

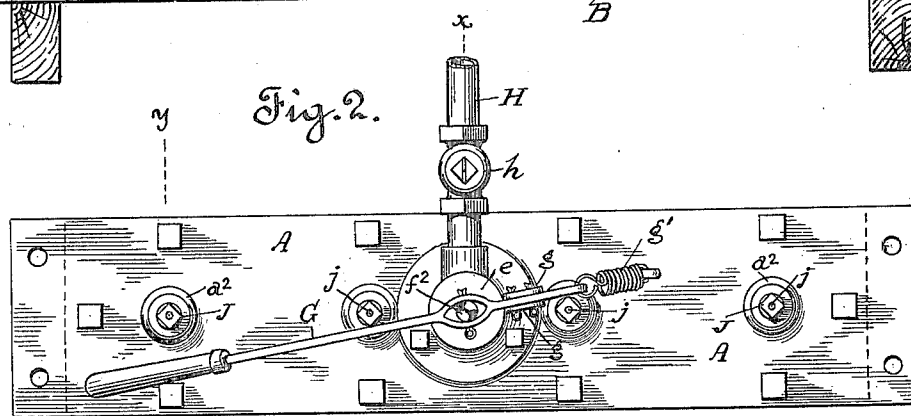
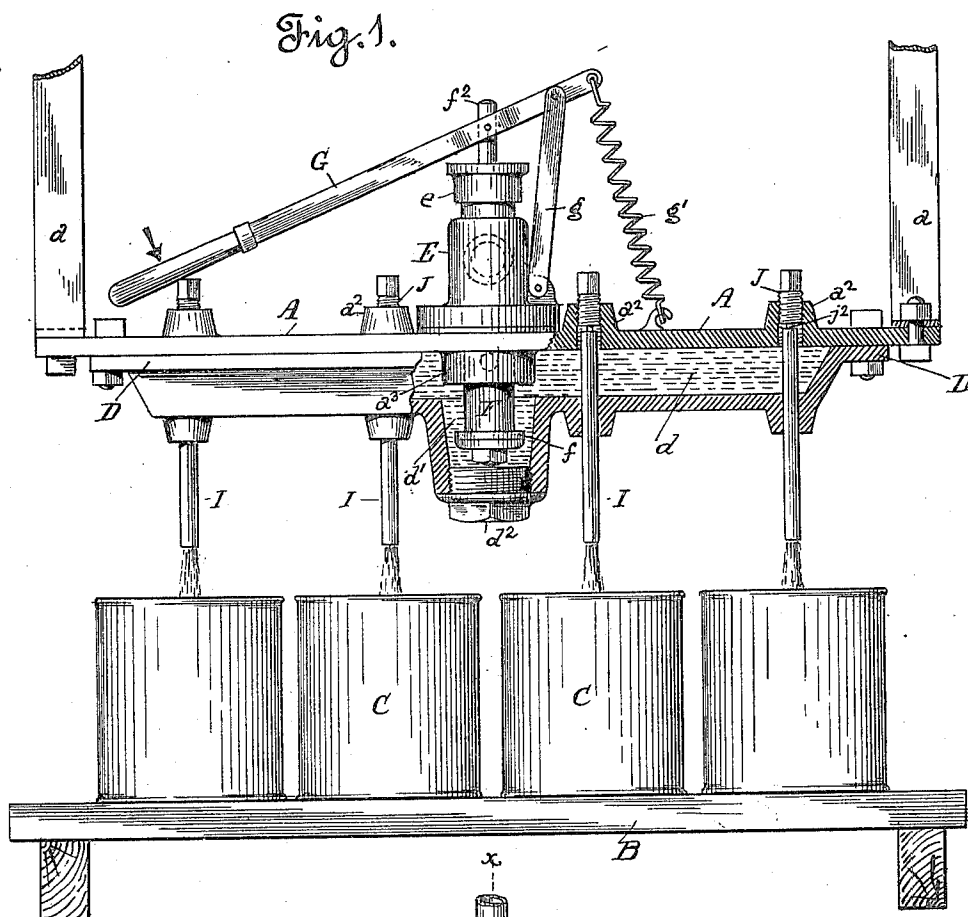
No. 680,762.

Patented Aug. 20, 1901.

F. E. CATON.
CAN FILLING MACHINE.
(Application filed Apr. 4, 1901.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses.

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Walter & Co.

Inventor.

Fred E. Caton
by *Wm F. Booth*
his Attorney.

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2 Sheets—Sheet 2.

Fig. 3.

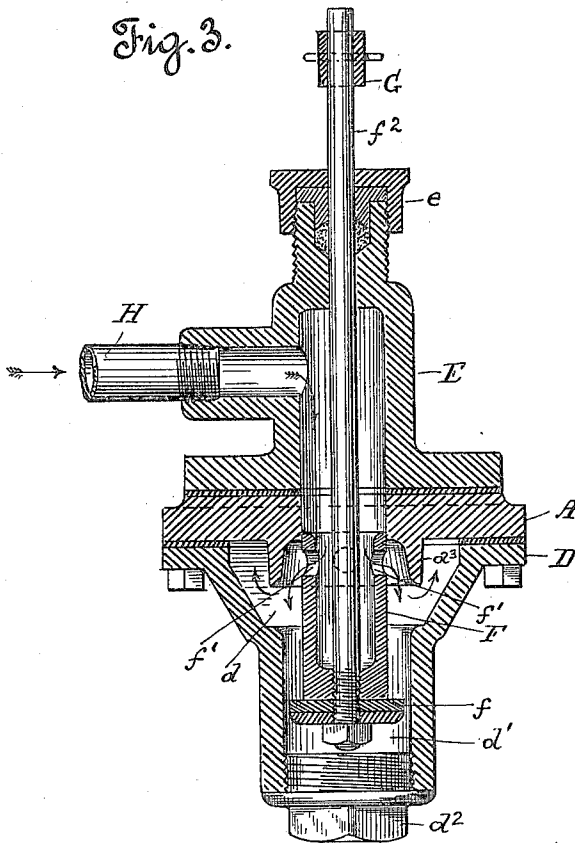
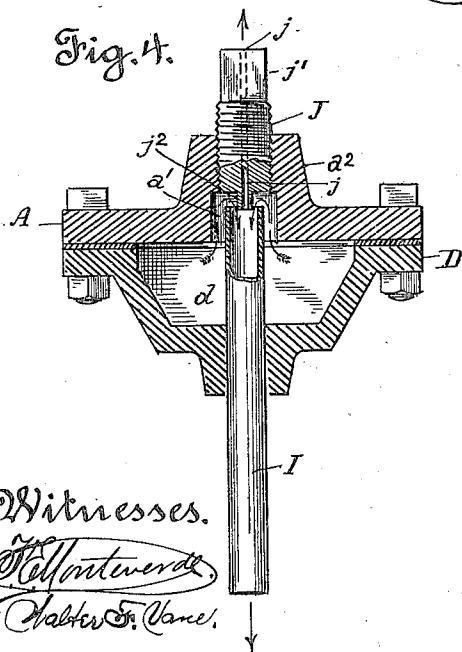
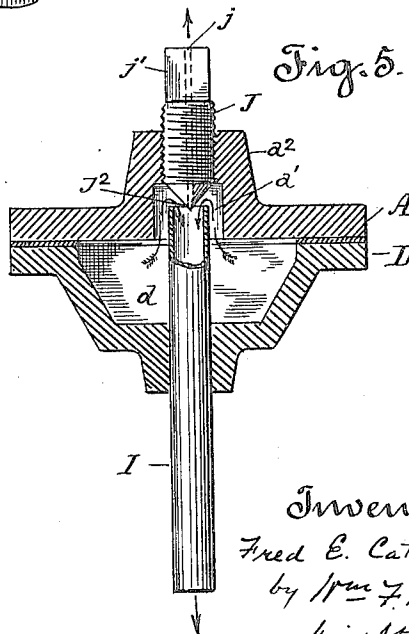


Fig. 4.



Witnesses.
W. H. Monteverde
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Fig. 5.



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UNITED STATES PATENT OFFICE.

FRED E. CATON, OF SAN JOSE, CALIFORNIA, ASSIGNOR TO CATON'S
FOUNDRY AND MACHINE COMPANY, OF SAME PLACE.

CAN-FILLING MACHINE.

SPECIFICATION forming part of Letters Patent No. 680,762, dated August 20, 1901.

Application filed April 4, 1901. Serial No. 54,292. (No model.)

To all whom it may concern:

Be it known that I, FRED E. CATON, a citizen of the United States, residing at San Jose, county of Santa Clara, State of California, have invented certain new and useful Improvements in Can-Filling Machines; and I do hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to the class of machines for filling cans and other vessels, and especially to those machines adapted to supply liquids, such as syrups, to cans or vessels previously supplied with the material, such as fruit, to which the liquid or syrup is added. Machines of this class are usually called "syruping-machines," and although my invention is applicable to the filling or charging of cans or other vessels with any liquid it is especially intended as a syruping-machine.

The object of my invention may be stated generally to be the rapid and accurate delivery of the charge of liquid without dripping. This involves the initial feed from the supply-pipe, including its accurate flow and cut-off, the discharge from the machine in easily regulatable or controllable quantities, the positiveness of the discharge without spurring through the air-vents or siphoning through the delivery-pipes, the complete delivery of the charge, and the instantaneous cut-off without drip.

My invention consists in the novel construction, arrangement, and combinations of parts, which I shall now fully describe by reference to the drawings and shall hereinafter point out in the claims.

In the drawings, Figure 1 is a front elevation, partly broken, showing the machine in operation. Fig. 2 is a top plan. Fig. 3 is an enlarged detail cross-section on line xx of Fig. 2. Fig. 4 is a section on line yy of Fig. 2. Fig. 5 is a modification of Fig. 4.

In Fig. 1, A is a table, preferably suspended, as by hangers a , and having an underlying platform B, on which the cans C are supported. Bolted up tightly under the table is a plate D, having a chamber d , in the center of which is a well d' . Upon the table is a valve-casing E, having within it a piston-valve F. This valve is adapted to play ver-

tically in the casing and through the table and to descend into the well d' . The lower end of the valve has a washer f , which when the valve is raised seats itself against the under side of the table. The valve is tubular, as shown in Fig. 3, and has side ports f' , which when the valve rises are closed by entering the casing, but which are exposed when the valve is depressed into the well d' . The valve has a vertical movement imparted to it by means of a lever G, Figs. 1 and 2, which is connected with the valve-stem f'' , extending upwardly through a stuffing-box e in the head of the casing E. The lever G is fulcrumed on links g and has connected with its extremity a spring g' , the tendency of which is to lift the lever to raise and close the valve F. The supply-pipe H for the liquid, Fig. 2, enters the valve-casing E, and it has a suitable controlling-cock h .

The operation of the parts thus far described is as follows: When cock h is open, the liquid flows to casing E, but is there cut off by the raised valve F; but upon depressing the lever G the valve F is lowered and its lower end below its ports passes down into the well d' for a purpose to be hereinafter described. As soon, however, as the valve-ports f' descend below the lower surface of the table, as shown in Fig. 3, the liquid flows through the valve and through its ports into the chamber d and well d' . When the valve rises again and seats itself, the liquid-supply is cut off. Passing down through the floor of chamber d , Fig. 1, are the delivery-pipes I. The upper ends of these extend into sockets a' , Figs. 1 and 4, of table A, said sockets being of sufficiently-larger diameter than the pipes to permit a free communication between the chamber d and the open upper ends of said pipes. The pipes extend upwardly in these sockets higher than the lower surface of the table (which forms the roof of the chamber d) in practice to about the general level of the top surface of the table, and the upper ends of said pipes are open. Fitted adjustably in the table A (as by being screwed into bosses a'' of said table) are plugs J, which serve the double function of air-vents and delivery-pipe controllers. These plugs lie directly in ver-

tical alinement with the delivery-pipes, and each has an air-passage j through it, Fig. 4. When the plug is properly seated, its base, by approaching the upper open end of the delivery-pipe, leaves an annular space which forms the inlet to the pipe, as shown by the arrows in Fig. 4. By adjusting the plug up or down this annular inlet-space is increased or diminished, thereby regulating its capacity and controlling the liquid-supply as may be desired. The plug may be turned up or down by means of a wrench-hold j' on its top or other proper tool-seat. The base of the plug has a small point j^2 , which may be either cylindrical, as is shown in Fig. 4, or tapering, as shown in Fig. 5. In either case this point just enters the top of the delivery-pipe, so that the lower end of the air-vent passage j is just below the top of the pipe. This prevents the liquid under pressure from spurt- ing up through the air-vent and leaves said vent clear to supply the air necessary to effect the dropping of the liquid in the tube and prevent siphoning when the supply is cut off. Continuing the description of the operation, it will be seen that as the piston-valve F descends into well d' in opening the liquid-supply it takes up some of the capacity of said well by displacement. The liquid now flows through chamber d and passing up into sockets a' flows through the annular inlet between the base of the vent-plugs J and the top of the delivery-pipes I and into said pipes, and thence down to the cans. When these latter are charged, the lever G is relieved and the spring throws it up, thereby lifting valve F . Instantly the ports f of the valve entering the casing are closed and the liquid is shut off. Then the lower portion of valve F emerging from the well restores the full capacity of said well, and liquid from chamber d , flowing into the well, reduces the level of the liquid in the chamber d below the tops of the delivery-pipes, and as the level thus sinks away from the pipe-tops the liquid in the pipes drops by the action of the air without siphoning and without drip. The valve F finally closes with its washer f against the under side of the table, and the operation may then be repeated.

The bottom d^2 of the well d' is best made removable, as, for example, as here shown, by being a screw-plug. This is for the purpose of permitting the valve to be readily removed for cleansing. By taking off the bottom d^2 and releasing the valve-rod from lever G the valve F may be drawn down and out through the well and replaced in like manner.

In order to prevent the liquid in passing from ports f of valve F from creating by the force of its flow undue disturbance by eddies and currents in the immediate neighborhood of the nearer discharge-pipes, and thereby tending to render the discharge unequal or otherwise interfere with the proper operation, I provide the under surface of the table with a protecting-flange a^3 , Figs. 1 and 3, which

receives the first flow from the ports f and directs it downwardly away from the discharge-pipes.

I am aware that air-vents placed directly over delivery-pipes have had their lower extremities depressed below the pipe-tops; but, as far as I know, said vents have never been placed in vertically-adjustable pieces or plugs, which serve also to control and regulate the inlet to said pipes.

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

1. In a can-filling machine, the combination of a liquid-chamber having a communication with the source of liquid-supply, a valve for opening and closing said communication, delivery-pipes issuing from said chamber, a displacing-body, adapted to enter and to withdraw from said chamber, and a lever connected with both valve and displacing-body, and adapted, by one operation, to open the valve, and to enter the displacing-body into the chamber, and, by a second operation, to close the valve and withdraw said displacing-body from the chamber.

2. In a can-filling machine, the combination of a liquid-chamber having a communication with the source of liquid-supply, and a well in said chamber, a valve for opening and closing said communication, delivery-pipes issuing from said chamber, a displacing-body, adapted to enter and to withdraw from the well in said chamber, and a lever connected with both valve and displacing-body, and adapted, by one operation, to open the valve, and to enter the displacing-body into the chamber-well, and, by a second operation to close the valve and withdraw said displacing-body from said well.

3. In a can-filling machine, the combination of a liquid-chamber, suitable delivery-pipes issuing from said chamber, and a valve adapted to control the communication of said chamber with the source of liquid-supply, and by its opening movement to enter and remain in said chamber as a displacing-body during the flow of the liquid, and to withdraw therefrom by its closing movement in cutting off the supply, whereby the level of the liquid is reduced below that of the chamber-outlets.

4. In a can-filling machine, the combination of a liquid-chamber, suitable delivery-pipes issuing from said chamber, a well in the chamber in communication therewith, and a valve adapted to control the communication of said chamber with the source of liquid-supply, and by its opening movement to enter and remain in the well, as a displacing-body, during the flow of the liquid, and to withdraw therefrom on its closing movement in cutting off the supply, whereby sufficient liquid is allowed to flow into the well to reduce its level below that of the chamber-outlets.

5. In a can-filling machine, the combination of the table with its underlying chamber having a well, suitable delivery-pipes issuing from

said chamber, the valve-casing having communication with the liquid-supply and the vertically-movable ported piston-valve seated in the casing in the vertical plane of the chamber-well, and adapted when moved down, to open the communication for the liquid to the chamber, and to enter and remain in the well as a displacer while said communication is open, and to withdraw from the well upon rising to its seat in closing the liquid communication, whereby the level of the liquid in the chamber is reduced below that of its outlets.

6. In a can-filling machine, the combination of the table with its underlying chamber having a well, suitable delivery-pipes issuing from said chamber, the valve-casing having communication with the liquid-supply and the vertically-movable ported piston-valve seated in the casing in the vertical plane of the chamber-well, and adapted when moved down, to open the communication for the liquid to the chamber, and to enter and remain in the well as a displacer while said communication is open, and to withdraw from the well upon rising to its seat in closing the liquid communication, whereby the level of the liquid in the chamber is reduced below that of its outlets, and a removable bottom for the well, to permit the removal of the valve therethrough when required.

7. In a can-filling machine having a liquid-chamber, a delivery-pipe issuing therefrom and an adjustable plug in line with the entrance to said pipe and adapted by the approach of its base thereto to regulate the capacity of said entrance, said plug having an air-passage through it.

8. In a can-filling machine having a liquid-chamber, a delivery-pipe issuing therefrom and an adjustable plug in line with the entrance to said pipe and adapted by the approach of its base thereto to regulate the capacity of said entrance, said plug having an air-passage through it, and having also a point entering said entrance and carrying the inner end of said air-passage below the level of said entrance.

9. In a can-filling machine having a liquid-chamber, a delivery-pipe issuing therefrom with its entrance end above the general top of the chamber whereby when the supply is cut off the chamber is left full, and an adjustable plug in line with the entrance to said pipe and adapted by the approach of its base thereto to regulate the capacity of said entrance, said plug having an air-passage through it.

10. In a can-filling machine having a liquid-chamber, a delivery-pipe issuing therefrom with its entrance end above the general top of the chamber whereby when the supply is cut off the chamber is left full, and an adjustable plug in line with the entrance to said pipe and adapted by the approach of its base thereto to regulate the capacity of said entrance, said plug having an air-passage through it, and having also a point entering

said entrance and carrying the inner end of said air-passage below the level of said entrance.

11. In a can-filling machine, the combination of the table having the underlying chamber with a controllable communication with the liquid-supply, and a socket extending upwardly from the lower surface of said table, a delivery-pipe rising from below through the floor of the chamber and freely entering the socket thereof, and an adjustable plug seated in the table in line with the entrance to said pipe and adapted by the approach of its base thereto to regulate the capacity of said entrance, said plug having an air-passage through it.

12. In a can-filling machine, the combination of the table having the underlying chamber with a controllable communication with the liquid-supply, and a socket extending upwardly from the lower surface of said table, a delivery-pipe rising from below through the floor of the chamber and freely entering the socket thereof, and an adjustable plug seated in the table in line with the entrance to said pipe and adapted by the approach of its base thereto to regulate the capacity of said entrance, said plug having an air-passage through it, and having also a point entering said entrance and carrying the inner end of said air-passage below the level of said entrance.

13. In a can-filling machine, the combination of a liquid-chamber, having a controllable communication with the liquid-supply, a delivery-pipe issuing from said chamber from a point above its general top, an adjustable plug in line with the entrance to said pipe and adapted by the approach of its base to said pipe to control the capacity of its entrance, said plug having an air-passage through it and a point entering the pipe to carry the end of said passage below the level of the pipe-entrance, and a displacing-body adapted to enter and remain in the liquid-chamber during the flow of the liquid, and to withdraw therefrom when the flow ceases, in order to reduce the level of the liquid in the chamber below that of the delivery-pipe entrance.

14. In a can-filling machine, the combination of a liquid-chamber having a well in communication therewith, and a communication with the liquid-supply, a delivery-pipe issuing from said chamber from a point above the general plane of its top, an adjustable plug in line with the entrance to said pipe and adapted by the approach of its base to said pipe to control the capacity of its entrance, said plug having an air-passage through it and a point entering the pipe to carry the end of said passage below the level of the pipe-entrance, and a valve adapted to control the communication of the chamber with the liquid-supply and by its opening movement to enter and remain in the chamber-well, as a displacing-body, during the flow of the liquid and to withdraw therefrom on its

closing movement in cutting off the supply, whereby sufficient liquid is allowed to flow into the well to reduce its level below that of the delivery-pipe entrance.

- 5 15. In a can-filling machine, the combination of the table having the liquid-chamber with its well, the vertically-movable displacer-valve adapted to control the liquid-supply and to enter and withdraw from the well, said
10 valve having the side ports, the discharge-pipes from the liquid-chamber, the adjustable

air-vent plugs for controlling the entrance to said pipes and the protecting-flange on the under side of the table to guard the discharge-pipes from the direct flow of the liquid from the valve-ports. 15

In witness whereof I have hereunto set my hand.

FRED E. CATON.

Witnesses:

WALTER F. VANE,
D. B. RICHARDS.