No. 799,962. PATENTED SEPT. 19, 1905.

C. H. AYARS.

CAN FEED DEVICE FOR CAN FILLING OR OTHER MACHINES.

APPLICATION FILED SEPT. 24, 1904.

2 SHEETS—SHEET 1.

Fig. 5.

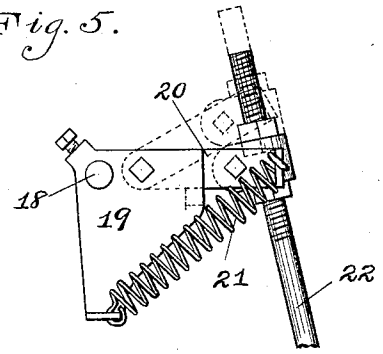


Fig. 1.

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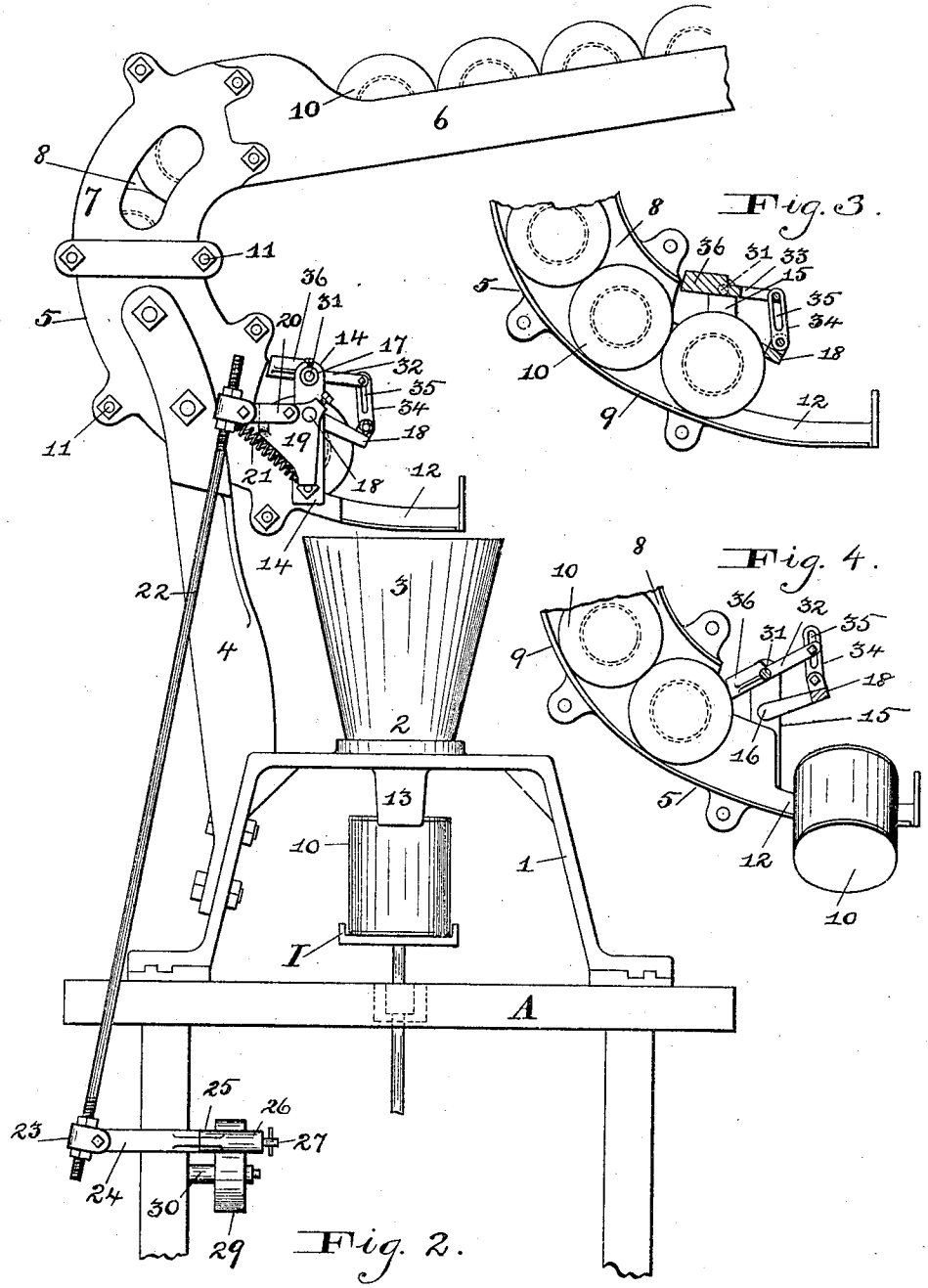


Fig. 2.

Fig. 3.

Fig. 4.

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UNITED STATES PATENT OFFICE.

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CAN-FEED DEVICE FOR CAN-FILLING OR OTHER MACHINES.

No. 799,962. Specification of Letters Patent. Patented Sept. 19, 1905.

Application filed September 24, 1904. Serial No. 225,752.

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-Feed Devices for Can-Filling or other Machines, of which the following is a specification.

This invention relates to improvements in can-filling machines, and has particular reference to the mechanism for feeding the cans to the filler.

The invention is especially adapted for use in connection with that class of filling-machines in which the vessel has a vertical position while being filled. In feeding cans to such machines the practice at the present time is to employ endless conveyers to carry the cans while in a vertical position to the filler or to employ a tube extending vertically from the filling-machine, in which tube the cans are placed so that as the lowermost can is withdrawn from the tube all the cans above will drop by gravity to present another can to the lowermost position to be withdrawn. As an example of a machine of this character attention is directed to a patent granted to me March 3, 1903, No. 722,075, in which the cans are fed into a vertical tube through which they are directed while in a vertical position to the filler. In such machines it is necessary to employ an operator to place the cans in a vertical position in the tube, so that they will be properly directed to the filler, and the cans to be filled must first be carried to a point within the reach of such operator.

My invention therefore has for its object to provide a device whereby the cans may be rolled while on their side or in a horizontal position from a point remote from the filler and automatically turned from the horizontal to a vertical position in readiness for being filled.

The invention therefore consists in providing devices for conveying the cans toward the machine while in a horizontal position and turning the cans to a vertical position to be filled.

The accompanying drawings illustrate one form of device for carrying the invention into practical effect, it being understood, however, that the same is not limited to the structure shown.

As shown in the drawings, the invention is applied to a machine constructed in accordance with my said former patent, No. 722,075; but the same is as readily applied to other forms of machines.

In the drawings, Figure 1 illustrates a side elevation of a portion of a filler-machine provided with the improved can-feed device. Fig. 2 illustrates a side elevation of the feed device on an enlarged scale. Fig. 3 shows a vertical sectional view of the escapement device in the inoperative position. Fig. 4 shows a side elevation of the same in the operated position to release the lowermost can, but hold the other cans in check; and Fig. 5 shows an enlarged detail of the crank-bar and the parts connecting the same with the operating-rod.

A portion only of the filler-machine is illustrated, it being deemed unnecessary to enter into the details of construction, and, briefly described, the machine comprises a framework A, above which is mounted an inclined hopper *a*, adapted to hold the vegetables or other material that is to be canned and deliver it into a tapered discharge-tube *b*. By means of a plunger the material is forced through the discharge-tube into a vertical tube O and from the latter into a can. Beneath the hopper the machine is provided with a table I, on which the cans are supported and along which all the cans are preferably advanced step by step in any suitable manner—such, for example, as shown in my Patent No. 652,581, of June 26, 1900. At one end of the machine and resting on the upper surface of the frame is an inverted-U-shaped bracket 1, which bridges over the table I, and immediately above the table said bracket is provided with a circular opening in which fits the lower small end 2 of a conical chute or guide 3. This conical chute or guide is open at both ends and is utilized to direct the empty cans to a position on the table beneath, as will presently more fully appear.

A support or arm 4 is secured at its lower end to the bracket 1, and said support extends vertically above the chute or guide 3. At its upper end the support is bolted to and sustains the lower end of a curved chute 5, which latter is in communication with a chute 6, leading from any desired point toward the filler-machine. The curved chute comprises

two side plates 7 and 8, each of which is provided at its lower curved edge with a flange 9, which turns inwardly, so that together the two flanges will form a ledge on which the cylindric can-bodies 10 may roll between the side plates. The side plates are secured together by bolts 11, which extend horizontally from the opposite edges thereof. The flange of the side plate 7 terminates at a point adjacent the edge and near one side of the guide 3, while the flange of the opposite plate 8 projects beyond and toward the opposite side of said guide, as shown at 12. By this construction it will be seen that the two confronting ledges to support the cans while they roll by gravity toward the discharge end are of unequal length, one being longer than the other, so that when a cylindric body arrives at the point where the shorter ledge terminates that side of the body which is unsupported will drop, and as the can falls below into the cone-shaped guide it will be caused to turn from a horizontal position through a quarter of a circle to a vertical position.

It will be noted that the cylindric bodies are placed in the chute 6 and conveyed by the latter to the curved chute 5, so that the open ends will have position adjacent the side plate 8, having the longer projecting flange or ledge 12, so that said open end will be held momentarily, while the closed end drops because unsupported. This operation causes the can when turned to the vertical position to present its open side uppermost as it drops into the table I and in readiness for filling.

Depending from the bracket 1 and beneath the cone-guide 3 is a lug 13, which projects below the plane of the top surfaces of the cans when the latter are on the table I. This lug, it will be noted, is at the outer side of the bracket 1 and is designed to prevent the cans from tilting outwardly or away from the filler when dropping onto the table.

It will be understood that the conveyer-chute 6 may lead from any point to the curved chute 5. If the point at which the cans are placed in the chute 6 is higher than the receiving end of the curved chute, the cans may be rolled by gravity; but it is to be understood that the cans may be conveyed to the curved chute while lying in a horizontal position on an endless conveyer. It is preferred, however, to roll the cans by gravity to the curved chute. In feeding the cans, therefore, it is necessary to provide suitable escapement mechanism to control the escape of the cans from the delivery end of said curved chute and to time their discharge with the operation of the filling machine, so that one at a time will be deposited on the table while the others are held in check. The mechanism for effecting this operation will now be described, it being understood, however, that the invention is not limited to the particular form of devices shown and described, as the same is susceptible of many modifications without departing from the spirit of the invention.

Secured by bolts and projecting vertically from the side plates are bracket-arms 14 and 15. These arms are each provided with two perforations, one above the other, which form bearings 16 and 17. A crank-shaped bar 18 has its ends supported in the bearings 16 and extends across the curved chute, and said bar is designed to swing in a vertical plane over the ends of the side plates 7 and 8. On the outer end of the crank-bar adjacent the bracket 14 is a plate 19, rigidly secured thereon, and near its upper edge said plate pivotally supports one end of a lever 20. A spiral spring 21 connects the free end of said lever with the lower end of the plate 19 for a purpose to be presently described. A rod 22 has its upper end adjustably secured in the pivoted lever 20 and extends downwardly therefrom to a point below the table, and the lower end of said rod passes through a pivoted head 23 on the end 24 of a lever 25. This lever is provided with a boss 26, through which a stem 27 on the frame of the filler-machine projects, so as to pivotally support it between its ends, and the rear end of said lever is provided with a roller, as seen in broken lines in Fig. 1, which travels in a groove 28 of a cam 29 on a horizontal shaft 30. It will be understood that the revolution of the cam 29 will impart a vertical rocking movement to the lever 25 and rod 22 and cause the crank-shaped bar 18 to swing intermittently at the discharge end of the curved chute 5 to release the cans. In the event of a can being caught between the flanges 9 and the crank-bar 18 as the latter is lowered by the elevation of the rod 22 and to prevent such can from being crushed I have provided the arangement of plate 19, pivoted lever 20, and spring 21 so that any strain or resistance, such as a can, to prevent the lowering of the crank-bar would be taken care of by being thrown on the spring, and the continued upward movement of the rod 22 would merely cause the lever 25 to move independently of the plate 19, as the connection between the two is a yielding one. Thus the mechanism employed to stop the discharge of cans from the curved chute is provided with a yielding connection somewhere between its two ends.

In order to prevent the escape of more than one can at a time from the curved chute into the guide or chute 3, I have provided an escapement device which operates to release the lowermost can, but hold in check all the other cans in the said chute and also in the chute 6, so that during the momentary elevation of the crank-bar 18 to permit the escape of the lowermost can a supplemental check or stop will be placed in front of the remaining cans until the crank-bar is returned.

This supplemental stop device comprises a horizontal rock-shaft 31, which is supported in the bearings 17 in the bracket-arms 14 and 15. This rock-shaft extends crosswise of and above the curved chute 5 and is provided at a point above the center of said chute with a lateral arm 32, provided with a slotted end 33. This slotted end of the arm projects toward the crank-bar 18, and a link 34 pivotally connects said bar and arm 32. A slot 35 in the arm end of the link serves as a yielding connection between the crank-bar and arm for a purpose now to be described. The arm 32 projects beyond the rear of the rock-shaft as well as in front of it, and said rearwardly-projecting end of the arm is provided with a weight 36 and is projected down into the curved chute when the shaft 31 is rocked by the elevation of the crank-bar 18. This weight is heavier than the slotted end of the arm and keeps said slotted end and the crank-bar normally at their greatest distance apart; but if a can should be caught beneath the weight as the latter is being lowered the crank-bar could continue its upward movement because of the slot 35 in the link, and thus prevent damage or strain on the connecting parts or to the can that is caught. It will therefore be seen that a yielding connection is formed in the escapement device in both of its strokes.

In the operation of the devices the parts are properly timed so that the cans may be fed successively one at a time and filled in the order in which they are fed, and the escapement device is operated by the mechanism of the filler proper. This fact enables the device to be readily attached to almost any filler now in common use without alterations or much expense. As the rod 22 is lowered the crank-bar 18 will be raised, and this movement of the crank-bar will rock the shaft 31 and permit the weight 36 to be lowered by its own weight into the curved chute. The distance between the crank-bar and the weight on the rock-shaft is equal to the diameter of one can, and before the crank-bar is moved upwardly far enough to release the lowermost can in the chute the weight will take a position between the lowermost can and the next adjoining can, so as to form a stop to prevent movement of all but said lowermost can. After the weight assumes its stop position the crank-bar may continue its vertical movement because of the slot 35 in the link 34, and this slot is long enough to permit enough independent movement of the crank-bar to release the said lowermost can and permit it to roll on the flanges or ledges 9 until its closed end passes beyond the ledge, when said end of the can will fall and cause the can to be partly turned toward a vertical position, because its open end is still supported on the projecting flange 12. As the can has been partly turned in leaving the flanges, its complete turn to the vertical position will be effected by the conical guide 3, and it will pass through said guide and be deposited on the table I in a vertical position and with its open end uppermost. When the lowermost can has been released from the curved chute, as above described, the rod 22 will begin its upward movement and the crank-bar will begin to lower, while the weight and rock-shaft will momentarily remain stationary until the link 34 has been drawn down a distance equal to the length of the slot 35. When this has been accomplished, the crank-bar will be lowered sufficiently to prevent the escape of cans from the curved chute, and the further movement of the crank-bar is utilized to raise the weight and permit the cans to roll down against it. It will thus be seen that the feeding operation is entirely automatic and that the cans may be conveyed to the curved chute by a conveyer-chute from a point remote from the feed device and the services of an operator to feed the cans is entirely dispensed with.

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

1. In a device for feeding cylindric bodies the combination with a chute on which the bodies may roll by gravity, of a swinging crank-bar extending horizontally across the chute in the path of the bodies; a rock-shaft supported adjacent the swinging horizontal crank-bar provided with a swinging stop device; means connecting the swinging crank-bar and swinging stop device and means to turn the bodies from a horizontal to a vertical position after they have been released by the swinging crank-bar and swinging stop device.

2. In a device for feeding cylindric bodies the combination with a trackway having supporting-rails one of which projects beyond the other at the discharge-point of the trackway, of a stationary guide-receptacle below the end of the longer trackway-rail, a swinging bar extending crosswise of the supporting-rails near the discharge-point and in a direction lengthwise of the cylindric bodies, a swinging stop device, means for yieldingly connecting the swinging bar and stop device, means for rocking said swinging bar, and means for yieldingly connecting the rocking means and the swinging bar.

3. In a device for feeding cylindric bodies the combination with a trackway, of a swinging bar extending across the trackway near the discharge-point, a swinging stop device, a link pivotally connecting the bar and stop and having a slot whereby to permit independent movement of one of said devices with respect to the other and means for rocking said bar.

4. In a device for feeding cylindric bodies the combination with a trackway, of a rock-shaft having a swinging bar which extends

across the trackway near the discharge-point, a swinging stop device, a link pivotally connecting the bar and stop, a plate on the end of the rock-shaft, and means yieldingly connected to said plate for operating the latter to swing the bar.

5. In a device for feeding cylindric bodies to a can-filling machine the combination with a trackway, of a swinging bar extending crosswise of the trackway near the discharge-point, a swinging stop device, means for yieldingly connecting the swinging bar and swinging stop, a stationary guide-receptacle below the trackway and a table below the guide-receptacle and spaced from the bottom of the latter sufficiently to permit the bodies to pass from beneath the receptacle.

6. In a device for feeding cylindric bodies to a machine to be filled while the bodies are in a vertical position, the combination with the filler mechanism, of an inclined chute on which the bodies may roll in a horizontal position; a crank-bar pivotally sustained near the discharge end of said chute to control the escape of said bodies; means for rocking said crank-bar; a yielding connection between the crank-bar and its operating means, and means at a point between the crank-bar and filler mechanism for turning the bodies from a horizontal to a vertical position to present them with their open ends uppermost.

7. The combination with a can-filling machine provided with means for filling the cans while the latter are in a vertical position, of a gravity-chute on which the cans may roll while in a horizontal position; a crank-bar to control the escape of a can from the chute; a rock-shaft provided with a stop-arm to hold the cans in the chute in check while the lowermost can is being discharged; means for yieldingly connecting the crank-bar and rock-shaft; means for connecting the crank-bar with the can-filling mechanism whereby to operate them in time, and means to turn the cans from the horizontal to a vertical position after they are released from the chute.

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

CHARLES H. AYARS.

Witnesses:

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J. G. RICHMOND.