C. H AYARS.

CAN FILLING MACHINE.

APPLICATION FILED DEC. 8, 1915.

1,255,377.

Patented Feb. 5, 1918.

4 SHEETS—SHEET 1.

Fig. 1

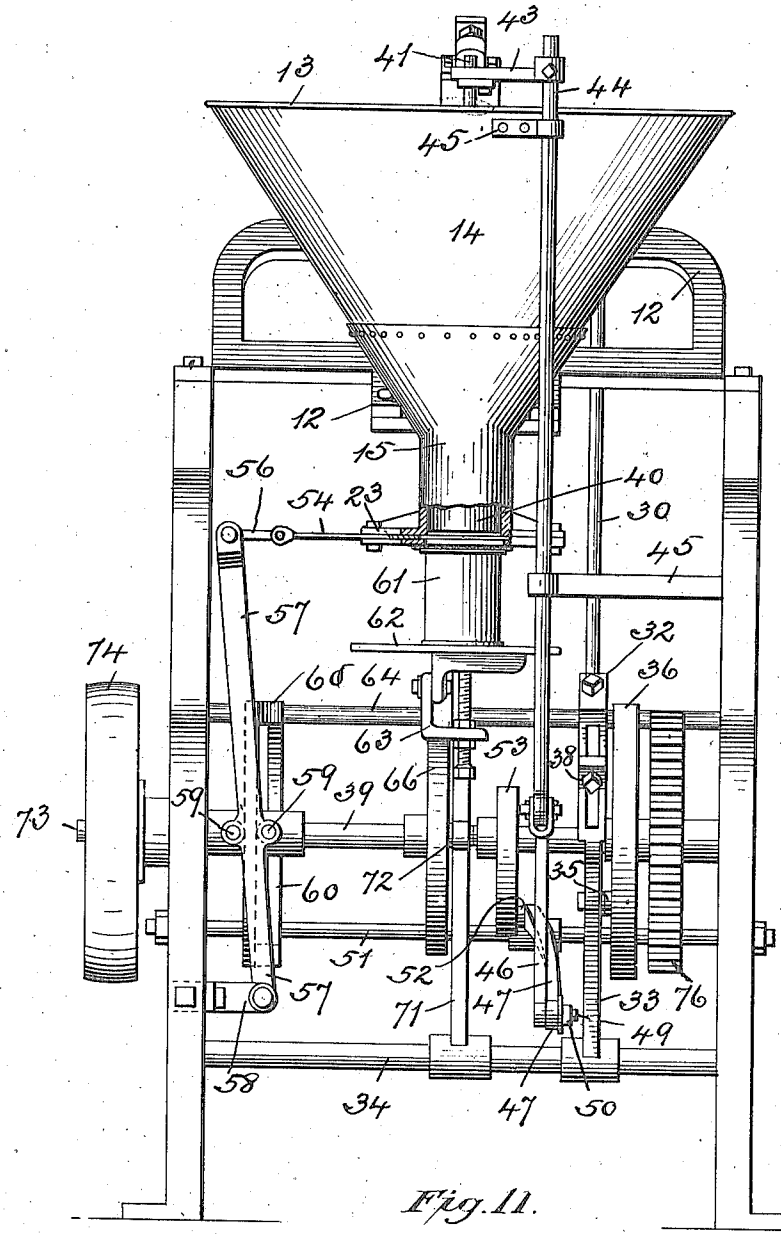
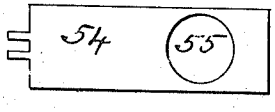


Fig. 11.



Inventor

Charles H. Ayars

By Mann & Co.

Attorneys.

C. H AYARS

CAN FILLING MACHINE.

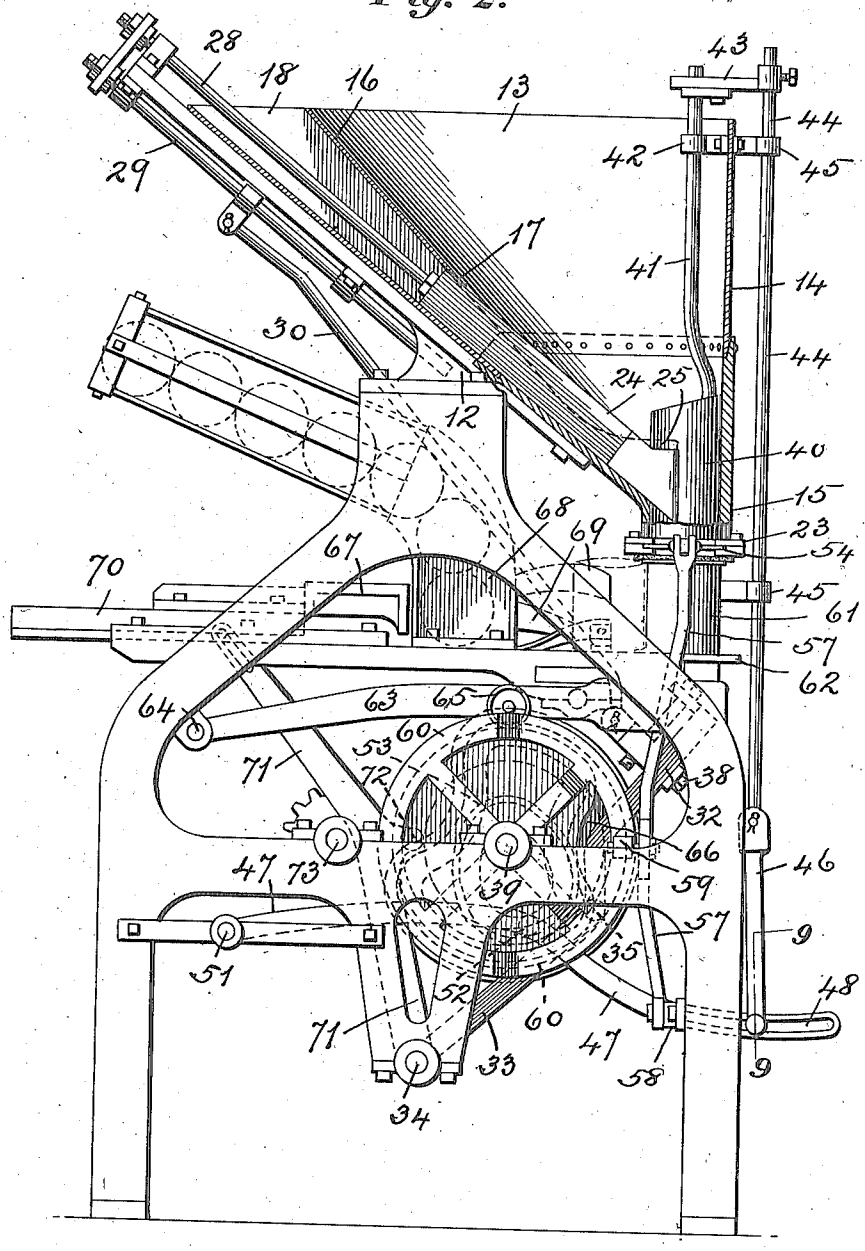
APPLICATION FILED DEC. 8, 1915.

1,255,377.

Patented Feb. 5, 1918.

4 SHEETS—SHEET 2.

Fig. 2.



Inventor

Charles H. Ayars

By Manuel & Co.

Attorneys.

C. H AYARS.

CAN FILLING MACHINE.

APPLICATION FILED DEC. 8, 1915.

1,255,377.

Patented Feb. 5, 1918.

4 SHEETS—SHEET 3.

Fig. 3.

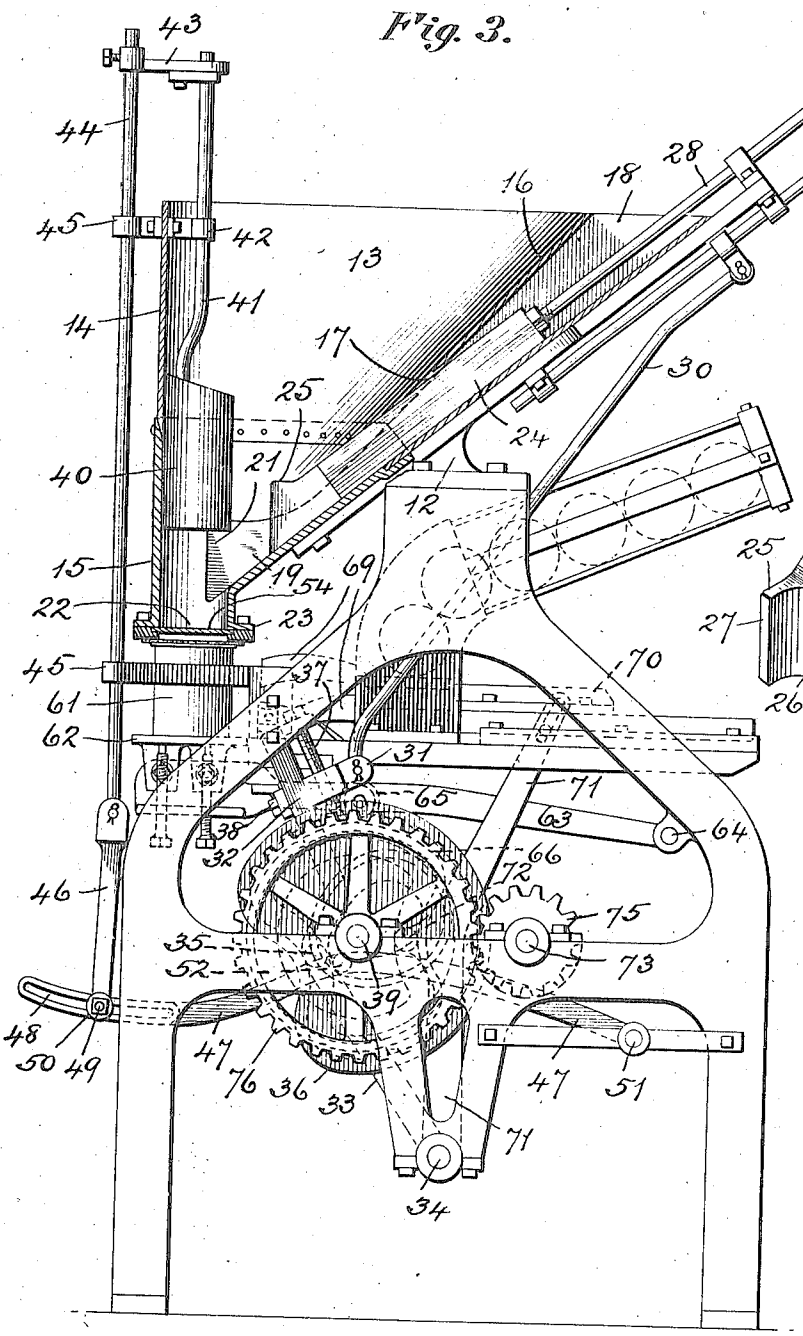
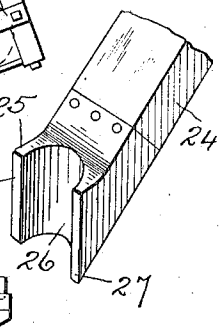


Fig. 12.



Inventor

Charles H. Ayars

By

Marin & Co.

Attorneys

C. H AYARS.

CAN FILLING MACHINE.

APPLICATION FILED DEC. 8, 1915.

1,255,377.

Patented Feb. 5, 1918.

4 SHEETS—SHEET 4.

Fig. 4.

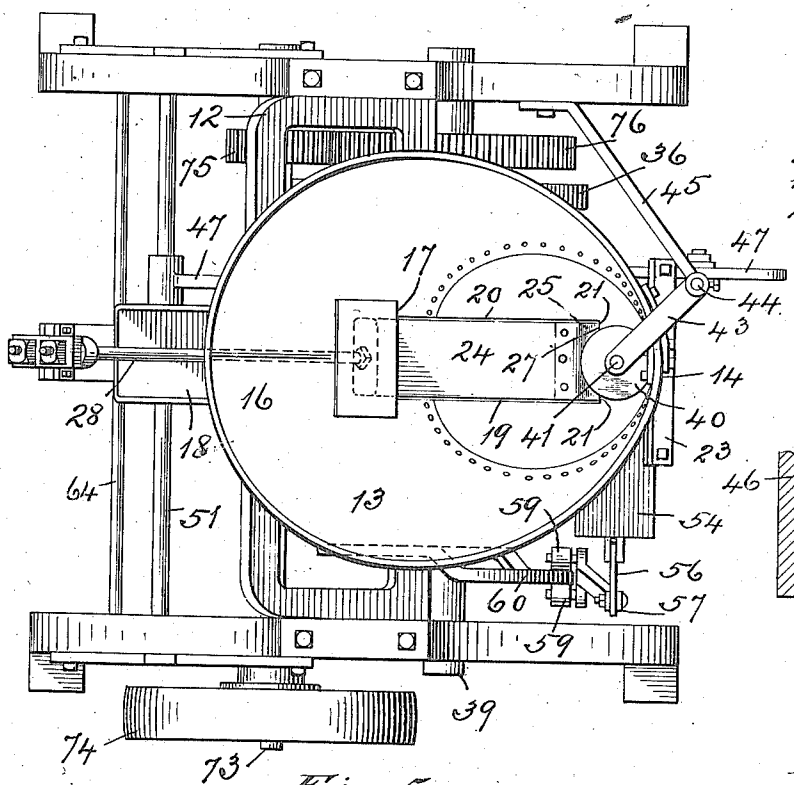


Fig. 10.

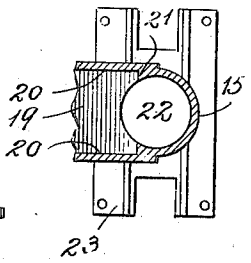


Fig. 9.

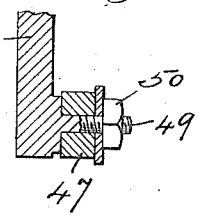


Fig. 5.

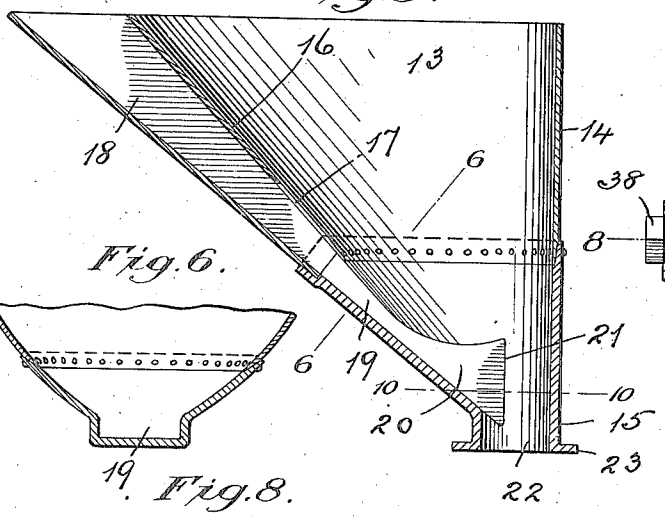


Fig. 7.

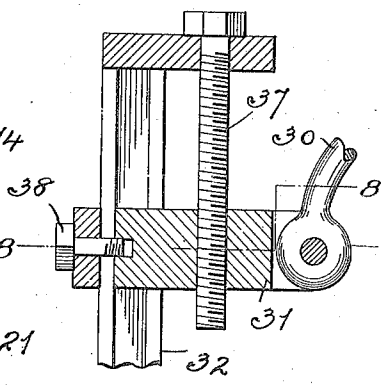
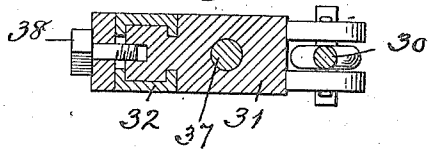


Fig. 6.

Fig. 8.



Inventor

Charles H. Ayars

By

Manu & Co.

Attorneys.

UNITED STATES PATENT OFFICE.

CHARLES H. AYARS, OF SALEM, NEW JERSEY, ASSIGNOR TO AYARS MACHINE CO., OF SALEM, NEW JERSEY, A CORPORATION OF NEW JERSEY.

CAN-FILLING MACHINE.

1,255,377. Specification of Letters Patent. Patented Feb. 5, 1918.

Application filed December 8, 1915. Serial No. 65,733.

To all whom it may concern:

Be it known that I, CHARLES H. AYARS, a citizen of the United States, residing at Salem, in the county of Salem and State of New Jersey, have invented certain new and useful Improvements in Can-Filling Machines, of which the following is a specification.

This invention relates to improvements in can filling machines and has particular reference to that class of can fillers wherein a reciprocating feed plunger operates in a hopper to direct the material toward an outlet and a separate ejecting plunger forces the material from the outlet into a can.

The invention in the present instance is shown embodied in a machine particularly designed for packing tomatoes but it may readily be embodied in machines for packing other vegetables or materials.

The object of the invention is to improve the construction of filling machines with a view of filling the cans uniformly and to provide improved plungers and actuating means therefor whereby this uniformity in the filling may be obtained.

The invention is illustrated in the accompanying drawings wherein,—

Figure 1, shows a front elevation of a can-filling machine embodying the invention,—some parts, unnecessary to the illustration of the invention however being omitted.

Fig. 2, illustrates the machine as viewed from one side,—the lower part of which is shown in side elevation and the upper part in vertical section.

Fig. 3, shows the same as viewed from the opposite side of the machine.

Fig. 4, illustrates the machine in top plan.

Fig. 5, shows a vertical longitudinal section through the hopper.

Fig. 6, illustrates a cross-sectional detail through the same,—the section being taken on the line 6—6 of Fig. 5.

Fig. 7, shows an enlarged sectional detail through the adjusting means on the lever that actuates the hopper feed plunger whereby to vary the stroke of the latter.

Fig. 8, illustrates a cross-sectional detail of the same on the line 8—8 of Fig. 7.

Fig. 9, shows an enlarged sectional detail through the adjusting means for the ejecting plunger,—the section being taken on the line 9—9 of Fig. 2.

Fig. 10, illustrates a horizontal cross-sectional detail through the lower part of the hopper,—the section being taken on the line 10—10 of Fig. 5, and

Fig. 11, shows a detail top plan view of the cut-off slide plate.

Fig. 12, shows the plunger-end in perspective.

Referring to the drawings the two vertical side frames of the machine are connected by a horizontal plate, which latter carries a hopper-supporting frame 12. A hopper 13, is sustained by the frame 12, and said hopper has a straight front wall portion 14, whose lower end terminates in a circular vertical nozzle 15.

At the rear side, the hopper has an inclined wall 16, with an opening 17 therein and beneath the opening said hopper also has an inclined chamber 18, which extends in an inclined direction and whose lower end is exposed to the interior of the hopper through the opening 17. This chamber 18, therefore has its lower end communicating with the hopper and from the opening 17, downwardly has the form of a depressed channel 19, as best shown in Figs. 4, 5, 6 and 10 of the drawings. At the extreme lower end, the side walls 20, of the channel 19, increase in depth and terminate at vertical walls 21, which are formed at diametrically-opposite sides of a circular plunger-guide opening 22, on the interior of the discharge nozzle 15.

It is to be understood that the interior walls of the hopper incline toward the depressed channel 19; that the interior rear wall thereof inclines downwardly and forwardly toward the lower end of said channel, and that the interior front wall of the hopper extends substantially vertical from the front side of the circular guide opening 22.

The depending nozzle portion 15, of the hopper is provided with a horizontal flange 23, against the under side of which a horizontal cut-off slide operates, as will presently be explained.

An inclined plunger 24, is situated in the depressed hopper channel 19, and said plunger is of a rectangular cross-sectional shape. The lower end of this plunger has a flat horizontal surface 25, and a concave recess 26, is provided in said end and extends down vertically and at a right angle with respect to said flat surface. At

opposite sides of the concave recess the plunger-end is provided with vertical straight edges 27, as clearly shown in Fig. 12, of the drawing, which vertical edges, when the plunger is in its extreme lower position, as shown in Fig. 4, will register or aline with the vertical walls 21, in the hopper wall so that the concave recess 26, of the plunger will form one side of the circular guide opening 22, when said plunger is down.

The upper end of the plunger 24, extends through the opening 17, in the hopper bottom and has position in the plunger chamber 18, and a rod 28, is connected to the upper end of the plunger; extends upwardly in an inclined direction and has its upper end projecting above the upper end of the chamber and hopper wall.

Reciprocating movement is imparted to the rod 28, and plunger 24, by means of a guide bar 29, and an operating rod 30, which latter has its lower end pivotally connected to an adjustable head 31, that is slidably mounted in a frame 32, at the upper end of a rock lever 33. This rock lever 33, is pivotally mounted on a horizontal bar 34, and has a roller 35, that engages a grooved cam 36, on a horizontal cam shaft 39. The adjustment in the stroke of the rod 30, may be varied by varying the position of the head 31, on the frame 32,—a screw 37, being provided to effect this adjustment and a locking screw 38, serving to lock the head in the adjusted position.

It is therefore to be understood that each revolution of shaft 39, and cam 36, thereon, will impart an outward and return stroke or swing to the frame 32, at the upper end of lever 33, and that this movement of said lever and frame will impart one complete reciprocation of plunger 24, in the hopper.

Over the circular guide opening 22, of the discharge nozzle I provide an ejector plunger 40, the same having position at the inner side of the vertical front wall of the hopper. This ejector plunger is carried at the lower end of a vertical rod 41, which passes through a bracket 42, on the inner side of the front hopper wall. The upper end of this rod is connected by a horizontal bar 43, to the upper end of a vertically-reciprocating rod 44, which latter passes through guide brackets 45. The lower end of rod 44, is pivotally attached to the upper end of an arm 46, which latter has its lower end adjustably connected to the forward end of a rock-bar 47. This forward end of rock-bar 47, is provided with a longitudinal slot 48, and a pin 49, projects from the arm 46, and projects through this slot and is rigidly locked thereto by means of a nut 50, as shown in sectional detail in Fig. 9, of the drawing. The rear end of rock-bar 47, is pivotally carried on a cross-bar 51, and a roller 52, is carried by the bar and by traveling in a groove of a cam 53, causes the outer slotted end of said bar to swing up and down and to thereby vertically reciprocate the ejector plunger 40.

By referring to Figs. 2 and 4 of the drawings, it will be noted that when the plunger 24 is down, the concave recess 26, in its end will fit close about the ejector plunger 40, so that the bottom of said plunger 40, the concaved recess 26, in the end of plunger 24, and the walls that form the guide opening 22, all go to form a measuring space into which the material from the hopper is forced by the plunger 24, and which space is closed at the bottom, during the downward stroke of plunger 24, by means of a cut-off slide plate 54, which will presently be explained.

It is therefore to be understood that the circular opening 22, is closed at the bottom during the measuring operation, by the slide plate 54; that ejector plunger will be up and that the space between the bottom of the ejector plunger when the latter is up and the slide plate will form a measuring space that is open at that side which confronts the plunger 24. Therefore as plunger 24, descends it forces the material into said space and its concaved recessed end will form the other side of the measuring space to confine the material therein, until the slide 54, is withdrawn and the plunger 40, is lowered to eject the measured material.

The slide plate 54, is held horizontally against the under side of the flange 23, and is provided with an opening 55, which is substantially of the same diameter as that of the guide opening 22. At one end this plate is provided with a link bar 56, which is pivotally connected to the upper end of a rock lever 57,—the lower end of which lever is pivotally attached to a bracket 58, that projects from the side frame of the machine. Between its upper and lower ends the rock lever 57, is provided with two spaced-apart rollers 59, which latter straddle or project on opposite sides of a cam 60, that is carried on the horizontal shaft 36. As cam 60, revolves it will rock lever 57, and throw its upper end toward the nozzle 15, thus pushing cut-off slide 54, horizontally until the opening 55, in the latter registers with the opening 22, in the nozzle. The ejector plunger 40, then moves down and forces the measured material down through the opening 55, in the slide-plate and into a can 61, that has been placed on a table 62, which sustains it during the filling operation.

The table 62, is carried at the outer end of a rock bar 63, whose inner end is pivotally mounted on a horizontal cross-bar 64, and the rock bar is provided with a roller 65, that travels on the circumferential face

of a cam 66, that is revolved by shaft 39. As the cam 66, revolves it will cause the bar 63, and table 62, to move upward and remain in the elevated position during the filling operation, and then to move down during the period that a filled can is being removed and an empty can substituted.

In practice, it is preferable to provide a means for automatically feeding the cans onto the table 62, and while the mechanism employed is not essential to the operation of the devices hereinbefore described, briefly stated it consists of a reciprocating pusher head 67, shown in Fig. 2, of the drawing, which passes through the lower end of a can-chute 68, and pushes one can forward at a time. In the present instance the cans are shown as rolled on their cylindric sides and delivered in that position in front of the head and at the front side of the chute I provide a series of curved arms 69, which engage the can as it is moved forward and effect a partial rotation thereof so as to turn them on their ends as they are delivered onto the table.

The head 67, is carried by a guide bar 70, and the latter is reciprocated by means of a rock bar 71, whose lower end is pivotally mounted on cross-bar 34, and which has a roller 72, that enters a groove in the side of cam 66, which groove effects a rocking of the bar to feed the cans forward one at a time.

A main shaft 73, extends horizontally across the machine and has a driving pulley 74, at one end. The opposite end of this main shaft carries a pinion 75, which meshes with and drives a gear 76, on the cam shaft 39, and by this means motion is provided for the several moving parts.

Having described my invention what I claim is,—

1. In a can-filling machine, the combination with a hopper having an outlet, of a plunger exposed on the interior of the hopper to move material toward said outlet; a second plunger also in the hopper and movable crosswise of the end of the first-named plunger, and the ends of said two plungers forming walls of a measuring space inside of the hopper to determine the bulk of material to be discharged, and means for holding the second plunger elevated while the first-named plunger makes a feed stroke.

2. In a can-filling machine, the combination with a hopper having an outlet, of a plunger exposed to the interior of the hopper to move material toward said outlet; a second plunger also exposed to the interior of the hopper and movable in a direction crosswise of the end of the first-named plunger said two plunger-ends forming walls of a measuring space in the hopper itself; means independent of both plungers for closing the escape from the measuring space while the first-named plunger is making its feed stroke and means for opening the escape from the measuring space when the second-named plunger makes a feed stroke.

3. In a can-filling machine, the combination with a hopper having an outlet, of a plunger in the hopper and having a concave forward end; a second plunger also in the hopper in alinement with the hopper outlet and having a convex surface to pass through the concave end of the first-named plunger,—the ends of said two plungers forming walls of a measuring space over said hopper-outlet; valve means in the hopper outlet beneath both of said plungers for opening and closing the outlet; means for keeping the valve closed when one plunger makes a stroke and means for opening the valve when the other plunger is making its stroke.

4. In a can-filling machine, the combination with a hopper having an outlet, of a plunger inside of the hopper and having a concave end; a second plunger also inside of the hopper in alinement with the hopper outlet and having a convex surface to pass through the concave end of the first-named plunger,—the ends of said two plungers forming walls of a measuring space over said hopper-outlet; a movable can-supporting table beneath the hopper-opening; valve means below both plungers and above the table; means for holding the valve closed when the plunger with the concave end makes its stroke, and means for moving the second plunger across the concave end of the first-named plunger to force the material through the hopper opening and valve into a can on the table.

In testimony whereof I affix my signature in the presence of two witnesses.

CHARLES H. AYARS.

Witnesses:
O. W. ACTON,
MARY D. BANKS.