

Dec. 19, 1922.

W. H. HUNTER ET AL.
FEEDING DEVICE FOR CANS.

FILED DEC. 16, 1921.

1,439,550.

3 SHEETS—SHEET 1.

Fig. 1.

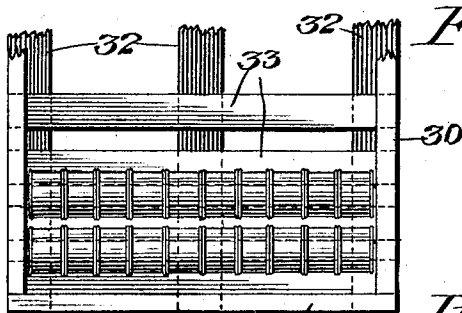
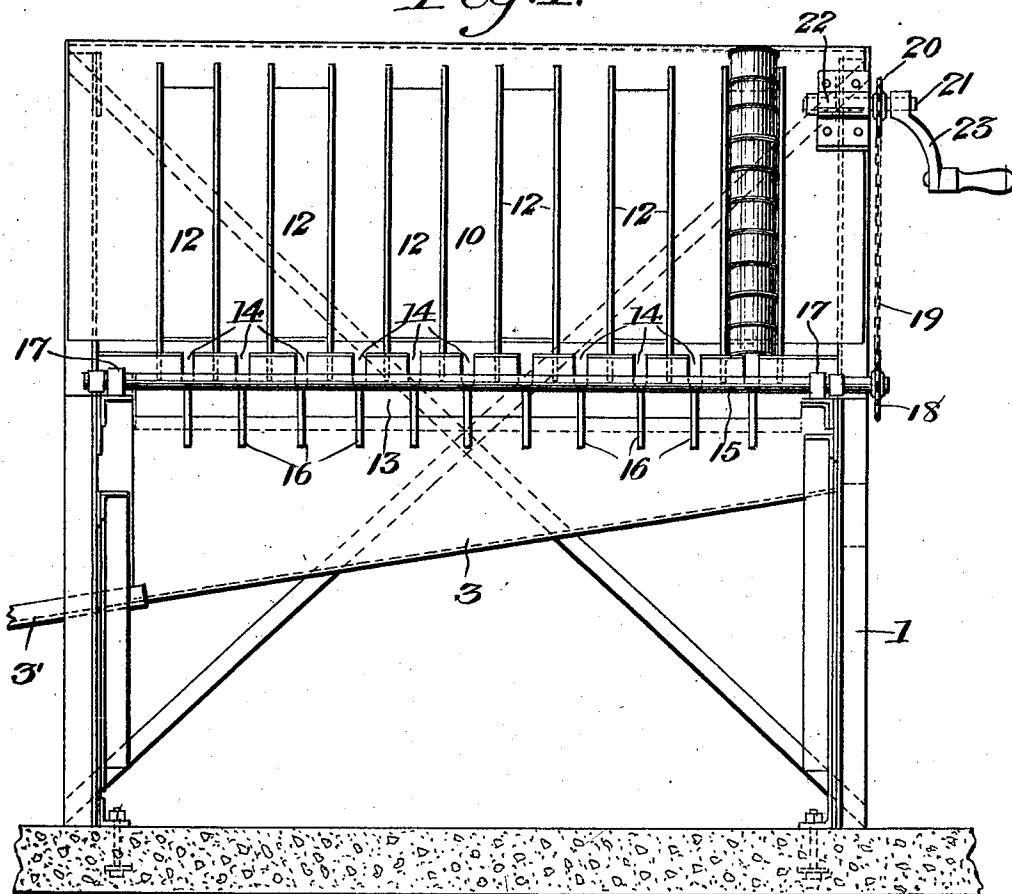


Fig. 7.

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3 SHEETS—SHEET 2.

Fig. 3.

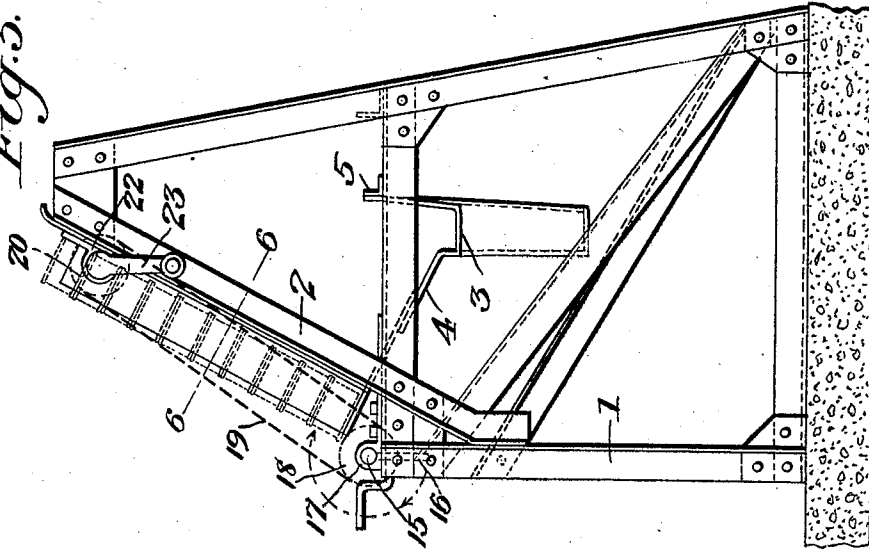


Fig. 2.

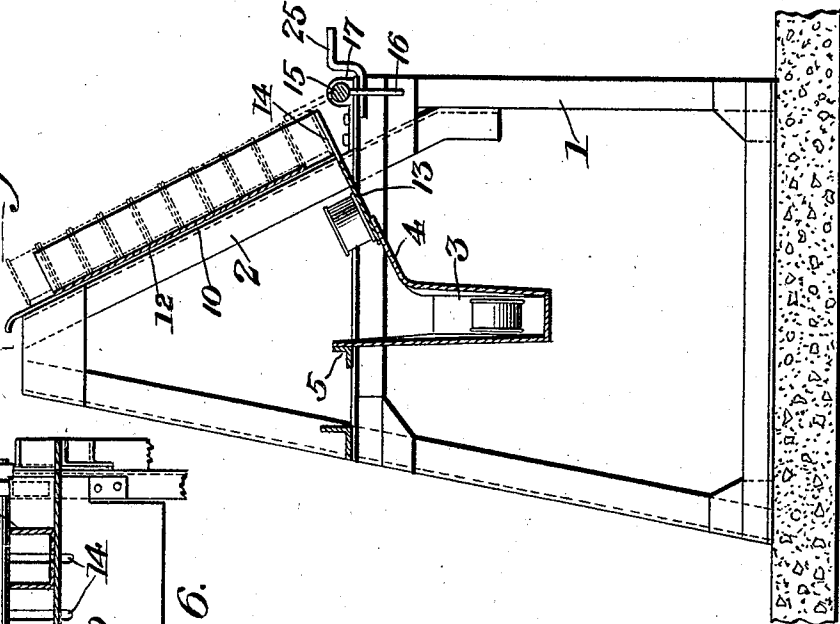
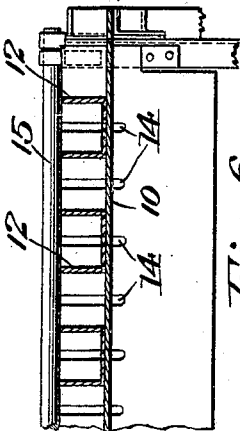


Fig. 6.



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3 SHEETS—SHEET 3.

Fig. 4.

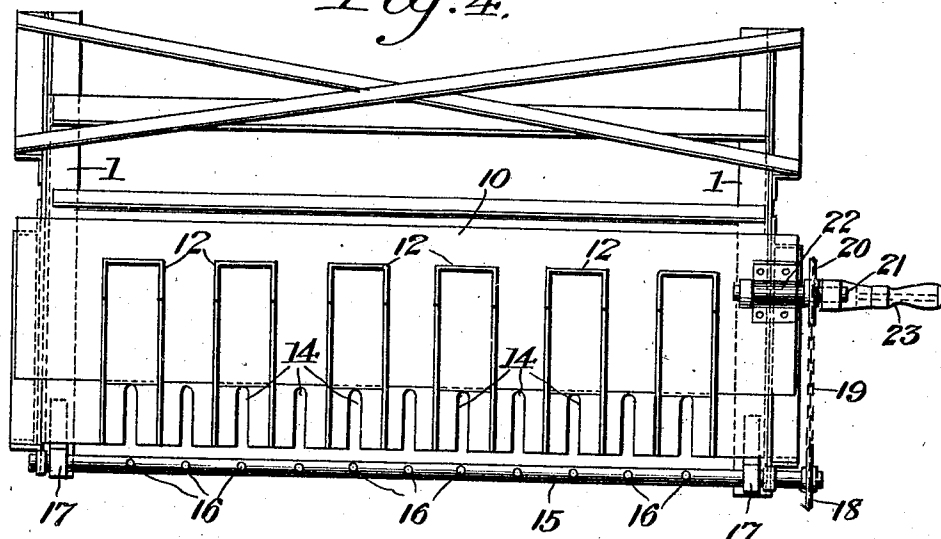
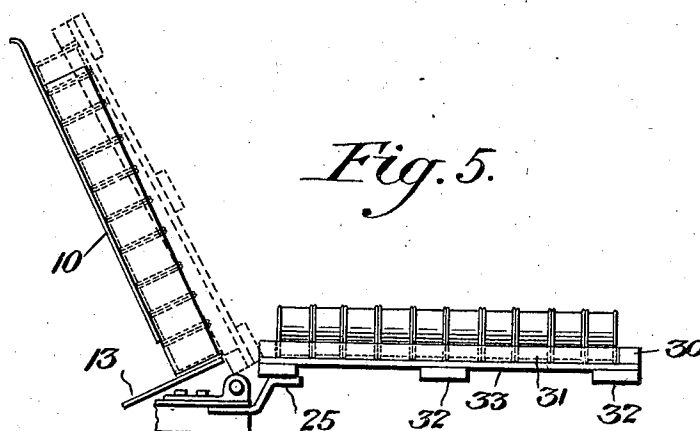


Fig. 5.



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UNITED STATES PATENT OFFICE.

WALTER H. HUNTER AND KIICHI SERAI, OF HONOLULU, TERRITORY OF HAWAII.

FEEDING DEVICE FOR CANS.

Application filed December 16, 1921. Serial No. 522,777.

To all whom it may concern:

Be it known that we, WALTER H. HUNTER and KIICHI SERAI, a citizen of Canada and a subject of the Emperor of Japan, respectively, residing at Honolulu, Territory of Hawaii, have invented certain new and useful Improvements in Feeding Devices for Cans; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The invention relates to a simple and effective apparatus for feeding cans or similar cylindrical objects at properly spaced intervals to a labeling machine or other form of apparatus for subsequently treating the cans. To this end the invention comprises a rack, preferably mounted at an angle to the vertical adapted to receive multiple rows of cans in end to end stacked relation, the back wall of the rack being cut away to permit the lowermost can in each stack to be ejected, the bottom of the rack being slotted to permit the passage of a series of fingers, mounted upon a rotary shaft which engage the lowermost cans of the several stacks and force said cans laterally on to an inclined shelf, along which they slide and are ultimately delivered to an inclined runway, communicating with the feed chute or elevator of a labeling machine or other apparatus in which the cans are subsequently treated, the cans being delivered into the runway with their longitudinal axes horizontal, so that the cans roll down the runway in properly spaced relation. These and other novel features of the invention will appear from the annexed specification based upon the accompanying drawings, in which:

Fig. 1 is a front elevation of the machine;

Fig. 2 is a vertical transverse section;

Fig. 3 is an end view;

Fig. 4 is a plan view;

Fig. 5 is a fragmentary end view of the rack and the tray for supplying the stacks of cans thereto;

Fig. 6 is a partial sectional plan view on line 6—6 of Fig. 3, and

Fig. 7 is a partial plan view of one of the transporting trays applied in conjunction with the feeder.

Referring to the drawings, 1 indicates a supporting framework, preferably made up of angle iron sections provided with rear-

wardly inclined supports 2—2, to which is secured a flat plate 10 which constitutes the back of a rack for receiving a number of rows of cans in end to end stacked relation. Secured to the framework, at substantially right angles to the back plate 10 and at a distance below the lower edge of said plate 10 slightly greater than the height of the cans, is a bottom plate 13, which is preferably extended beyond the back plate, and is provided in its front edge with a series of slots 14.

In order to retain the stacks of cans in properly spaced parallel relation, and to permit the lowermost cans of each stack to be successively ejected from the rack, the latter is divided into a series of open compartments by securing on the face of said back plate 10 a series of U-shaped troughs 12, the bottoms of which are fastened to the back plate by any suitable means and the side flanges of which extend over the intervening space between the lower edge of the back plate and the bottom plate 13. The several trough-like members 12 are spaced apart a distance slightly greater than the diameter of the can, or substantially equal to the width of the trough-like members between the side flanges thereof, so that one stack of cans occupies each of the troughs 12 and the adjacent stack of cans occupies the space between the successive troughs whereby the several cans in each stack are accurately guided in their downward movement in the rack between the flanges of the troughs 12.

Mounted longitudinally of the frame 1 is a runway 3, having its bottom inclined in the direction of its length and provided with vertical sides, the side toward the front of the machine having an inclined section 4 at its upper end which is connected with and forms a continuation of the inclined bottom 13 of the rack. The lower or discharge end of the runway 3, connects with a chute 3', which may lead directly to a labeling machine or to an elevator or other device for delivering the cans successively to a labeling machine or other form of apparatus for subsequently operating upon the cans.

Journaled in suitable bearings 17, on the front part of the frame 1 and in substantial parallelism with the bottom 13 of the rack, is a shaft 15 provided with a longitudinal series of radial fingers or ejector rods 16,

each of said fingers 16 being mounted opposite a corresponding slot 14 in the bottom plate of the rack, so that when the shaft 15 is rotated the several fingers 16 will engage the sides of the lowermost cans of each of the stacks and eject said cans through the opening in the back plate 10, whereby when said lowermost cans are free of the weight of the superposed stacks, the cans will slide freely upon the extension of the bottom plate 13 and over the inclined side 4 of the runway and drop from the latter into the runway, each can in its transit being turned through an angle of substantially ninety degrees, so that when it reaches the bottom of the runway it will rest on its side in rolling relation, and the several cans will roll down the runway in properly spaced arrangement to be fed to the labeling machine. During the ejecting operation the fingers 16 pass freely through the slots 14 in the forward portion of the base plate 13, and when each of the lowermost cans is freed from its stack the corresponding finger will have passed out of the cooperating slot, so that the remainder of the cans in the stack slide downward in the rack until the bottom can rests on the bottom 13 of the rack in position to be ejected by the next revolution of the shaft 15. The shaft 15 may be driven by any suitable mechanism and that illustrated in the drawings comprises a sprocket wheel 18 mounted on one end of the shaft, which is actuated by a sprocket chain 19 driven from a sprocket wheel 20 mounted upon a shaft 21 mounted in a journal bearing 22 secured to the front of the back plate of the rack 10, said shaft 21 being provided with a suitable crank or handle 23.

As a matter of convenience for supplying the cans to the rack in properly spaced parallel stacks, the cans are assembled in trays of the character shown in Figs. 5 and 7, each tray comprising side frame members 30, end members 31, bottom longitudinal 32, and cross slats 33, the latter being so spaced as to support stacks of cans in parallel rows, in the manner illustrated in Fig. 7, so that when a tray filled with cans is supported at one longitudinal edge upon brackets 25 mounted on the front and adjacent to the lower end of the rack, and said tray is tilted upward and backward, the several stacks of cans will be discharged from the tray into and between the trough-like elements 12 on the plate 10 of the rack. The tray is then removed and the machine is ready for operation.

After several stacks of cans have been supplied to the machine, shaft 15 is rotated through the crank 23 and the connecting sprocket gearing, which causes the ejector fingers 16 to pass through the slots 14 in the bottom plate of the rack, each finger engaging the lowermost can of the corresponding

stack and forcing the can out of the stack and over the inclined bottom 13 of the rack, whence it slides on to the inclined section 4 of the runway and drops into the runway in rolling position, the several cans rolling down the runway in properly spaced relation for feeding to the labeling machine. In the particular embodiment of the machine illustrated, the rack is adapted to receive twelve stacks of ten cans each and twelve cans are ejected from the corresponding stacks and delivered in properly spaced relation into the runway for each rotation of the shaft 15. It will be seen, therefore, that the machine not only accurately times and spaces the feeding of the cans, but enables them to be fed at a much more rapid rate than any possible realization under the present hand feeding methods or even with the automatic or semi-automatic machines heretofore employed for this purpose.

What we claim is:

1. A can feeding apparatus comprising a rack adapted to receive a series of rows of cans in stacked relation, a runway below the rack, and means for successively ejecting the lowermost can in each stack from the rack into the runway.
2. A can feeding apparatus comprising a rack including a back plate and a bottom spaced from the lower edge thereof a distance substantially equal to the height of a can, said rack adapted to receive a series of rows of cans in stacked relation, a runway below the rack, and means for successively ejecting the lowermost can in each stack from the rack into the runway.
3. A can feeding apparatus comprising a rack adapted to receive a series of rows of cans in stacked relation, a runway below the rack, a downwardly inclined plate between the bottom of the rack and the runway, and means for successively ejecting the lowermost can in each stack from the rack onto said plate.
4. A can feeding apparatus comprising a rack including a back plate and a bottom spaced from the lower edge thereof a distance substantially equal to the height of a can, said rack adapted to receive a series of rows of cans in stacked relation, a runway below the rack, a downwardly inclined plate between the bottom of the rack and the runway, and means for successively ejecting the lowermost can in each stack from the rack onto said plate.
5. A can feeding apparatus comprising a rack adapted to receive a series of rows of cans in stacked relation, including a rearwardly inclined back plate and a bottom normal thereto and spaced from the lower edge thereof a distance substantially equal to the height of a can, a runway below the rack, a downwardly inclined plate between

the bottom of the rack and the runway, and a rotary shaft having ejector fingers thereon located below the rack, each finger adapted to engage and discharge the lowermost can in the adjacent stack onto said inclined plate.

6. A can feeding apparatus comprising a rack adapted to receive a series of rows of cans in stacked relation, including a rearwardly inclined back plate and a bottom normal thereto and spaced from the lower edge thereof a distance substantially equal to the height of the can, said bottom having slots thereon in alignment with the positions of the can stacks, a runway below the rack, a downwardly inclined plate between the bottom of the rack and the runway, and a rotary shaft having ejector fingers thereon located below the rack, said fingers passing through the slots in the rack bottom to engage and discharge the lowermost cans in the adjacent stacks onto said plate.

7. A can feeding apparatus comprising a rack, including a rearwardly inclined plate having a series of partitions extending from the bottom toward the top thereof and forming compartments to receive a series of rows of cans in stacked relation and a bottom normal to said back plate and spaced from the

lower edge thereof a distance substantially equal to the height of the can, said bottom having slots therein in alignment with the positions of the can stacks, a runway below the rack, a downwardly inclined plate between the bottom of the rack and the runway, and a rotary shaft having ejector fingers thereon located below the rack, said fingers passing through the slots in the rack bottom to engage and discharge the lowermost cans in the adjacent stacks onto said plate.

8. A can feeding apparatus comprising a rack, including a rearwardly inclined plate having trough-like elements spaced in parallel relation and extending from top to bottom on the front face thereof and a bottom spaced from the lower edge of said back plate a distance substantially equal to the height of a can, the same being adapted to receive a series of rows of cans in stacked relation, a runway below the rack, and means for successively ejecting the lowermost can in each stack from the rack into the runway.

In testimony whereof we affix our signatures.

WALTER H. HUNTER.
KIICHI SERAI.