 3 is a vertical cross-section. Fig. 4 is an enlarged view of the valve and cup construction.

In the bottom of the brining-tank 30 are screwed cylindrical bushings 31, which carry circular cap-plates 32. The bottom 33 of these cap-plates comes against the top of the tin can and effects a reasonably-tight closure

therewith. The filling-tubes 2 are securely fastened within the bushings 31 and extend well above the top of the surface of the brine. The top of the filling-tube 2 is closed by a valve 3, which carries a rod 4, to the lower end of which is secured a spider 7. The filling-cups 1 slide up and down on the filling-tubes 2, it being understood that the bottoms of these cups rest on a plate 122, which is actuated by rods 12. It will thus be understood that if a can is pressed upwardly against the under surface 33 of the cap 32 the spider 7 will raise the rod 4, and thus raise the valve 3 from off the top of the tube 2. If at the same time the cup 1, which has been filled with brine while near the bottom of the reservoir, is raised above the top of the tube 2, the brine within the cup 1 will flow down through the tube 2 and into the can. In some cases the valve 3 and its operating attachments may be omitted. In order to complete this part of the description, I may refer at once to Figs. 2 and 3. Here it will be seen that cams 16 on the shaft A act to raise and lower tables 10 on the opposite side of the apparatus, on which tables the tray of cans rests when they are under the brining-tank. These two tables are inset in the bed-plate and lift the opposite edges of the tray. The construction is more efficient than one in which the table comes under the center of the tray and extends across the machine. It will also be seen that the rods 12, which carry the plate 122, on which the filling-cups 1 rest, are adjustably secured by means of nuts 13 to sliding rods 11. The purpose of the adjustment is to determine the height to which the filling-cups 1 are raised above the top of the tubes 2, and thus to determine the amount of syrup which flows into the cans. The sliding rods 11 are raised and lowered by cams 20 on the shaft A, which are timed to act with the cams 16. It thus follows that when a tray of cans is pressed upwardly by the tables 10 against the under surface of the caps 32 the filling-cups 1 are at the same time raised by means of the rods 11 above the top of the tubes 2, and thus act to fill the cans upon the opening of the valves 3. The cams 20 have flat faces, so as to leave the filling-cups in a raised position for a sufficient period of time to cause their emptying.

In order to push a tray of cans under the brining-tank, I employ a sliding platform 200, moving in ways in the bed-plate, which has an impelling device 21, acting against the back of the tray. A rod 24, connected to a lever 23, which in turn is acted upon by a slot-cam 17, acts to push this tray of cans forward. When the platform 200, however, moves in the reversed direction toward the right in Fig. 2, the pivoted and weighted pawl 22 is so tilted that the point which normally projects into the path of the cans moves toward the left, thus sinking below the under surface of the tray. The point of the pawl thus has no effect on the tray during such movement. On the next forward movement of the platform 200—that is, a movement toward the left in Fig. 2—the pivoted pawl 22 is so arranged that its point, which projects above the table, engages the back of the tray which has previously been pushed under the brining-tank, and thereby proceeds to push the tray onto the tilting table. The pawl is prevented from tilting backward at this time by the engagement of the upper surface of its weighted part 221 with the under surface of a cross-piece in the platform. The construction of the cam 17 and lever 23 is such as to actuate the platform 200 positively in each direction. The tilting table 14 is pivoted on a shaft 141 in bell-crank fashion. Secured to the arm 142, which connects the table 14 with the shaft 141, is an arm 19, which rests on the upper surface of the cam 18. A tray of cans having been pushed into position on this tilting table, the cam 18 raises the arm 19, and thus tilts the table 14, so that the cans may drip and be emptied of a small portion of the brine or syrup contained in them. The tilting table does not extend entirely across the machine. In fact, it is merely broad enough to properly support the tray. The construction is thus lighter than one in which the whole section of the bed-plate is made to tilt. The tilting table 14 is merely inset in the bed-plate of the machine in the path of the trays. On the next forward movement of the series of trays which is now on the bed-plate the tray which has just been described as on the tilting table 14 is pushed under the rapidly-revolving brushes 102, so that the tops of the cans are clean and made ready for soldering. These brushes 102 are revolved by a gear 100 on the power-shaft transmitting its motion by means of a chain 101 to a sprocket 109 on the brush-shaft.

As before indicated, power is conveyed to the machine through the power-shaft B, which carries a pinion (not shown) meshing with the gear 103 on the cam-shaft A.

The operation of the machine will now be clear. Power being conveyed to the power-shaft B the brush 102 is at once set in motion. At the same time the pinion on the power-shaft acting on the gear 103 acts to turn the cam-shaft A. A boy or other operator feeds a tray of cans onto the bed-plate of the machine in front of the impelling devices 21. The cam 17 acts to move the impelling devices 21, and thereby to place the tray of cans under the brining-tank. Thereupon the cams 16, acting on the tables 10, act to lift the tray and its cans against the under surface of the brining-tank. While this has been going on the cams 20 have been lifting the cups toward the top of the filling-tubes, thus placing them in position to begin to discharge their contents. When finally the cans come against the under surface of the caps 32 and press against the spiders 7, they open the valves 3, and the cans are filled with brine. The tray again descends and is pushed forward to the

tilting table 14. This is tilted by operation of the cam 18 to empty some of the brine. The tilting table having resumed its normal position, the tray of cans is pushed past the rotary brushes 102, and the operation is completed. In this way it will be seen that the operation is entirely continuous. No attendant is required except a boy to feed the trays. There is no liability of the valves becoming clogged, and it is only necessary to keep the reservoir filled with brine, which may, if desired, be automatically effected by a common type of floating valve.

For the sake of brevity I call my machine, which is intended to fill brine or syrup into cans, a "brining-machine." It will be understood that the machine operates just as well to fill syrup as to fill brine.

What I claim is—

1. A brining-machine comprising a tank having filling-tubes secured to apertures in its bottom, valves at the top of the tubes and cups, sliding on the tubes, to empty their contents into the cans when the valves are opened, substantially as described.

2. A brining-machine comprising a tank having filling-tubes secured to apertures in its bottom, valves at the top of the tubes having rods secured thereto which pass through the tubes, and cups sliding on the tubes to empty their contents into the cans, when the valves are opened by pressure of the cans against the rod, substantially as described.

3. A brining-machine comprising a tank having filling-tubes secured to apertures in its bottom, valves at the top of the tubes having rods secured thereto passing through the tubes, cups sliding on the tubes, and a vertically-movable table, for raising the cans to open the valves through the intervention of the rods and thus to fill them, substantially as described.

4. A brining-machine comprising a tank having filling-tubes secured to apertures in its bottom, valves at the top of the tubes, cups sliding on the tubes and resting on a plate, sliding rods for raising the plate and cams for operating the rods, substantially as described.

5. A brining-machine comprising a tank having filling-tubes secured to apertures in its bottom, valves at the top of the tubes, cups sliding on the tubes, a plate on which the cups rest, adjustably secured to sliding rods for raising the plate and cams for operating the rods, substantially as described.

6. A brining-machine comprising a tank having filling-tubes secured to apertures in its bottom, valves at the top of the tubes having rods secured thereto which project through the bottom of the tubes, cups sliding on the tubes and resting on a plate, sliding rods for raising the plate, cams for operating the rods and a vertically-movable table for raising cans to coact with the valve-rod to open the valves and empty the cups, substantially as described.

7. A brining-machine comprising a tank having filling-tubes secured to apertures in its bottom, valves at the top of the tubes having rods secured thereto which project through the bottom of the tubes, cups sliding on the tubes, sliding rods for raising the cups, cams for operating the rods and a vertically-movable table for raising cans to coact with the valve-rods to open the valves and empty the cups, substantially as described.

8. A brining-machine comprising a tank having filling-tubes secured to apertures in its bottom, valves at the top of the tubes having rods secured thereto which project through the bottom of the tubes, cups sliding on the tubes, sliding rods adjustably secured to the cups, cams for operating the rods, a vertically-movable table for raising cans to coact with the valve-rods to open the valves and empty the cups, and cams for raising the table, substantially as described.

9. A brining-machine comprising a tank having filling-tubes secured to apertures in its bottom, valves at the top of the tubes having rods secured thereto passing through the tubes, spiders secured to the lower ends of the rods and caps surrounding the lower ends of the tubes to effect a closure with the cans, substantially as described.

10. A brining-machine comprising a bed-plate, a brining-tank thereover, an impelling device for pushing a tray of cans under the brining-tank, and vertically-movable tables taking under opposite sides of the tray for raising the cans up to the bottom of the brining-tank to be filled, substantially as described.

11. A brining-machine comprising the combination of a bed-plate, a brining-tank above the plate, an impelling device for moving the trays along the table, a tilting table in the path of the trays, a shaft and a bell-crank for securing the table to the shaft, substantially as described.

12. A brining-machine comprising a combination of a bed-plate, an impelling device sliding in ways in the plate operating at one end of the table to move the cans along the table, a brining-tank above the table, a tilting table inset in the bed-plate beyond the brining-tank and within the path of the cans and a rotary brush beyond the tilting table, substantially as described.

13. A brining-machine comprising the combination of a bed-plate, a brining-tank above the table, an impelling device sliding in ways in the bed-plate at one end of the table, a slotted cam and lever for moving the device positively in both directions, and a tilting table in the path of the cans at the other end of the horizontal table, substantially as described.

14. A brining-machine comprising the combination of a power-shaft and a cam-shaft geared thereto, a brining-tank above the table, a reciprocating impelling device, and a tilting table on opposite sides of the brining-tank, vertically-movable tables under the

brining-tank and connections between these parts and cams on the cam-shaft to move them in proper order, substantially as described.

15. A brining-machine comprising a bed-plate, a brining-tank above the plate, a tilting table inset in the bed-plate beyond the brining-tank and a cam and connections for operating the tilting table to remove the superflous brine from the cans, substantially as described.

16. A brining-machine comprising a tank having filling-tubes secured to apertures in its bottom, cups sliding on the tubes, to empty their contents into the cans when raised and mechanism for raising the cups, substantially as described.

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

JAMES W. TUTTLE.

Witnesses:
MURRAY HANSON,
WILLIAM H. BERRY.