W. F. THOMAS.

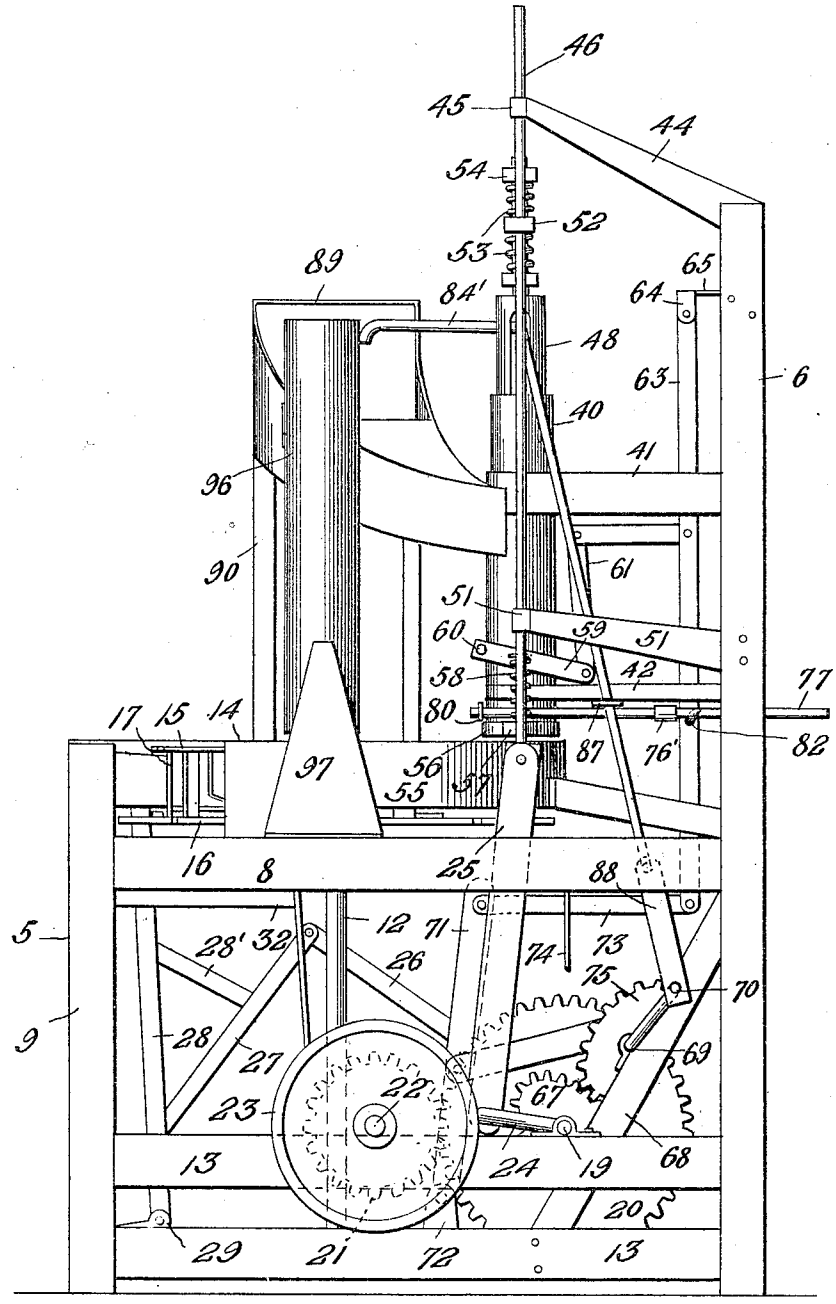
CAN FILLER.

APPLICATION FILED APR. 1, 1909.

956,652. Patented May 3, 1910.

4 SHEETS—SHEET 1.

Fig. 1.



Witnesses:
Adam Loch
Eugene Gurfaugh.

Inventor:
William Francis Thomas

W. F. THOMAS.

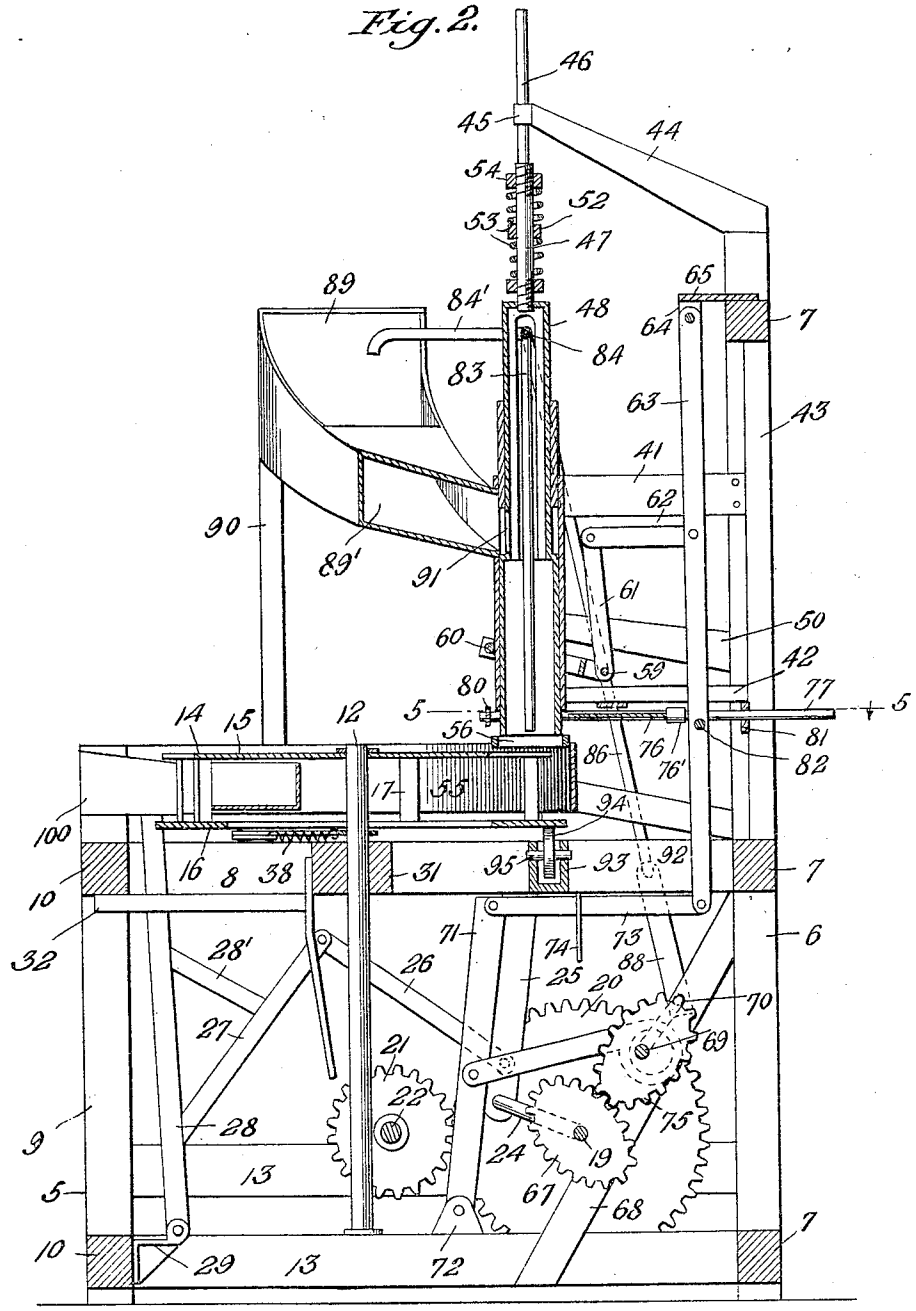
CAN FILLER.

APPLICATION FILED APR. 1, 1909.

956,652. Patented May 3, 1910.

4 SHEETS—SHEET 2.

Fig. 2.



Witnesses:
Adam Loch
Eugene Grafwegh

Inventor:
William Francis Thomas

W. F. THOMAS.

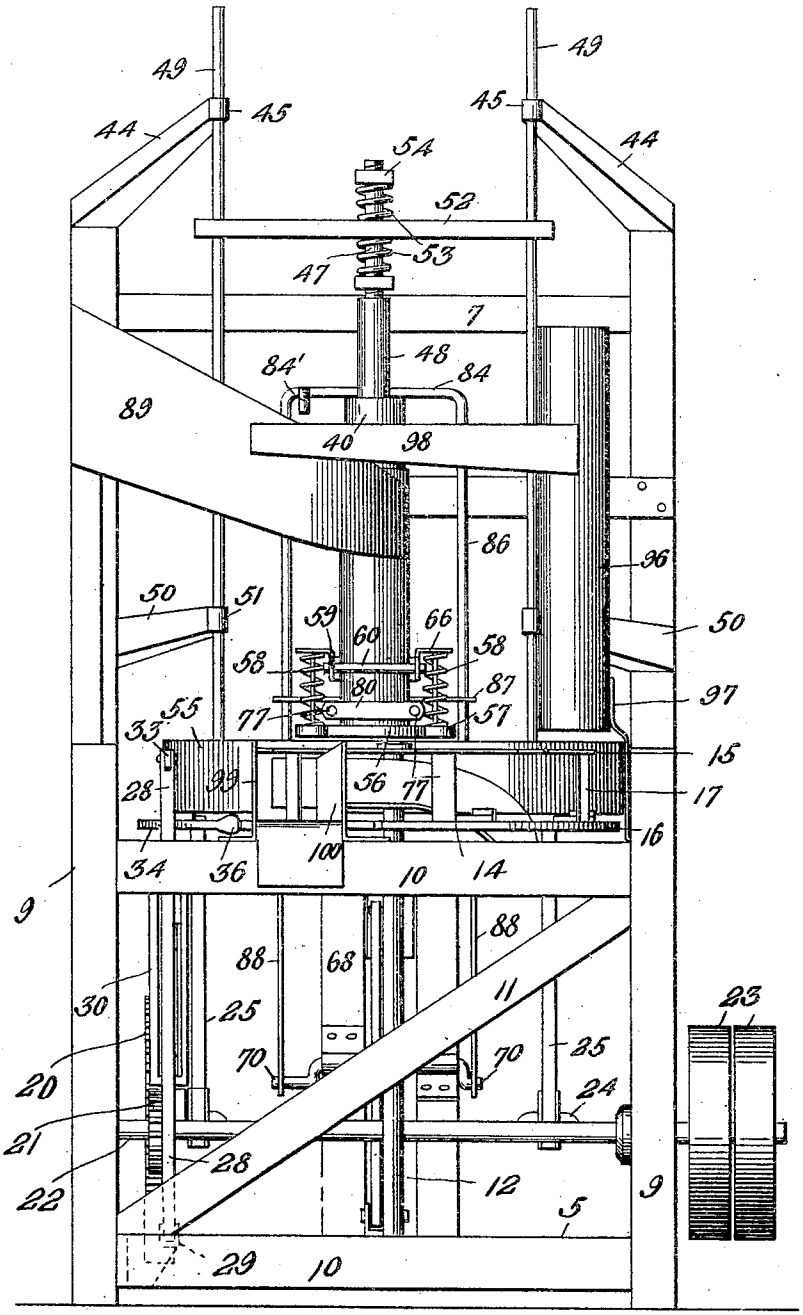
CAN FILLER.

APPLICATION FILED APR. 1, 1909.

956,652. Patented May 3, 1910.

4 SHEETS—SHEET 3.

Fig. 3.



Witnesses:
Adam Loch
Eugene Gufaught.

Inventor:
William Francis Thomas

W. F. THOMAS.

CAN FILLER.

APPLICATION FILED APR. 1, 1909.

956,652.

Patented May 3, 1910.

4 SHEETS—SHEET 4.

Fig. 4

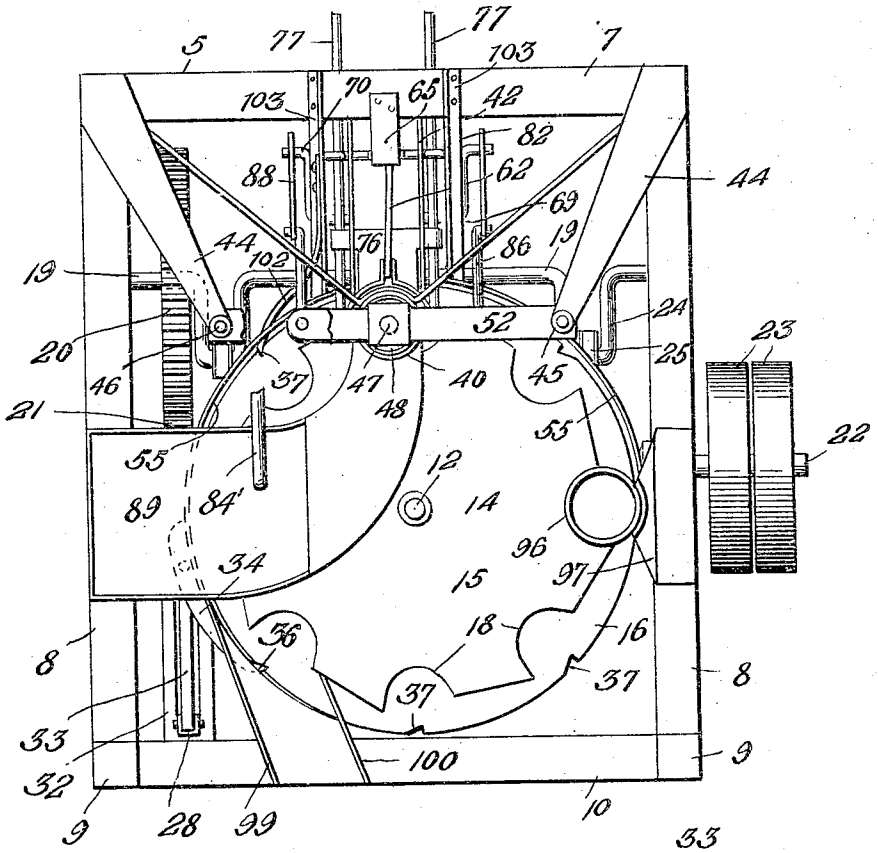


Fig. 5.

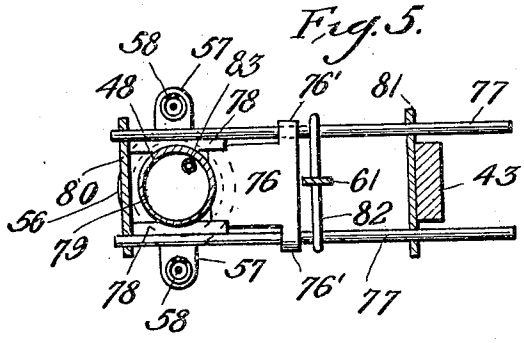
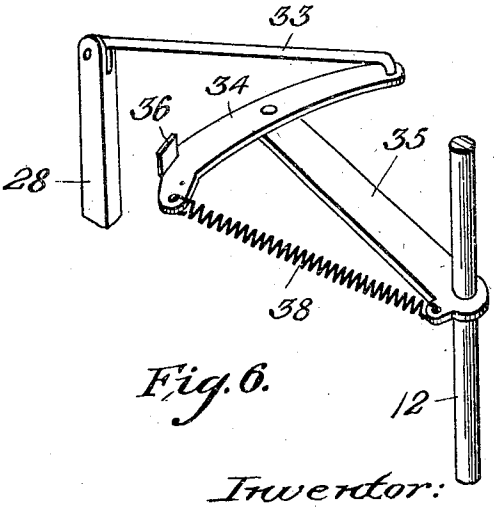


Fig. 6.



Witnesses:

Adam Loch

Eugene Gunfough.

Inventor:

William Francis Thomas

UNITED STATES PATENT OFFICE.

WILLIAM FRANCIS THOMAS, OF CHANUTE, KANSAS.

CAN-FILLER.

956,652. Specification of Letters Patent. **Patented May 3, 1910.**

Application filed April 1, 1909. Serial No. 487,370.

To all whom it may concern:

Be it known that I, WILLIAM FRANCIS THOMAS, a citizen of the United States, residing at Chanute, in the county of Neosho and State of Kansas, have invented certain new and useful improvements in can-fillers by using a machine that cans more rapidly, fills the can full, and in other ways is a great improvement by discharging the air out of the can as the tomatoes are put in; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

This invention has relation to certain new and useful improvements in can filling machines, and has for its object to provide a machine of this character wherein the can carrier is intermittently moved to position the cans beneath a suitable filling mechanism, said can carrier being loaded from a suitable magazine.

Another object is to provide a machine which is particularly adapted for the filling of cans or similar receptacles with liquid fruits or vegetables, suitable means being employed for preventing the flow of the material during the rotary movement of the can carrier to remove the filled can and position an empty can beneath the filling mechanism.

A further object is to provide mechanism for automatically cutting off the flow of the material and to simultaneously operate suitable means for rigidly holding the can in position to be filled as said cut off mechanism is actuated to open the filling mechanism.

An additional object is to provide a vertically reciprocal filling tube to insure the flow of the material into the can, and an air pipe eccentrically positioned in the filling cylinder to provide a vent for the air which is displaced by the flow of the material into the can, said vent pipe being moved upwardly at the same time as the plunger is moved downwardly within the filling cylinder.

With these and other objects in view, the invention consists of the novel construction, combination and arrangement of parts hereinafter fully described and claimed, and illustrated in the accompanying drawings in which—

Figure 1 is a side elevation of a machine embodying my improvement; Fig. 2 is a central vertical longitudinal section thereof; Fig. 3 is a front end elevation; Fig. 4 is a top plan view partly broken away; Fig. 5 is a detail horizontal section taken on the line 5—5 of Fig. 2; and Fig. 6 is a detail perspective view of the can carrier rotating mechanism.

Referring to the drawings 5 indicates a frame of any preferred construction, but as shown in the drawings I provide the two rear vertical members 6 which are connected and braced between their ends by a plurality of transverse bars 7. Longitudinal supporting members 8 have one of their ends connected to the rear vertical bars 6 and the other of their ends are suitably secured to the front vertical members 9 which extend substantially one-half of the height of the rear members 6. The members 9 are also connected by a transverse brace bar 10 and by a diagonally positioned bar 11. Between the longitudinal side members 8 the operating mechanism is arranged and comprises a vertically disposed rotatable shaft 12 which has its lower end mounted in a longitudinal bar 13 extending between the lower transverse bars 7 and 10. Upon the upper end of the shaft 12 a can carrier 14 is secured and has rotative movement therewith. This member comprises the spaced circular plates 15 and 16 which are connected by the vertical supporting members 17. The uppermost plate 15 is formed with a plurality of can receiving notches or recesses 18 which are annularly arranged therein. These recesses receive the cans to be filled which are successively moved upon rotation of the can carrier beneath a suitable mechanism which will be later described.

The mechanism employed whereby an intermittent rotative movement may be imparted to the can carrier comprises a transversely positioned crank shaft 19 which has its ends journaled upon one of the lower longitudinal bars 13. A gear 20 is carried by the shaft 19 adjacent to one end thereof and engages with a pinion 21 carried by a second transverse shaft 22 also journaled upon the bars 13. The outer end of this shaft carries the band wheels 23 upon which the driving belt is disposed to apply the power to the mechanism which may be derived from an engine, motor or other suitable source of power supply. The shaft 19

is formed upon either side of the longitudinal center thereof with the cranks 24, to each of which a link bar 25 is pivotally connected at its lower end and is adapted to impart vertical reciprocatory movement to a plunger positioned within the filling cylinder. Pivotally connected to one of the bars 25 adjacent to the gear 20 there is a link 26, which extends upwardly and forwardly at an inclination thereto. The upper end of this link is pivoted to a similar link 27 which is rigidly secured to a vertically positioned bar 28 and is braced thereto by the bar 28'. The lower end of the bar 28 is pivotally secured in a bracket 29. A guide bar 30 depends from a transverse beam 31 secured to the upper longitudinal members 8, through which the can carrier shaft 12 extends. This guide is in the form of a slotted plate the upper end of which is secured to the beam 31. The link 27 extends through the slot in this plate and provides means whereby transverse movement of the links 26 and 27 is prevented and the proper operation of these parts insured. The upper end of a vertical bar 28 is extended through a similar guide member 32. To the upper extremity of the bar 28 a rod 33 is connected and has its other end secured to a spring held dog 34 which is pivotally mounted upon the outer end of an arm 35 carried by the shaft 12. The dog 34 is arcuate in plan and has its forward end reduced and upwardly directed as shown at 36 to engage in one of a plurality of V-shaped notches 37 provided in the periphery of the lower circular plate 16 of the can carrier. These notches are disposed below each of the can holding recesses 18 in the upper plate, and it will be readily seen that as the shaft 19 is rotated through the medium of the gear and pinion 20 and 21, the links 26 and 27 will oscillate the pivot bar 28 which will rotate the can carrier, the dog 34 being engaged in one of the notches 37. The dog is securely held in this position by means of a coiled spring 38 which is secured to the forward end of the dog and to the arm 35. This arm is loosely mounted on the vertical shaft 12 and is rotatable independently of the can carrier 14. Thus when the crank 24 of the shaft 19 moves the vertical bar 28 rearwardly, the dog will be disengaged from the notch 37 and will be moved into engagement with the next succeeding notch in the rear thereof. It is during this temporary inactivity of the can carrier 14 that the filling mechanism is put into operation. This mechanism comprises a vertically disposed cylinder 40 which is supported from the rear vertical bars 6 by the members 41 which extend inwardly and forwardly therefrom. The lower end of this cylinder is rigidly held against vibration by the parallel longitudinal bars 42 which have their rear ends secured to a central vertical brace beam 43 connecting the transverse members 7.

To the upper ends of the rear frame bars 6, the forwardly and inwardly extending arms 44 are secured and are formed at their ends with a sleeve 45. A rod 47 has threaded on its lower end a filling tube 48 which is vertically slidable within the stationary cylinder 40. To the upper ends of the links 25, the vertical guide rods 49 are pivotally connected. These guide rods extend through the sleeves 45 of the arms 44 and through the sleeve 51 formed on the ends of similar arms 50 secured to the vertical frame bars 6. The rods 49 carry a transverse bar 52 through which the rod 47 extends and is vertically movable. Coiled springs 53 are disposed against the opposite faces of the bar 52 and bear against the nuts 54 which have threaded engagement on the rod 47. These nuts may be manipulated to adjust the tension of the springs 53 as desired. In this manner a cushion is provided to absorb the shock imparted to the different elements when the filling tube 48 is operated. It will be noted that the filling cylinder 40 is located directly above the can holding recesses 18 of the carrier 14. A vertical circumscribing flange 55 has its ends secured to the longitudinal and transverse upper frame members 8 and 10 and is adapted to hold the can beneath the filling cylinder against radial movement.

In order to rigidly position the can beneath the cylinder 40, I provide a circular collar 56 through which the lower end of the filling tube 48 is adapted to extend during the filling operation. This collar is provided with the transversely extending ears 57 which carry the vertical rods 58. A yoke 59 has its ends pivotally mounted upon a transverse rod 60 which is secured to the filling cylinder. The rear end of this yoke is secured to the lower end of a vertical link 61, the upper end of which is pivoted to the end of an arm 62 which is rigidly secured to a vertical bar 63. The upper end of the bar 63 is pivoted between the ears 64 of a bracket plate 65 secured to the upper transverse frame bar 7. The yoke 59 is also provided with the transversely extending ears 66 through which the upper ends of the rods 58 are extended. The filling tube 48 and the can holding collar 56 are adapted to be simultaneously actuated. To further insure the rigid positioning of the carrier while the cans are being filled, I provide a resilient locking dog 102 which is adapted to engage in one of the notches 37 in the plate 18 at the end of each intermittent movement of the carrier and is forced out of said notch upon the forward movement of the vertical

oscillatory bar 28. As shown in Fig. 4, this resilient locking dog is secured to one of the parallel supporting bars 103 which are attached to the circumscribing flange 55.

In the attainment of the above result I employ an elliptical gear 67 carried by the crank shaft 19. This gear moves upon the rotation of the shaft between the inclined bars 68 suitably mounted in the supporting frame. Upon these bars a short transverse shaft 69 is journaled and its ends are formed with the cranks 70. A vertical bar 71 has its lower end pivotally secured between the ears 72 carried by the frame. A horizontally extending link 73 connects the upper end of this bar to the lower end of the bar 63 and is movable through a suitable guide member 74. Upon the shaft 69 a second elliptical gear 75 is secured and engaged with the teeth of the gear 67. These gears are so arranged upon their respective shafts that they will oscillate the vertical bar 63 to depress the collar 56, simultaneously with the vertical reciprocation of the filling tube 48. In this manner the collar 56 is yieldingly held upon the upper circumscribing edge of the can, and secures the same rigidly in position during the period of time when the can carrying member 14 is stationary and the filling mechanism is actuated.

When the can has been filled, the bar 63 is oscillated to raise the collar 56, and simultaneously with this operation suitable means is actuated to prevent the continued flow of the material being canned. For this purpose I provide a horizontally reciprocating valve plate 76 which is carried by the two parallel rods 77 and is movable in a guide plate 78, which is formed with a central circular opening 79 through which the material passes from the cylinder into the can. The forward end of the guide plate is upwardly bent to provide a bearing plate 80 for the forward ends of the rods 77. The rear ends of these rods are movably mounted in the opposite ends of a transverse plate 81 secured to the vertical brace beam 43. The rear end of the valve or cut off plate 76 is formed at opposite sides with the sleeves 76′ which are rigidly secured to the parallel bars 77. A transverse rod 82 connects the rods 77 and extends through the vertical bar 63. Thus it will be seen that when the bar 63 is oscillated to release the can from beneath the collar 56, the cut off plate 76 will be moved forwardly and will close the lower end of the filling cylinder 40, the filling tube 48 being in an elevated position within the cylinder at this point in the operation of the various mechanisms.

In order to provide means whereby the air, which is displaced from the can and the filling cylinder by the flow of the material therein, may be exhausted from the cylinder, an air vent pipe 83 extends vertically and downwardly within the cylinder and plunger 40 and 48, respectively. It will be noted from reference to fig. 5 that the air pipe 83 is eccentrically disposed within the filling tube and has its lower end located at one side of the opening in the top of the can, whereby as the vent pipe moves upwardly in the can and the filling tube downwardly the air will be withdrawn as the fruit enters the can, this air being exhausted from one side of the can by the entrance of the fruit. This pipe has communication with a transversely positioned pipe 84, which extends through a vertical slot 85 formed in the plunger 48. A discharge pipe 84′ extends laterally and forwardly from the pipe 84 and is adapted to return the fluid, which may be drawn into the pipe 83 together with the air, back into the feed hopper which contains the material to be supplied to the cans. To the ends of the pipe 84 the upper ends of the vertical rods 86 are secured. These rods extend through the guide arms 87 which are transversely extended from the cylinder supporting bars 42 and have their lower ends pivotally connected to the upper ends of the links 88. The lower ends of these links are connected to the cranks 70 of the shaft 69. It will be observed from reference to Fig. 2 of the drawings that as the crank shafts are rotated, the links 71 and 88 will be moved vertically in opposite directions, consequently also imparting an opposite vertical reciprocatory movement to the filling tube 48 and the air vent pipe 83. Thus after the tube depresses the material and is raised, the air pipe will descend and withdraw from the can the air which has been forced therefrom during the filling operation.

The material is fed into the filling cylinder from a hopper 89 which is supported upon one side of the frame on the vertical standards 90. This hopper extends downwardly and inwardly at an inclination and has communication with the interior of the filling cylinder through an opening 91 provided therein. The incline of this feed chute is very gradual, the hopper 89 being transversely disposed, thereby necessitating the curvature of the forward end of the feed chute as shown at 89′, to secure its proper disposition with relation to the filling cylinder. This arrangement will also prevent a too rapid flow of the material into the cylinder and obviate the liability of the filling tube becoming clogged.

Short longitudinal bars 92 are disposed in parallel relation between the transverse frame bars 7 and 31. Between these bars a channel iron 93 is disposed in which a fric-

tion roller 94 is rotatably mounted upon the shaft 95. This roller engages with the under surface of the lower plate 16 of the can carrier and materially aids in its rotation without undue friction of the several parts thereof. At one side of the machine and in transverse alinement with the shaft 12 there is a magazine tube 96, the lower end of which is disposed in juxtaposition to the upper surface of the plate 15 of the can carrier and over the annularly arranged can receiving recesses 18. This tube or cylinder is supported by means of a bracket plate 97 secured thereto at its lower end and to the circumscribing flange 55. An arm 98 connects the upper portion of the magazine cylinder to the feed hopper 89. This cylinder is loaded with empty cans, which in the present instance would be eight in number, as eight can recesses are provided in the carrier 14. As these recesses arrive below the lower open end of the cylinder, one of the cans will be deposited therein and supported upon the lower plate 16, from whence the can is carried beneath the filling cylinder to receive the material. After the cans have been filled and are moved forwardly, they will be automatically discharged from the front of the machine. To attain this end, the circumscribing flange 55 is directed outwardly at one end as shown at 99 and is secured in any suitable manner to the forward upper transverse frame member 10. A vertical plate or flange 100 is arranged in parallel relation to the end of the flange 55 and extends over the lower plate 16 of the can carrier. The plate 100 is extended inwardly adjacent to the carrier shaft 12, and is then transversely directed and has its inner end secured to the frame beam 31. The plate 100 terminates at the proper point whereby the cans will be automatically directed between this plate and the circumscribing flange 55 as the carrier is rotated. The filled cans may be removed from the forward end of the guideway formed by the plates 99 and 100 as they are discharged therein by the can carrier.

The operation of the machine is very simple. As the power is applied to the shaft 19, the can carrier 14 is rotated through the medium of the dog 34, such rotation being limited to position one of the recesses beneath the can magazine 96. As the vertical bar 28 is oscillated, the dog 34 is retracted or drawn rearwardly to position its forward end in the next succeeding notch 37 in the plate 16. This intermittent rotation of the can carrier is continued, and the cans successively positioned beneath the filling mechanism. During the rearward movement of the dog 34, the filling mechanism is actuated to discharge the material from the hopper 89 into the cans, the lower end of the filling mechanism being closed by the horizontally reciprocating valve plate 76 during the rotative movement of the carrier. As the cans are exhausted from the magazine 96 other cans may be supplied thereto to replace those which have been filled and removed from the carrier.

The machine may be operated at any desired speed and the cans rapidly filled. They are then removed from the machine and the tops placed thereon in any approved manner. The operation of the elements comprising the several coöperatively arranged mechanisms is very positive and provides a machine of comparatively simple construction whereby the cans may be automatically filled. The various parts are of such formation that the liability of breakage is reduced to a minimum.

It will be understood that the can carrier may be provided with any desired number of the can receiving recesses 18 to increase its capacity, and that the hopper 89 may be otherwise positioned with respect to the filling mechanism, than as shown in the drawings.

Many other minor modifications may also be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

Having thus described the invention, what is claimed is:

1. The combination with a can carrier, of means for rotating said carrier, a filling mechanism mounted above the path of movement of the cans, means for actuating said mechanism to fill the cans, and means movable with relation to the filling mechanism to discharge the air exhausted from the cans.

2. The combination with a can carrier, of means for rotating said carrier, a filling mechanism supported above the path of movement of the cans, means for actuating said mechanism to fill the cans, means movably disposed above the cans for discharging the air exhausted therefrom, and means for moving said last named means simultaneously with the actuation of said filling mechanism.

3. The combination with a can carrier, of means for intermittently rotating said carrier, a filling mechanism disposed above the path of movement of the cans, means automatically actuated when the carrier is stationary to operate said filling mechanism and a movable air discharge pipe positioned eccentrically above the can to discharge the air exhausted therefrom.

4. The combination with a can carrier adapted to support a plurality of cans, of means for intermittently rotating said carrier, a filling mechanism supported above the carrier adapted to supply material to the cans, automatically actuated means for operating said filling mechanism when the carrier is stationary and means movably dis-

posed above the cans in eccentric relation thereto and coöperatively associated with the filling mechanism to discharge the air exhausted from the cans.

5. The combination with a can carrier adapted to support a plurality of cans, of means for intermittently rotating said carrier, means for holding the carrier against rotation at the end of its intermittent movement, a filling mechanism supported above the path of movement of the cans, means for automatically actuating said mechanism to force the material into the cans, a hopper for feeding said filling mechanism and means movably positioned above the cans adjacent to the open end thereof and cooperatively associated with the filling mechanism adapted to discharge the air exhausted from the cans upon the entrance of the material and to return the juices discharged with the air to the feed hopper.

6. The combination with a can carrier, of means for intermittently rotating said carrier, a filling mechanism, means for automatically actuating said mechanism when the carrier is stationary, a cylinder supported above the path of movement of said cans, a filling tube disposed in said cylinder, means for feeding the material to the cylinder, means for automatically reciprocating the filling tube when the carrier is stationary, and a discharge pipe having its lower end disposed adjacent to the open end of the can extending through the cylinder in eccentric relation thereto and adapted to discharge the air exhausted from said cans.

7. The combination with a can carrier, of means for intermittently rotating said carrier, a cylinder supported above the path of movement of the cans, a filling tube disposed in said cylinder, means for reciprocating said tube when the carrier is stationary, a feed hopper communicating with said cylinder, an air discharge pipe having its lower end disposed above the open end of the can in eccentric relation thereto, said pipe extending through the filling tube, a lateral extension on the upper end of said pipe disposed over the feed hopper, whereby the juices withdrawn from the can together with the air exhausted therefrom are returned to the hopper, a can magazine adapted to supply the cans to said carrier and means for discharging said cans.

8. The combination with a rotary can carrier adapted to support a plurality of cans, of a supply cylinder vertically arranged and supported above said can carrier, means for positioning said cans successively beneath the supply cylinder, a vertically reciprocable filling tube in said cylinder, a yoke pivotally mounted on the lower end of said cylinder, a collar disposed below said cylinder and having transversely extending ears, rods connecting said collar and yoke, coiled springs disposed upon said rods, a horizontally reciprocatory plate disposed between said collar and tube and adapted to close the lower end of the supply cylinder when the can is moved from beneath the same, and means adapted to simultaneously withdraw said valve plate from beneath the cylinder and reciprocate said plunger and actuate the holding collar to engage the same with the upper end of the can.

9. The combination with a rotary can carrier adapted to support a plurality of cans, of a supply cylinder arranged above said carrier, a feed hopper communicating with said cylinder, the lower end of said cylinder being disposed above the path of movement of the cans, a vertically movable filling tube in said cylinder, said tube having a longitudinal slot therein, an air pipe extending transversely through said slot, a vertical vent pipe communicating therewith and extending adjacent to the lower end of the cylinder, a lateral discharge pipe extending from said transverse pipe and having its outer end positioned above the feed hopper, depending rods secured to the ends of said transverse pipe, means connected to said rods for reciprocating said vent pipe within the cylinder, means disposed below said cylinder for rigidly holding the can in position, a horizontal reciprocatory valve plate disposed between the lower end of the cylinder and said holding means, said plate being adapted to cut off the supply when the can is moved from beneath the cylinder, and means for simultaneously withdrawing said plate from beneath the cylinder and reciprocating said filling tube.

10. The combination with a can carrier adapted to support an annular row of cans, said carrier comprising spaced plates, one of said plates having a plurality of recesses to receive said cans, of means for intermittently rotating said carrier, a can magazine disposed above said carrier and adapted to supply the cans thereto, a filling mechanism vertically arranged and supported above the path of movement of said cans, means carried by said filling mechanism engaging with said cans to successively position the cans beneath the filling mechanism at the end of the rotary movement of said carrier, a reciprocable valve plate normally disposed between said holding means and the filling mechanism to cut off the supply from said cans, means for simultaneously engaging the holding means with the can and withdrawing the valve plate, a vertically movable air vent pipe adapted to exhaust the air from said cans as the material enters the same, means for feeding said filling mechanism and means yieldably engaging with one of the plates of said carrier to hold the same against rotation when the cans are being filled.

11. The combination with a rotary can carrier adapted to support an annular row of cans, of a vertical circumscribing flange arranged around said carrier to retain the cans thereon, a filling mechanism arranged above said carrier in the path of movement of the cans, said mechanism comprising a supply cylinder, a filling tube vertically movable therein, an air vent pipe vertically movable within said cylinder, means for intermittently rotating said carrier to successively position the cans beneath the cylinder, a valve, means for automatically actuating said valve to cut off the supply from the cylinder when the cans are moved from beneath the same, a supporting frame for said carrier and filling mechanism, parallel crank shafts journaled in said frame, intermeshing elliptical gears carried by said shafts, connections between the cranks of each of said shafts and said air pipe and tube to reciprocate the air pipe and tube in opposite directions within the supply cylinder, a power shaft journaled in said frame, a gear carried by one of said crank shafts engaged with a pinion on said power shaft, means pivoted on said frame and connected to said valve, said means being eccentrically pivoted to one of said elliptical gears to reciprocate the valve plate, and means for discharging the cans from said carrier.

12. The combination with a can carrier adapted to support an annular row of cans, said carrier comprising spaced plates, one of said plates having a plurality of notches in its periphery, of an arm independently rotatable on the carrier shaft, a dog pivoted on the outer end of said arm, means yieldingly holding said dog in one of the notches in said carrier plate to lock said arm and carrier for unitary rotary movement, an oscillatory bar, the upper end of said bar being connected to said dog, means for oscillating said bar to intermittently rotate said carrier, a filling mechanism disposed above the path of movement of the cans, the intermittent rotation of the carrier positioning one of said cans beneath the filling mechanism, means engaging with the can to rigidly hold the same in position to be filled, a valve plate movable beneath said filling mechanism to cut off the supply of material to the can when the carrier is rotated automatically operated means for simultaneously engaging said holding means with the can and withdrawing said valve plate and actuating the filling mechanism, and means for discharging the air from said cans as the material enters the same.

13. The combination with a rotatably mounted vertical shaft, of a can carrier secured to the upper end of said shaft, said carrier comprising spaced parallel circular plates, one of said plates being provided with a plurality of can receiving recesses, a cylindrical magazine supported above said carrier and adapted to supply the cans thereto, an arm loosely mounted upon said shaft beneath the carrier, a spring held dog pivoted on the outer end of said arm, the lower plate of said carrier having a plurality of notches in its periphery adapted to be engaged by said dog, a vertical oscillatory bar, means for oscillating said bar, a rod connecting the upper end of said bar and said dog, said bar being adapted to move said dog into position to engage in the notch in said carrier to intermittently rotate the same, a filling mechanism arranged above said carrier in the path of movement of the cans, the intermittent rotation of the carrier being adapted to move one of the cans into position to be filled, and means for actuating said filling mechanism when the carrier is stationary.

14. The combination with a frame, of a vertical shaft rotatably mounted in said frame, a can carrier secured to the upper end of said shaft and adapted to support an annular row of cans, means for automatically supplying the cans to said carrier, a vertical circumscribing flange arranged around said carrier to retain the cans thereon, one end of said flange being forwardly extended and secured to the frame, a parallel plate extending inwardly from the frame, said flange and plate forming a discharge passage for the cans, said carrier comprising spaced plates, a plurality of notches being formed in the periphery of one of said plates, an arm loosely disposed upon said shaft and extending outwardly of the carrier, a dog pivoted upon the end of said arm, a coiled spring secured to said dog and to said arm and adapted to hold said dog normally in engagement with one of the notches, a vertical oscillatory lever pivotally mounted on said frame, the upper end of said lever being connected to said dog and adapted to rotate said carrier, means for oscillating said bar, a filling mechanism vertically positioned and supported above the path of movement of the cans, said oscillating bar being adapted to intermittently rotate said carrier to successively position the cans beneath the filling mechanism, means for cutting off the supply of material to the cans during the rotative movement of the carrier, and means for actuating said filling mechanism when the carrier is stationary.

15. The combination with a rotatably mounted vertical shaft, of a can carrier secured to the upper end of said shaft, an arm loosely mounted upon said shaft beneath the carrier, a spring held dog pivoted on the outer end of said arm yieldingly engaged with said carrier for unitary rotary movement therewith, means for rotating said arm to intermittently rotate the can carrier, a filling mechanism supported above said car-

rier, the intermittent rotation of said carrier being adapted to move a can beneath said mechanism in position to be filled, means for holding said can in such position and means for simultaneously engaging said holding means with the can and actuating said filling mechanism at the end of the intermittent rotary movement of the carrier.

16. The combination with a can carrier comprising spaced parallel plates, one of said plates having a plurality of can receiving recesses and the other of said plates being provided with a plurality of notches in its periphery, of means movable upon the periphery of the last named plate adapted to engage in said notches, an oscillatory bar connected to said plate engaging means, means for oscillating said bar to intermittently rotate said carrier and position said plate engaging means in another of the notches, a resilient dog adapted to engage in one of said notches at the end of the rotary movement of the carrier to hold the same against rotation, a supply cylinder supported above said carrier in the path of movement of the cans, a vertically reciprocable filling tube in said cylinder adapted to discharge the material therefrom into the cans, an air vent pipe movable in said cylinder adapted to exhaust the air discharged from said can by the inflow of the material, and means for simultaneously cutting off the supply of material to the can and actuating said carrier rotating means.

17. The combination with a can carrier adapted to support a plurality of cans, means for intermittently rotating said carrier, a supply cylinder supported above said carrier, a reciprocating valve plate, means for automatically actuating said valve plate to cut off the supply of material to the can, a yoke pivotally secured to said cylinder adjacent to its lower end, a collar positioned beneath said cylinder and connected to said yoke and means connected to said yoke adapted to automatically depress said collar upon the can to secure the same in position beneath the cylinder simultaneously with the actuation of said valve plate.

18. The combination with a frame, of a can carrier rotatably mounted in said frame, means for intermittently rotating said carrier, a supply cylinder supported above said carrier in the path of movement of the cans, the intermittent rotation of said carrier being adapted to position one of the cans beneath said cylinder, a reciprocating valve plate movable beneath said cylinder adapted to be automatically actuated to cut off the supply of material to the cans upon the rotation of the carrier, means for reciprocating said valve plate, a tubular plunger vertically reciprocable in said cylinder to force the material into the cans, a feed hopper communicating with said cylinder, an air discharge pipe movable within said plunger and oppositely thereto, to exhaust the air discharged by the inflow of the material to the can and means for simultaneously reciprocating said plunger and air pipe in opposite directions and withdrawing said valve plate from beneath the supply cylinder.

19. The combination of a frame, a vertical shaft mounted in said frame, a can carrier secured on the upper end of said shaft, means mounted on said shaft for independent rotation yieldingly engaging with said can carrier for unitary rotary movement, means for intermittently rotating said carrier, an anti-friction roller mounted in said frame and engaging with said carrier, a supply cylinder supported above said carrier, a feed hopper communicating with said cylinder, means carried by said cylinder engaging with the cans to rigidly hold the same beneath the cylinder, a tubular plunger disposed within said cylinder, an air pipe vertically movable within said plunger and means for simultaneously actuating said can holding means to engage the same with the can and reciprocating said plunger and air pipe in opposite directions, said air pipe being laterally extended at its upper end above the feed hopper and adapted to exhaust the air displaced from the can by the inflow of the material thereto.

20. The combination with a frame, of a rotatable can carrier mounted in said frame, means for intermittently rotating said carrier, a supply cylinder supported above said carrier in the path of movement of the cans, means for holding said carrier against rotation when the cans are positioned beneath said cylinder, a tubular plunger disposed within the cylinder, an air pipe vertically movable in said plunger, the upper end of said plunger being slotted, said air pipe extending through said slot exteriorly of the plunger, the air pipe being eccentrically positioned within the plunger and having its lower end disposed adjacent to the edge of the can to be filled, means carried by said cylinder to hold the can in filling position and means for simultaneously actuating said holding means and reciprocating said tubular plunger and air pipe in opposite directions.

21. The combination with a frame, of a rotatable can carrier mounted in said frame, means for intermittently rotating said carrier, a supply cylinder supported above the carrier, means yieldingly engaging with the carrier to hold the same against rotation when the cans are in filling position beneath the cylinder, a reciprocatory valve plate normally closing the lower end of said cylinder, a yoke pivoted on the lower end of said cylinder, a spring held collar connected to said yoke positioned below the cylinder, said collar being adapted to engage upon the top

of the can to rigidly secure the same in position, a tubular plunger disposed in said cylinder, an air pipe extending downwardly within said plunger, the upper end of said plunger being slotted, said air pipe extending through said slots and eccentrically positioned within the cylinder, the lower end of said pipe being disposed adjacent to the edge of the can, mechanism for actuating said carrier rotating means and means operated by said mechanism for simultaneously engaging said holding collar with the can, reciprocating said plunger and air pipe in opposite directions and withdrawing said valve plate from beneath the lower end of the supply cylinder.

22. The combination with a can carrier, of means for intermittently rotating said carrier, a filling mechanism supported above the path of movement of the cans, means for actuating said mechanism when the carrier is stationary to fill the cans, a reciprocatory air discharge pipe adapted to discharge the air exhausted from the cans, and means for reciprocating said pipe simultaneously with the actuation of the filling mechanism.

23. The combination with a can carrier, of means for intermittently rotating said carrier, a filling cylinder mounted above the path of movement of the cans, a reciprocatory filling tube in said cylinder, means for actuating said tube to force the material into the cans when the carrier is stationary, a reciprocatory air discharge pipe extending through said filling tube, and means for reciprocating said pipe simultaneously with the operation of said tube actuating means to discharge the air exhausted from the cans.

24. The combination with a can carrier, of means for intermittently rotating said carrier, a filling cylinder mounted above the path of movement of the cans, a reciprocatory filling tube in said cylinder, means for reciprocating said tube when the carrier is stationary to fill the cans, an air discharge pipe eccentrically extending through said tube, and means for reciprocating said discharge pipe in a direction opposite to the reciprocatory movement of the filling tube simultaneously with the actuation of the tube reciprocating means to discharge the air exhausted from the cans.

WILLIAM FRANCIS THOMAS.

Witnesses:
CORA TRAMMELL,
A. S. LAPHAM.