

Mar. 13, 1923.

1,448,255

C. F. CAPELL

PROCESS OF CANNING AND CANNING MACHINE

Filed May 29, 1919

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Fig. 1.

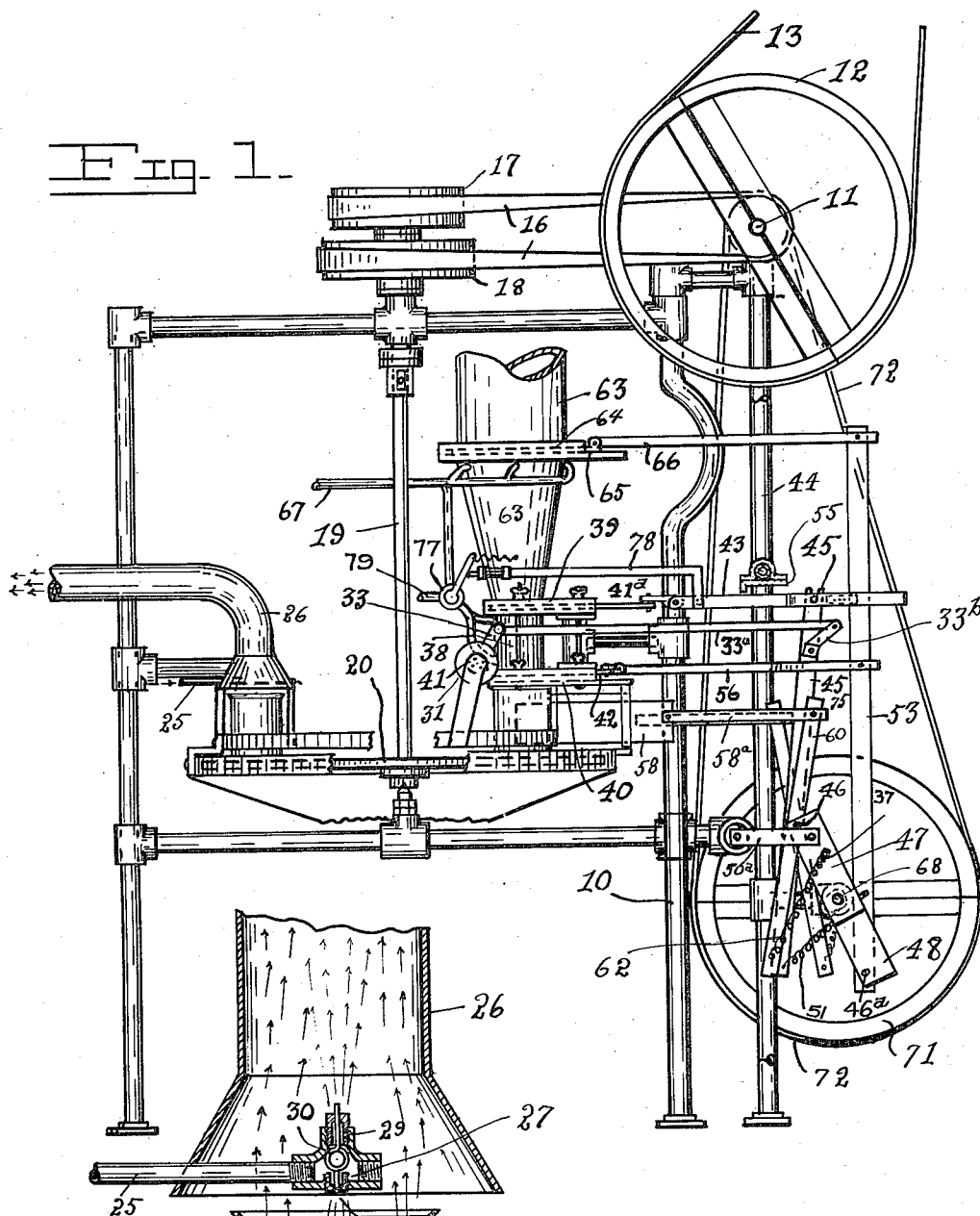
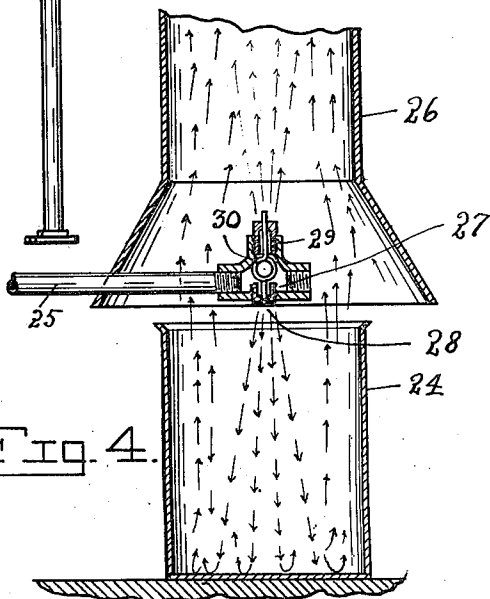


Fig. 4.



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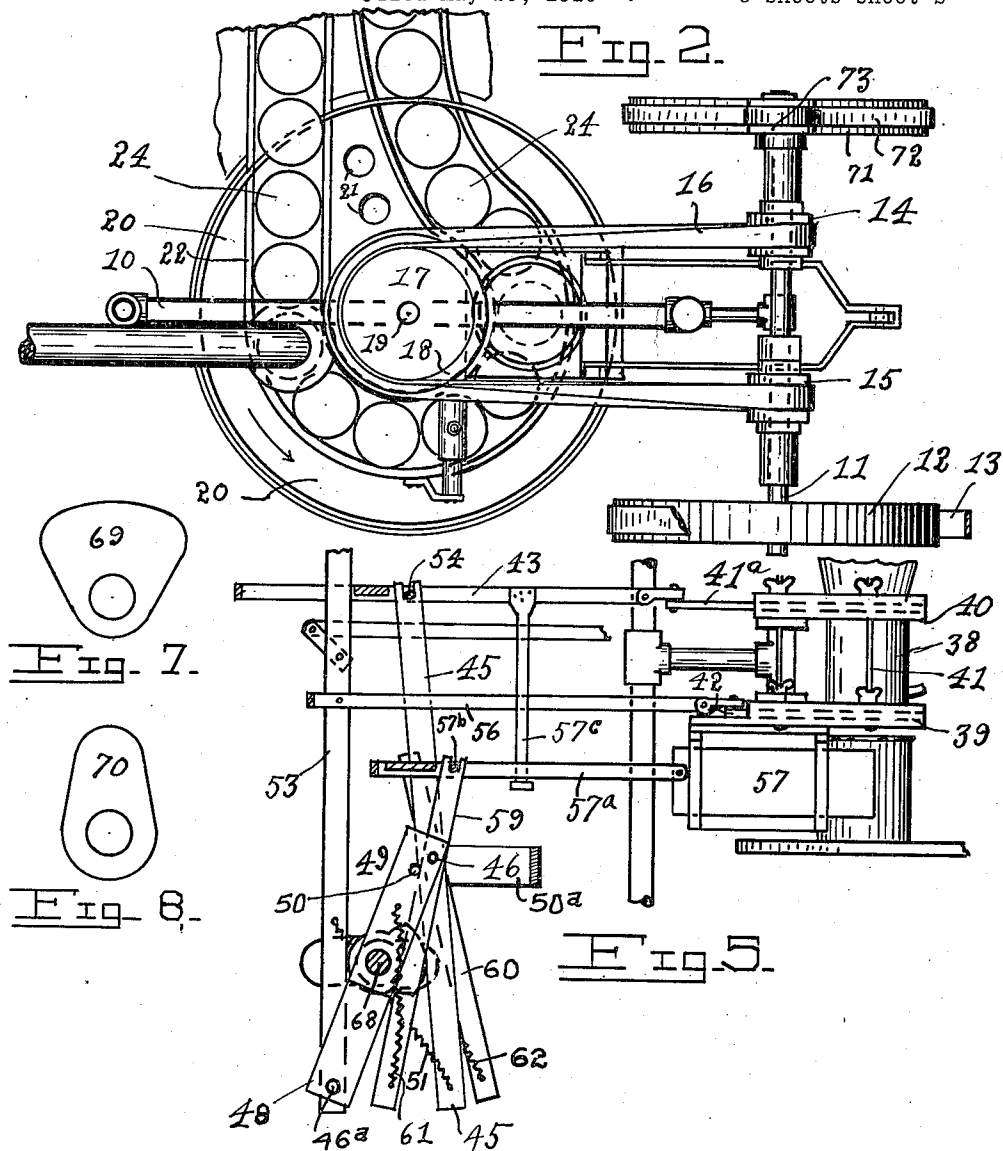
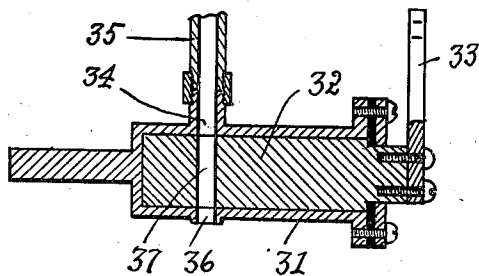


Fig. 6.



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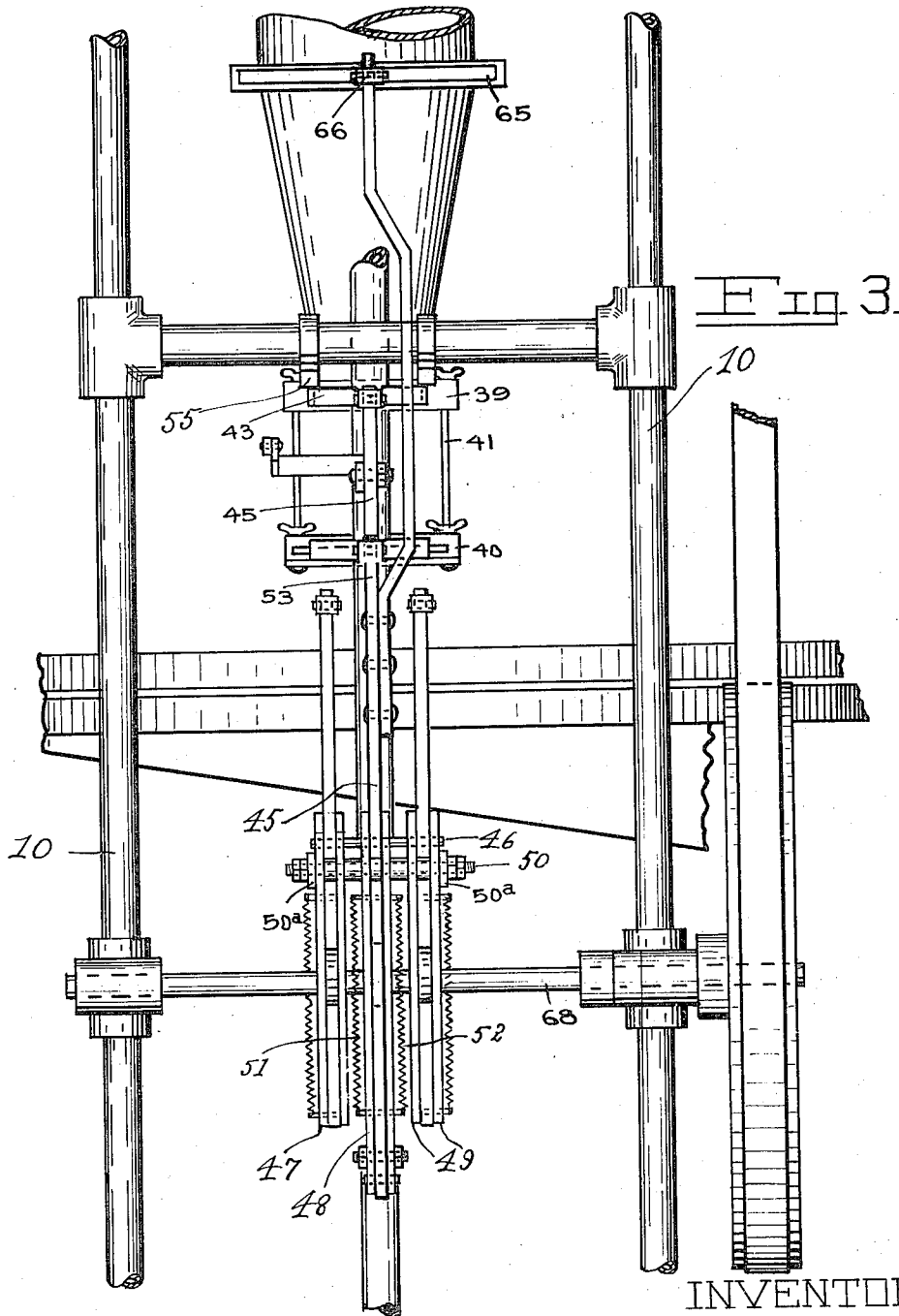
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Filed May 29, 1919

3 sheets-sheet 3



INVENTOR,

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UNITED STATES PATENT OFFICE.

CARL F. CAPELL, OF VENICE, CALIFORNIA, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO CAPELL LABORATORIES, INC., OF LOS ANGELES, CALIFORNIA, A CORPORATION OF CALIFORNIA.

PROCESS OF CANNING AND CANNING MACHINE.

Application filed May 29, 1919. Serial No. 300,729.

To all whom it may concern:

Be it known that I, CARL F. CAPELL, a citizen of the United States, residing at Venice, in the county of Los Angeles, State of California, have invented new and useful Improvements in Processes of Canning and Canning Machines, of which the following is a specification.

My invention relates primarily to a process for filling cans, and to a machine for cleaning the empty cans, and then automatically filling the can with heated vegetables or fruit. A further object is to automatically put into the can a predetermined amount of syrup or other flavoring compound or other liquid before the can is filled if such be desired, said machine being used in carrying out such process. In the drawings forming a part of this application Fig. 1 is a side view of my machine with parts broken away and parts omitted for clearness of illustration. Fig. 2 is a top plan of a portion of the machine. Fig. 3 is an end view; Fig. 4 is an enlarged sectional detail of a portion of the can cleaning mechanism. Fig. 5 is a detail of the cams and operating levers and a portion of the gates. Fig. 6 is an enlarged detail of the liquid valve. Figs. 7 and 8 show the forms of the cams used.

Referring to the drawings the frame 10 is preferably made of pipe and fittings. In the upper part of the frames is mounted the driving shaft 11 which has mounted thereon pulley 12 to which power is applied by belt 13 run by power not shown. Any other means may be used to operate shaft 11. Shaft 11 has mounted thereon pulleys 14 and 15 over which run a belt 16, which belt passes around pulleys 17 and 18 on shaft 19. Pulley 17 is a loose pulley and pulley 18 is rigid on shaft 19. Shaft 19 has secured thereto the circular can table 20 which is preferably provided throughout its entire surface with perforations of which two marked 21 are shown in Fig. 2, the others being omitted for clearness of illustration. These perforations permit any fluid that may not be caught by or retained in the

can to pass below the table. On the top of the table is a can runway 22 formed of strap metal secured to the frame and held just above the table and is preferably of the form shown in Fig. 2. The cans 24 are fed into the runway and pass through it in the direction shown by the arrow. When power is applied the table is rotated in the direction of the arrow. The cans rest upon the table and are carried around by it through the runway. As the empty cans pass below the cleaning mechanism they are automatically stopped for a second or two as hereafter explained, and are then cleaned and sterilized.

Cleaning mechanism.

The cleaning mechanism consists of a pipe 25 which projects into the refuse conduit 26, whose lower end flares outwardly and is a little larger in diameter than the cans to be cleaned. On the end of pipe 25 is a nozzle 27 which has port 28 and 29 that are directly over the center of the can when it is stopped. In the nozzle is a vibrator 30 consisting of a small wire, the center of which is coiled and the ends of which project into the ports. This vibrator keeps the parts clear and spreads the cleaning medium. I prefer to use steam as a cleaning medium but air could be used. As shown by the arrows in Fig. 4 the steam passing through port 28 passes down into the can and cuts and removes any grease or other matters that may be on the inside of the can. The steam passing through port 29 acts on the injector principle and aids in injecting the steam from the can through conduit 26.

Syruping device.

Should the fruit or vegetables require syrup or flavoring liquid after the can passes the cleaning device, it is stopped beneath the syruping device which consists of a valve casing 31 (see Fig. 6) in which is mounted a rotary valve 32, which carries an arm 33, connected by bar 33^a to lever 45 by a link 33^b by means of which it is operated. Casing 31 has an upper port 34, that is con-

5 nected by pipe 35 to the source of supply of syrup or other flavoring compound not shown and a lower port 36. Valve 32 has a passage way 37 therein, which is adapted to connect ports 34 and 36 or to disconnect them.

Filling mechanism.

10 When the can reaches the filling mechanism it receives the desired quantity of vegetables or fruit. This filling mechanism consists of a measuring chamber 38 which is preferably of a little smaller diameter than the can to be filled. This chamber rests upon 15 and is supported by the lower gate casing 39, and is held by the upper gate casing 40. These casings are held together and in contact with the measuring chamber by rods 41 which can be removed and longer or shorter 20 rods substituted to accommodate longer or shorter measuring chambers between the casings so that cans of different sizes may be used in the machine. Casings 39 and 40 are suitably and adjustably connected to the frame. In casings 39 and 40 are mounted horizontally sliding gates 41^a and 42 which are adapted to be passed across the ends of the measuring chamber and to prevent anything going into or coming out of the same. The measuring chamber is a hollow cylinder and the casings have openings therein which register with the interior of the chamber. In the operation of the machine usually as gate 41^a closes gate 42 opens and as gate 42 closes gate 41^a opens. Gate 41^a is connected by yoke 43 which straddles member 44 of the frame, with lever 45 that is pivotally mounted on rod 46 which rod is mounted in lever frames 47 and 48 and 49. The rear end of yoke 43 is contracted. These frames are carried at their upper ends by rod 50 which is connected to the frame. To the lower end of lever 45 is connected springs 51 and 52 which springs 45 are connected to lever 53 pivotally mounted on rod 46. In case the material being filled into the cans is sluggish I supply compressed air into the top of the measuring chamber through pipe 67 having a cock 77 thereon, which is opened by a bar 78, connected to yoke 43. A vent pipe 79 is connected to the bottom of the measuring chamber to allow excess air to escape.

The upper end of lever 45 is bifurcated and a pin 54 in yoke 43 drops into this furcation and when the gate is closed can be raised out of the furcation thereby disconnecting the gate from the lever so as to prevent the filling of cans in case anything went wrong and it was not desired to fill cans. A plate 55 secured to the frame lies over and keeps yoke 43 from being disconnected from lever 45 except when the gate is closed, at which time the broader portions of the yoke have passed from beneath plate

55 and the yoke can then be raised. The intermediate portion of lever 53 is connected by yoke 56 with gate 42. Below gate 42 are the vertically arranged sliding can controlling gates 57 and 58. Gate 57 is connected to the top of lever 59 mounted on rod 46 by bar 57^a. Gate 58 is connected to the top of lever 60 mounted on rod 46 by bar 58^a.

The upper end of lever 59 is bifurcated and a pin 57^b in bar 57^a passes into the furcation. Bar 57^a is connected by bar 57^c with yoke 43 and when yoke 43 is disconnected from lever 45 bar 57^a is also disconnected from lever 59 and the passage of cans is stopped until the connection is restored.

80 The lower end of lever 59 is connected by spring 61 to a lever frame. The lower end of lever 60 is connected by spring 62 to a lever frame. Above the measuring chamber and resting upon casing 39, is the receiving spout 63, which is connected to the fruit or vegetables supply not shown. The lower end of this spout is preferably tapered and running across the top of the tapered portion is a gate casing 64 in which is mounted a sliding gate 65 that is connected by bar 66 to the upper end of lever 53. Just below casing 64 an air pipe 67 opens through preferably four branches into spout 63. Pipe 67 is connected to a compressed air supply not shown.

A cam shaft 68 is mounted in bearings secured to the frame and also passes through the lever frames. On this shaft are mounted cams that work within the lever frames and contract and retract the levers as hereafter explained.

In Figs. 7 and 8 I have shown the shape of these cams. In the machine constructed and successfully operated by me I use cam 69 to engage levers 43 and 53 and cam 70 to engage levers 59 and 60. Shaft 68 carries a pulley 71 that is connected by belt 72 with pulley 73 on shaft 11.

Operation.

I will describe the machine as canning tomatoes. Power is applied to operate the mechanism. Cans are suitably fed upon the table. A supply of hot tomatoes is supplied into spout 63. The operator positions four cans in the machine with one beneath the measuring chamber with gates 41^a and 57 closed. This can comes out not filled and is again fed into the machine. The next can receives the required amount of tomatoes and thereafter the operation is repeated until the desired number of cans are filled.

The operation of the mechanism and the dimensions of the parts are such that after the machine begins filling cans, at the same time a can is stopped beneath the cleaning mechanism, another is stopped beneath the syruping valve and another is stopped beneath the measuring chamber. Gate 41^a then closes

and gate 42 opens when the contents of the measuring chamber drops into the can. Gate 42 then closes and gate 57 opens and the filled can moves on. As gate 57 opens gate 58 closes. As soon as the can begins to move gate 57 again closes and gate 58 opens and the next can is positioned beneath the measuring chamber and the before described operation is repeated. The syringing valve is also operated to discharge the desired amount of syrup into the can as it stops beneath it. Each time gate 41^a opens gate 65 closes, and the force of the compressed air in spout 63 forces the tomatoes down into the measuring chamber without breaking the same. When gate 41^a closes gate 65 opens and the compressed air forces its way up the spout and through the tomatoes thereby preventing too much liquid from flowing down without fruit. The amount of air supplied is regulated by a valve not shown. Should any of the liquids escape from the cans they fall upon the table, pass through the perforations therein on to an apron 75 and are caught and used as desired.

It will be observed that I utilize the power of the springs for the positive action of the gates so that if anything obstructs them nothing will break as the gates are stronger than the springs.

Having described my invention I claim:—

1. In a process of filling cans, the steps consisting of filling a measuring chamber having a normally closed outlet and a normally open inlet, by forcing can filling material into said chamber by compressed air to prevent the forming by the material of arches in the chamber and to insure a uniform filling thereof, closing the inlet of the chamber, opening the outlet of the chamber, and directing compressed air into the chamber in back of the material to eject the measured material from the measuring chamber into the can.

2. The herein described process of filling cans which consists of forcing into a measuring chamber by the use of compressed air material to fill the can, then forcing the material from the measuring chamber into the can to be filled by the use of compressed air, whereby a uniform quantity of material is filled into each can and all arching of material is prevented.

3. In a can filling machine, the combination with a measuring chamber having an inlet and an outlet, of a delivery pipe communicating with said inlet, a gate for closing the delivery pipe at a point spaced from the chamber inlet, means to supply compressed air to the delivery pipe between said gate and the chamber inlet, gates to close the inlet and outlet of the chamber, and means to operate the gate as described, whereby the material to fill the chamber is forced therein by compressed air.

4. In a can filling machine the combination of a delivery pipe having a tapered open end bottom section; a gate adapted to pass across said pipe at the top of the tapered portion; means to supply compressed air into said pipe below said gate; with an open end measuring chamber below said pipe; gates to close the ends of said chamber; and means to operate said gates as described, whereby the material to fill said chamber is forced therein by compressed air.

5. In a can filling machine the combination of a revolving table; a can runway above said table adapted to guide said cans around the table; with gates adapted to intermittently stop the travel of said cans.

6. In a can filling machine, a revolving table; a can runway above said table; a measuring chamber open at top and bottom; closing gates for the ends of said chambers; gates for said runway; and means to operate said gates; whereby cans are intermittently stopped beneath said chamber, and said chamber is alternately closed and opened at the top and bottom thereof.

7. In a can filling machine, a revolving table; a can runway above said tables; gates for said runway adapted alternately to pass across the same; levers operatively connected to said gates; springs connected to said levers; whereby said gates are closed; a cam shaft; and cams on said shaft adapted to engage said levers and alternately to operate the same, whereby said gates are alternately opened.

8. In a can filling machine, a revolving table; a can runway above said table; gates for said runway adapted to alternately pass across the same; levers connected to said gates; springs connected to said levers; whereby said gates are closed; an open end measuring chamber above said runway; gates to alternately close said open ends; levers connected to said gates; springs connected to said levers, whereby said gates are closed; a cam shaft; cams on said shaft engaging said levers, whereby said gates are opened as described.

9. In a can filling machine, a revolving table; a can runway above said table; gates for said runway adapted to alternately pass across the same; levers connected to said gates; springs connected to said levers whereby said gates are closed; a liquid valve above said runway, a lever connected to said valve, an open end measuring chamber above said runway; gates to alternately close said open ends; levers connected to said gates; springs connected to said levers, whereby said gates are closed; a cam shaft; cams on said shaft engaging said levers; whereby said valve and said gates are operated as described.

10. In a can filling machine; a revolving table; a can runway above said table; means

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above said runway adapted to supply cleans-
ing and sterilizing fluid into said cans in
said runway; means above said runway
adapted to deliver into the cans in the run-
5 way syrups or other liquids; means adapted
to deliver into said cans measured amounts
of vegetables or other material; and means
to cause said other means to operate as de-
scribed.
In witness that I claim the foregoing I 10
have hereunto subscribed my name this 23rd
day of May, 1919.

CARL F. CAPELL,