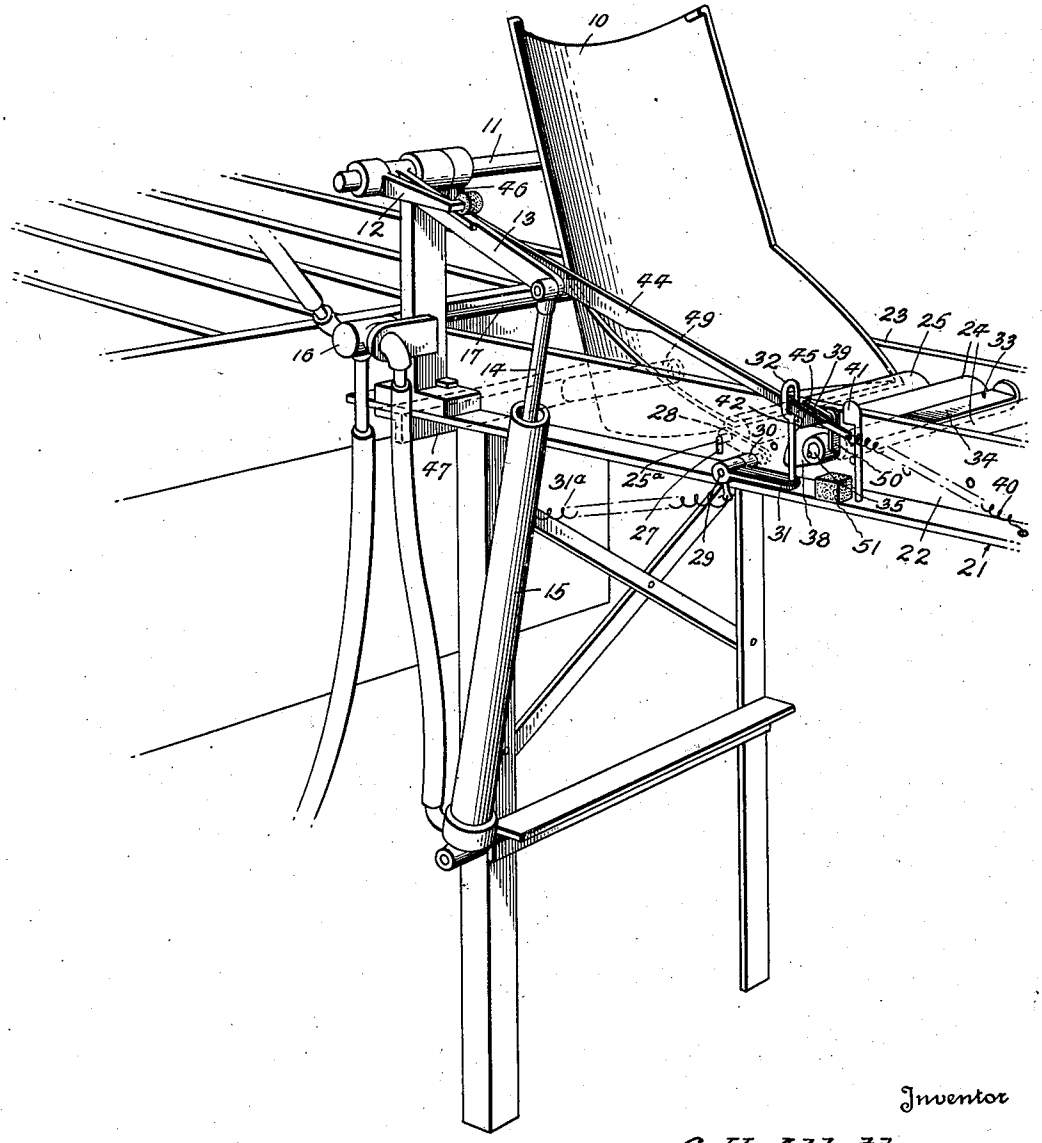
April 23, 1946. C. H. ABBOTT 2,399,087

CAN-FEEDING MEANS

Filed May 2, 1944 4 Sheets-Sheet 1

FIG. 1



Inventor

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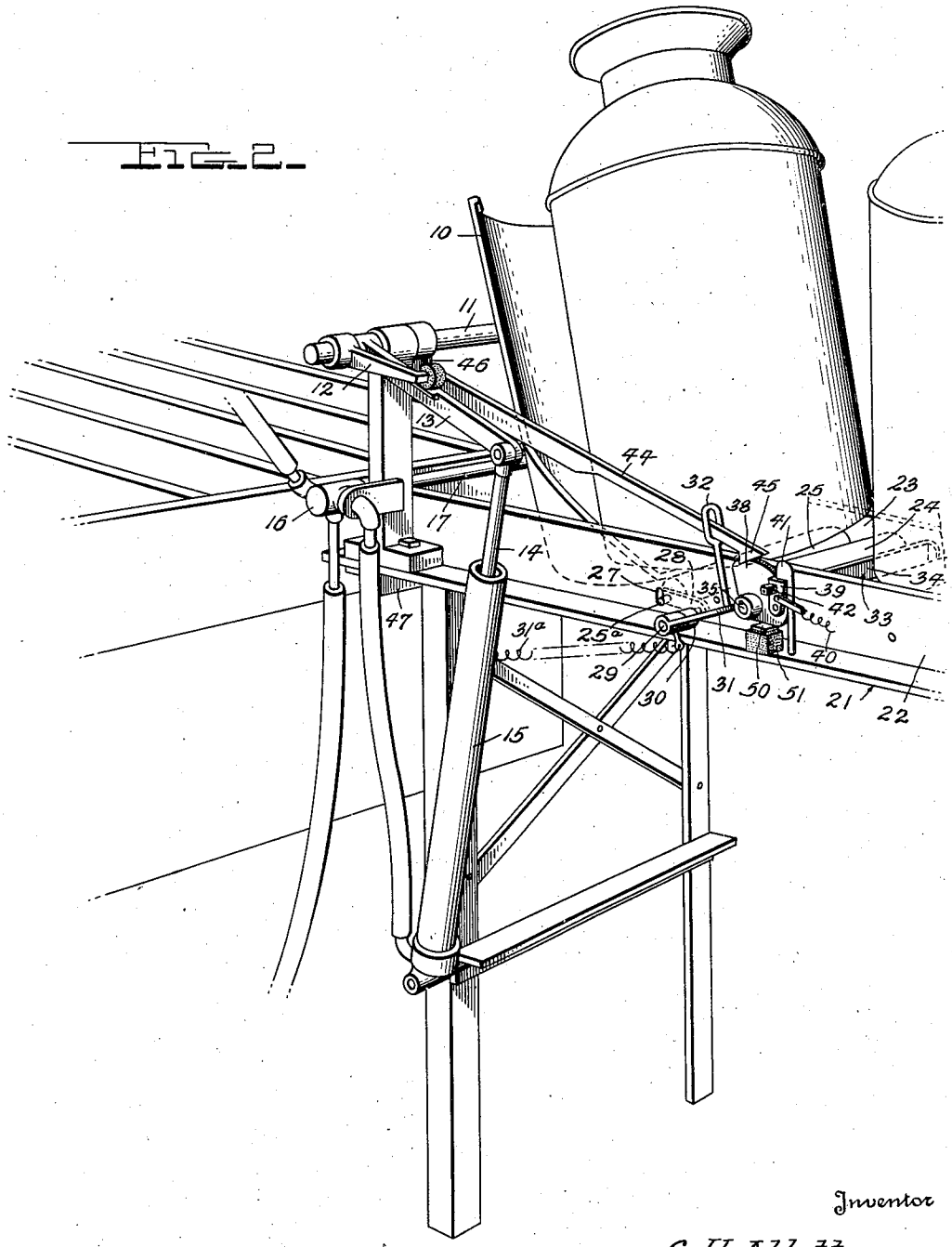
By H. B. Wilson & Co. Attorneys

April 23, 1946. C. H. ABBOTT 2,399,087

CAN-FEEDING MEANS

Filed May 2, 1944 4 Sheets-Sheet 2

FIG. 2.



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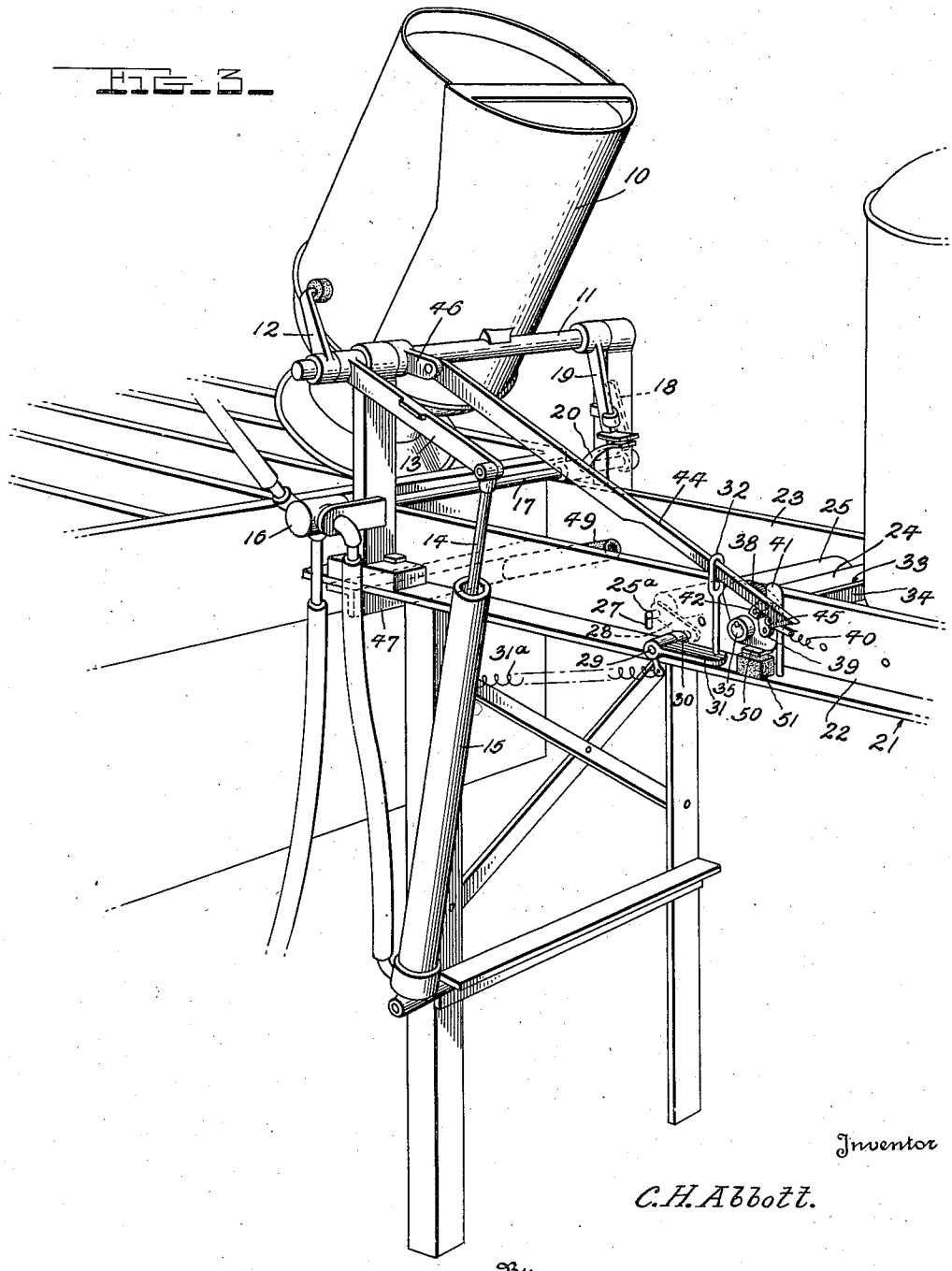
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April 23, 1946. C. H. ABBOTT 2,399,087

CAN-FEEDING MEANS

Filed May 2, 1944 4 Sheets-Sheet 3

FIG. 3



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CAN-FEEDING MEANS

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FIG. 4.

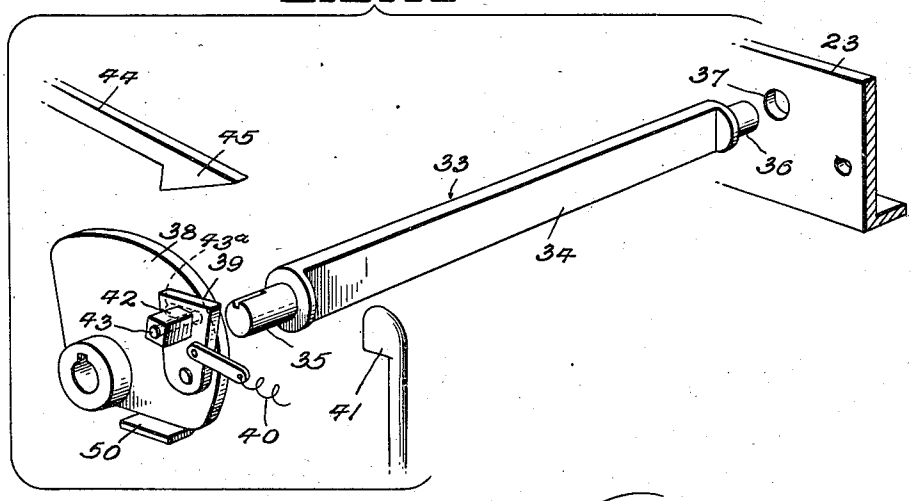


FIG. 5.

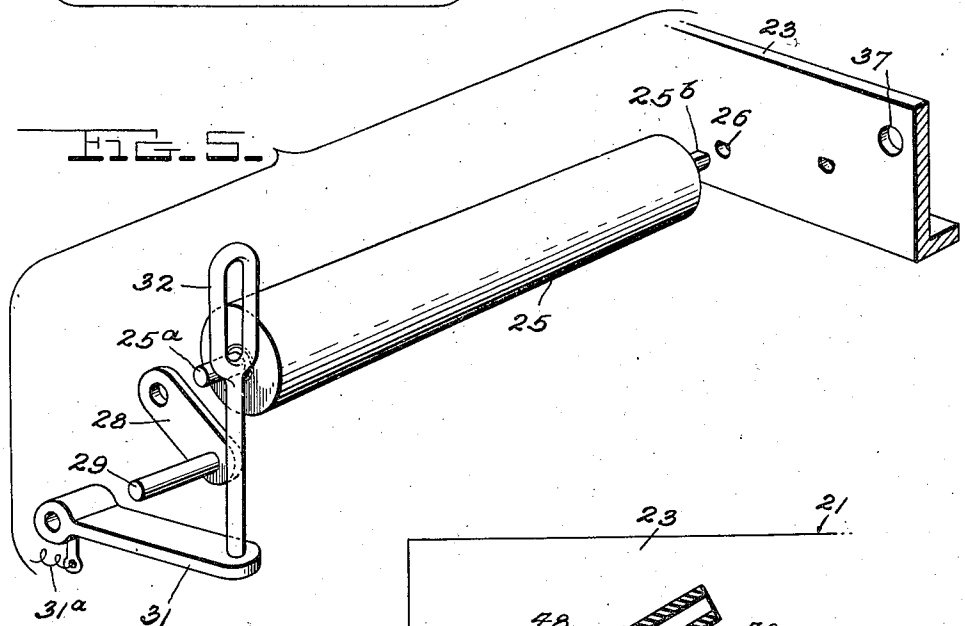
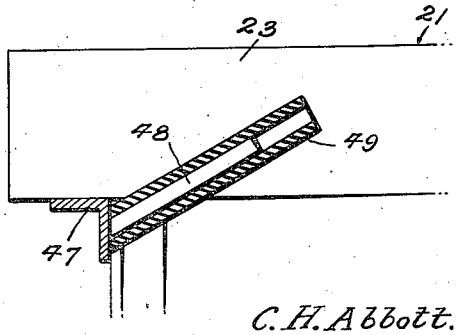


FIG. 6.



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Patented Apr. 23, 1946 2,399,087

UNITED STATES PATENT OFFICE

2,399,087

CAN-FEEDING MEANS

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Application May 2, 1944, Serial No. 533,759

16 Claims. (Cl. 214—1.1)

The invention relates to means for controlling the discharge of containers or other members from a runway which feeds a machine, and in the present disclosure, the invention controls the movement of cans of milk from a roller type runway into a milk can dumping machine. It is to be understood, however, that such terms as "can" and "can dumping" hereinafter used, are illustrative rather than limiting the invention to the feeding of cans or to the operation of can dumping.

One object of the invention is to provide a new and improved mechanism for admitting the cans one at a time to the dumping means and checking the other cans on the runway while any can is being dumped. This involves the use of a can stop on the runway, and a further aim is to provide novel means controlled by the can dumping means for automatically moving said stop to operative position as any can enters said dumping means, and for automatically returning said stop to inoperative position when said dumping means is again in readiness for can reception.

Another object is to provide simple, effective and desirable can stopping and releasing means, whether actuated by part of the dumping means, or otherwise.

The can dumping means includes a cradle tiltable from a can-receiving position to a can-dumping position and back to said receiving position, and a still further object is to provide a novel elastic bumper against which said cradle comes to rest when it returns to said receiving position.

With the foregoing in view, the invention resides in the novel subject matter hereinafter described and claimed, the description being accomplished by reference to the accompanying drawings.

Figure 1 is a perspective view showing the invention associated with a can dumping machine of the type disclosed in my U. S. Patent No. 2,351,731 of June 20, 1944. In this view, the cradle is shown in can-receiving position, the runway free from cans, and the can stop held in inoperative position to permit the first can to enter said cradle.

Figure 2 is a view similar to Fig. 1 but showing the relation of elements as one can enters the cradle. Note that the can stop occupies its operative position and holds the next can in check while the preceding can is entering the cradle.

Figure 3 is a perspective view showing the next can still held while the preceding can is being dumped, and illustrating the stop operating means in readiness to move said stop back to the inoperative position of Fig. 1 as the cradle returns to can-receiving position.

Figs. 4 and 5 are disassembled detail perspective views showing the can stop and its operating means.

Fig. 6 is a detail longitudinal sectional view showing the bumper against which the cradle comes to rest as it moves to can-receiving position.

Preferred features of construction have been illustrated and will be rather specifically described, with the understanding, however, that within the scope of the invention as claimed, variations may be made.

The can-dumping machine with which the invention is associated, includes a cradle **10** secured to a suitably mounted rock shaft **11** for tilting movement from the can-receiving position of Fig. 1 to the can-dumping position of Fig. 3. The can-dumping movement of the cradle is effected by two cooperating arms **12** and **13**, a piston **14** connected to the arm **13**, and a hydraulic cylinder **15** receiving said piston. Entrance of fluid to the cylinder **15** and exhaust of fluid therefrom, are controlled by a valve **16**, said valve having an actuating shaft **17** operable partly by a handle **18** and partly by cooperating members **19** and **20** on the two shafts **11** and **17**. All of the parts **10** to **20** inclusive are disclosed in my U. S. patent above identified and need not, therefore, be explained in detail. It may be stated, however, that when the handle **18** is moved in a proper direction after a can is positioned in the cradle **10**, the piston **14** operates the arms **12** and **13** to tilt said cradle to the can-dumping position of Fig. 3, the parts **13** and **14** returning to their normal position while the can contents are being discharged. The can is of course taken from the cradle by hand and this cradle then returns by gravity to can-receiving position.

A can runway **21** extends to the cradle **10** and includes side bars **22** and **23** and can-supporting rollers extending between said side bars. Two of these rollers **24** are spaced apart a somewhat greater distance than the normal roller spacing, and the last roller **25** is somewhat below the plane of the other rollers to cause the can to tilt forwardly as it enters the cradle **10** as seen in Fig. 2. This tilting causes the rear part of the can to rise from the hereinafter described can stop, giving the latter room to turn to its operative posi-

tion before the next can arrives. The roller 25 is depressibly mounted, at least at one end. In the present showing, one end 25b of its shaft is loosely held non-rotatably in an opening 26 in the side bar 23 (see Fig. 5) and its other end 25a is vertically movable in a vertical slot 27 in the side bar 22. This shaft end 25a is supported by an arm 28 at the inner side of the side bar 22, said arm being secured to the inner end of a short rock shaft 29 which is mounted in an appropriate bearing 30 secured to said bar 22. The outer end of this rock shaft 29 carries another arm 31 also secured to said shaft, and suitably secured to this arm 31 is an upstanding yoke 32. A tension spring 31a is suitably connected with the arm 31 to normally swing this arm downwardly, thereby turning the rock shaft 29 and swinging the arm 28 upwardly to position the shaft end 25a of the roller 25 in the upper end of the slot 27 as seen in Figs. 1 and 3. When a can enters the cradle 10 as shown in Fig. 2, it depresses the depressibly mounted end of the roller 25 as seen in Fig. 2, causing the parts 28, 29, 31 and 32 to move as shown in the last mentioned figure, for a purpose to appear.

A rockably mounted can stop 33 is mounted between the upwardly diverging upper portions of the two rollers 24 and is turnable to the inoperative position shown in Fig. 1 and to the operative position shown in Figs. 2 and 3, in which latter position it will stop cans of various sizes. This stop 33 is preferably formed from a length of shafting with part of its diameter cut away at 34 and its ends turned down to provide trunnions 35 and 36 which pass rotatably through suitable openings 37 in the side bars 22 and 23. Secured to the trunnion 35 at the outer side of the bar 22, is a disk 38. Pivoted to this disk 38 is a dog 39 to which a tension spring 40 is suitably secured, and a fixed abutment 41 is mounted on the side bar 22 to cooperate with said dog 39, the dog and the abutment when engaged, serving to hold the can stop 33 in the operative position of Figs. 2, 3 and 4.

The dog 39 is provided with a lateral projection 42 which preferably consists of a rectangular block rotatably mounted on a stud 43 projecting from said dog. To limit the movement of the dog 39, the inner end of the pin 43 may well be received in a slot 43a in the disk 38, as seen in Fig. 4. A longitudinal link 44 which is actuated by the cradle 10, is provided with a hook 45 cooperable with the projection 42. In the present disclosure, the link 44 is pivoted to a short arm 46 on the cradle shaft 11, said arm being so positioned that the link 44 moves rearwardly as in Fig. 3 while a can is being dumped, and moves forwardly while the cradle 10 is returning to can-receiving position. Each time the link 44 is moved forwardly, its hook 45 pulls upon the projection 42 of the dog 39, thus first releasing this dog from the abutment 41 and then turning the disk 38 to rock the can stop 33 from its operative position (Figs. 2, 3 and 4) to the inoperative position of Fig. 1. Thus, with the cradle 10 in readiness for can reception, the stop 33 cannot interfere with a can moving along the runway 21 and into said cradle. As the can enters the cradle, however, (Fig. 2) it depresses the depressibly mounted end of the roller 25 and thus moves the elements 28, 29, 31 and 32 to the positions shown in Fig. 2. The link 44 passes through the yoke 32 and when the movements of parts just mentioned occur, this yoke tilts said link 44 upwardly. This link movement disengages the hook 45 from the projection 42, and the spring 40 immediately pulls upon the dog 39 to rock the disk 38 and turn the stop 33 to the operative position shown in Figs. 2 and 3, in which position, it is held by the engagement of the dog 39 with the abutment 41. It will thus be seen that as a can enters the cradle 10, the stop 33 is automatically moved to its operative position to hold the next can in check while the one can is being dumped. The dumping movement of this can again moves the link 44 rearwardly and its hook 45 again engages the projection 42 of the dog 39. Therefore, as the cradle 10 returns to the can-receiving position of Fig. 1, the link 44 and associated parts again set the stop 33 in its released or inoperative position, freeing the previously held can and permitting it to enter the cradle 10.

The disk 38 is preferably provided with a flange 50 to strike a bumper 51 on the bar 22 when the spring 40 moves said disk to the position shown in Fig. 2.

A transverse bar 47 is secured to the side bars 22 and 23 below the cradle shaft 11, and a short inclined rod 48 (Fig. 6) is welded or otherwise secured to said bar 47. A length of rubber hose 49 surrounds the rod 48 and bears at one end against the bar 47. The other end of the piece of hose projects beyond the rod 48 and acts as a bumper against which the cradle 10 comes to rest when it reaches its can-receiving position.

From the foregoing, taken in connection with the accompanying drawings, it will be seen that novel and advantageous provision has been made for carrying out the objects of the invention, and while preferences have been disclosed, attention is again invited to the possibility of making variations within the scope of the invention as claimed.

I claim:

1. A machine of the class described comprising a can cradle movable repeatedly from a can-receiving position to a can-discharge position and back to said receiving position, a can runway extending to said cradle, a can stop mounted near the delivery end of said runway for movement from an inoperative position to an operative position and vice versa, a link operatively connected with and actuated by said cradle, said link being movable in one direction as said cradle moves to said can-receiving position and being movable in the other direction as said cradle moves to said can-discharge position, means for releasably connecting said link with said stop during the movement of said link in said one direction to cause the link to move said stop to said inoperative position to allow a can to enter said cradle from said runway, means actuated by said can when entering said cradle for disconnecting said link from said stop, and means for moving said stop to said operative position when said link is disconnected from said stop.

2. A machine of the class described comprising a can cradle movable repeatedly from a can-receiving position to a can-discharge position and back to said receiving position, a can runway extending to said cradle, a rockably mounted can stop extending transversely of said runway and rockable from an inoperative position to an operative position and vice versa, a dog movably mounted on one end of said stop and a fixed abutment with which said dog is cooperable to hold said stop in operative position, a link operatively connected with and actuated by said cradle, said link being movable in one direction as said cradle moves to said can-receiving posi-

tion and being movable in the other direction as said cradle moves to said can-discharge position, a hook on said link engageable with said dog when said link has been moved in said other direction by the movement of the cradle to said can-discharge position, said link and hook being operative to first release said dog and then rock said stop to said inoperative position as said cradle returns to said can-receiving position, whereby another can may enter said cradle, means actuated by the latter can for tilting said link to release said hook from said dog, and means for then restoring said stop to said operative position and re-engaging said dog with said abutment.

3. A machine of the class described comprising a can cradle movable repeatedly from a can-receiving position to a can-discharge position and back to said receiving position, a can runway extending to said cradle, a rockably mounted can stop extending transversely of said runway and rockable from an inoperative position to an operative position and vice versa, a member secured on one end of said stop, a dog movably mounted on said member, a fixed abutment engageable by said dog to hold said stop in said operative position, a spring connected with said dog and operative both to rock said stop to said operative position and to engage said dog with said abutment, said dog having a lateral projection by means of which it may be released and moved in a direction to rock said stop to said inoperative position, a link operatively connected with said cradle and actuated thereby, said link being movable in one direction as said cradle moves to said can-receiving position and movable in the other direction as said cradle moves to said can-discharge position, said link having a hook engageable with said lateral projection of said dog when said link has been moved in said other direction by the movement of said cradle to said can-discharge position, said link, hook and projection being operative to first release said dog and then rock said stop to said inoperative position as said cradle returns to said can-receiving position, whereby another can may enter said cradle, and means actuated by the latter can for tilting said link to release said hook from said lateral projection, whereby said spring may return said stop to said operative position and re-engage said dog with said abutment.

4. A machine of the class described comprising a can cradle movable repeatedly from a can-receiving position to a can-discharge position and back to said receiving position, a can runway extending to said cradle, said runway having can-supporting rollers the last one of which is depressibly mounted, a can stop near the delivery end of said runway, stop-actuating means for operating said stop in timed relation with the movements of said cradle, said stop-actuating means including a releasable member, and releasing means for said releasable member connected with said depressibly mounted roller and actuated by depression of this roller.

5. A machine of the class described comprising a can cradle movable repeatedly from a can-receiving position to a can-discharge position and back to said receiving position, a can runway extending to said cradle, said runway having can-supporting rollers, a spring-raised arm supporting one end of the last one of said rollers and permitting depression thereof by a can entering said cradle, a rockably mounted shaft upon which said arm is secured, a can stop near the delivery end of said runway, stop-actuating means for operating said stop in timed relation with the movements of said cradle, said stop-actuating means including a releasable member, and releasing means for said releasable member connected with and actuated by said rockably mounted shaft.

6. A structure as specified in claim 2; said can-actuated link tilting means including a yoke through which said link extends slidably, a can-actuated member, and connecting means from said can-actuated member to said yoke.

7. In a machine of the class described, a can runway, a rockably mounted can stop extending transversely of said runway for rocking movement from an inoperative position to an operative position and vice versa, a dog movably mounted on one end of said can stop, and a fixed abutment cooperable with said dog for holding said can stop against accidental movement from said operative position, said dog being releasable from said abutment to free said stop for movement to inoperative position.

8. In a machine of the class described, a can runway, a rockably mounted can stop extending transversely of said runway for rocking movement from an inoperative position to an operative position and vice versa, a member secured to one end of said can stop, a dog movably mounted on said member, and a fixed abutment cooperable with said dog to hold said can stop against accidental movement from said operative position, said dog having a lateral projection by means of which said dog may be released and said stop rocked to said inoperative position.

9. A structure as specified in claim 8; together with a spring connected with said dog and operative both to restore said stop to said operative position and to engage said dog with said abutment.

10. In a machine of the class described, a can runway, said runway having can-supporting rollers, the last one of which is depressibly mounted for depression by a can leaving the runway, a can stop associated with said runway and mounted for movement to and from operative position, and actuating means for said stop including said depressibly mounted last roller.

11. In a machine of the class described, a can runway, a can stop associated with said runway and mounted for movement from an operative position to an inoperative position and vice versa, operating means for said stop including a reciprocable link and means for releasably connecting said link with said stop to move the latter to one of said positions, a link-releasing member movably mounted adjacent said link, and can-actuated means for moving said link-releasing member to release said link from said stop.

12. In a machine of the class described, a can runway having can-supporting rollers, a can stop associated with said runway and mounted for movement from an operative position to an inoperative position and vice versa, operating means for said stop including a reciprocable link and means for releasably connecting said link with said stop to move the latter to one of said positions, a vertically swingable arm on which one end of one of said rollers is mounted, a rock shaft to which said arm is secured, means for biasing said rock shaft in a direction to normally hold said one end of said one of said rollers against depression, and link-releasing means connected with and actuated by said rock shaft for releasing said link from said stop when said rock shaft

is turned by depression of said one end of said one of said rollers.

13. In a machine of the class described, a can runway having can-supporting rollers, a can stop associated with said runway and mounted for movement from an operative position to an inoperative position and vice versa, a vertically swingable arm on which one end of one of said rollers is mounted, a rock shaft to which said arm is secured, means for biasing said rock shaft in a direction to normally hold said one end of said one of said rollers against depression, a second arm secured to said rock shaft, operating means for said stop including a reciprocable link and means for releasably connecting said link with said stop to move the latter to one of said positions, and a link-releasing member secured to said second arm and having a portion to thrust against said link to release said link from said stop when said rock shaft is turned by depression of said one end of said one of said rollers.

14. A structure as specified in claim 11; said link-releasing member being a yoke through which said link extends slidably.

15. In a machine of the class described, a can runway, said runway having can-supporting rollers, the last one of which is depressibly mounted, whereby a can leaving said runway will depress said roller and tilt forwardly, thereby raising the rear portion of the can bottom from the runway, a can stop mounted for movement into the space directly under said raised rear portion of the can bottom to abut a can behind and contacting with a tilted can, and operating means for said stop including said depressibly mounted last roller.

16. In a machine of the class described, a can runway having parallel roller-supporting bars and can-supporting rollers extending from one of said bars to the other and supported by said bars, the last one of said rollers being depressibly mounted, whereby a can leaving said runway will depress said roller and tilt forwardly, thereby raising the rear portion of the can bottom from the runway, and a rockable stop shaft extending from one of said bars to the other and supported by said bars, said stop shaft being located in the space between the upwardly diverging upper portions of two of said rollers and being mounted for movement into the space directly under said raised rear portion of the can bottom to abut a can behind and contact with a tilted can, said stop shaft having a stop portion which projects above said rollers when said stop shaft is turned to one position and occupies a position below the tops of said rollers when said stop shaft is turned to another position, said stop portion being between said bars and being elongated longitudinally of said stop shaft to stop cans of various sizes, and operating means for said stop shaft including said depressibly mounted last roller.

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