No. 878,603. PATENTED FEB. 11, 1908.

M. D. BLAKESLEE.

CAN FEEDING AND RIGHTING MACHINE.

APPLICATION FILED MAR. 5, 1907.

3 SHEETS—SHEET 1.

Fig. 1.

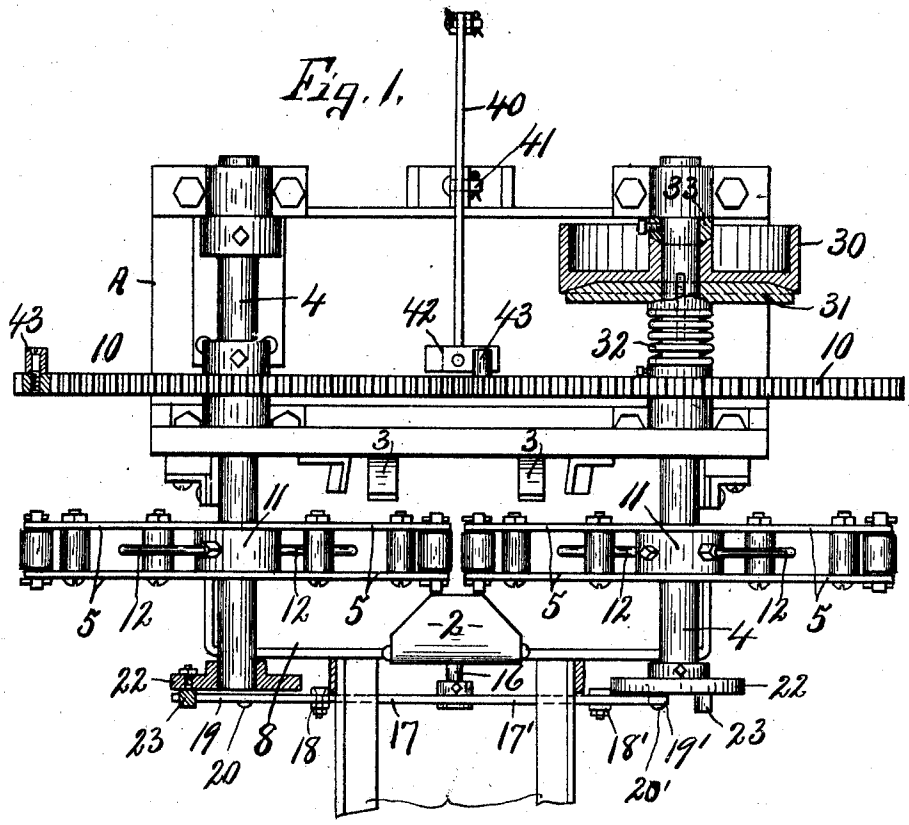


Fig. 4.

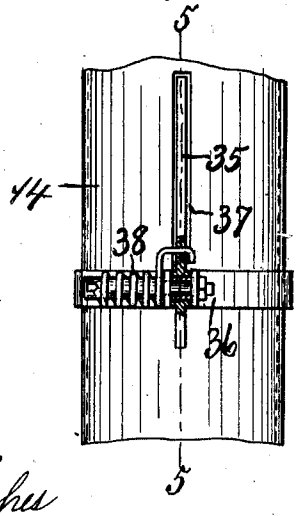
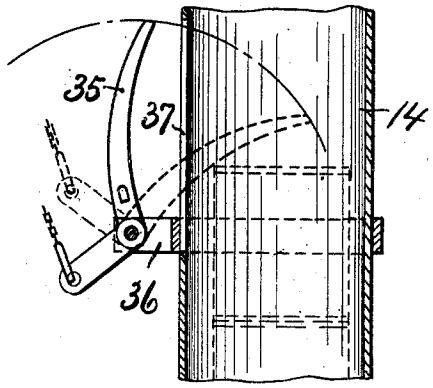


Fig. 5.



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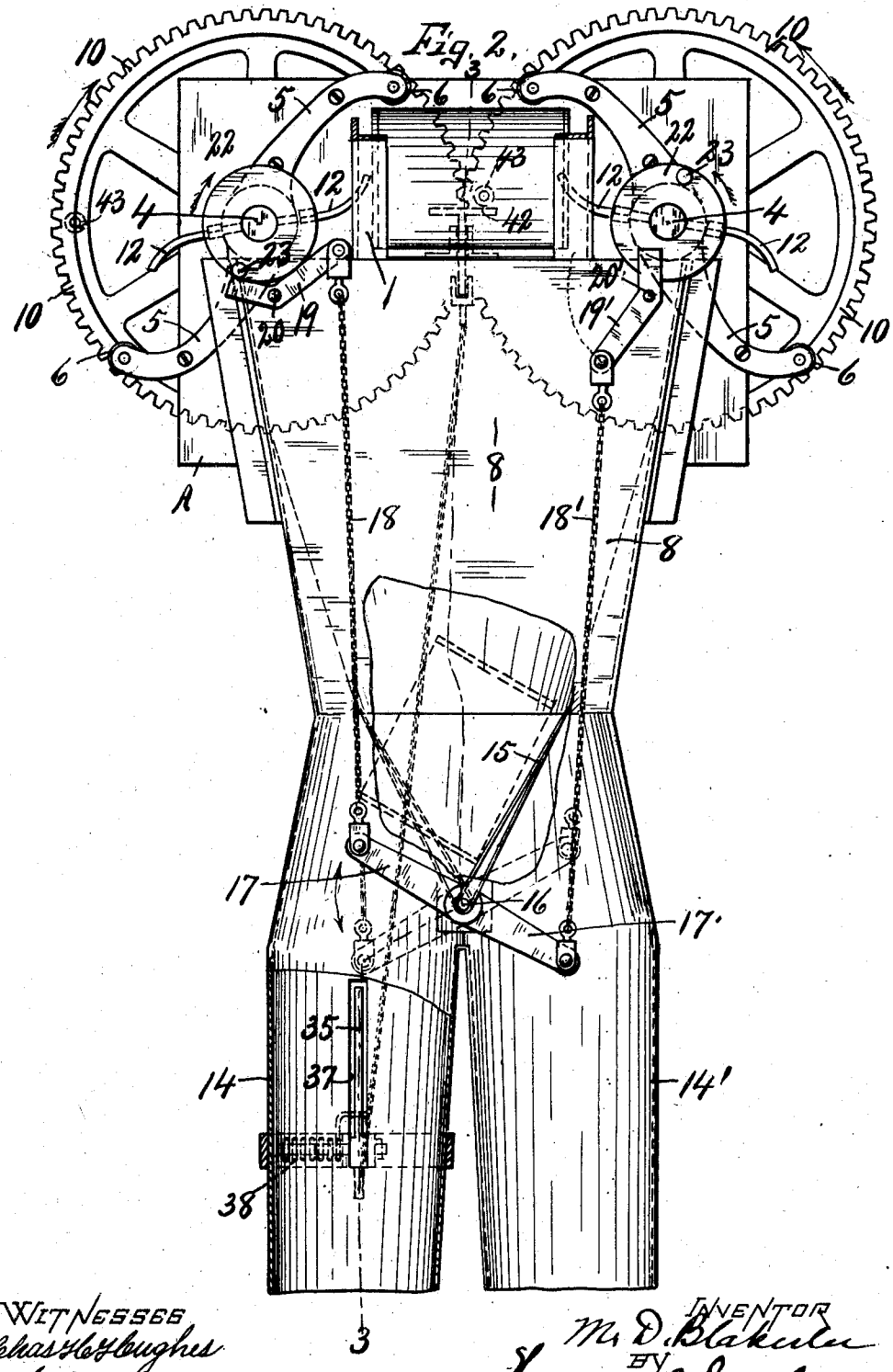
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3 SHEETS—SHEET 2.

Fig. 2.



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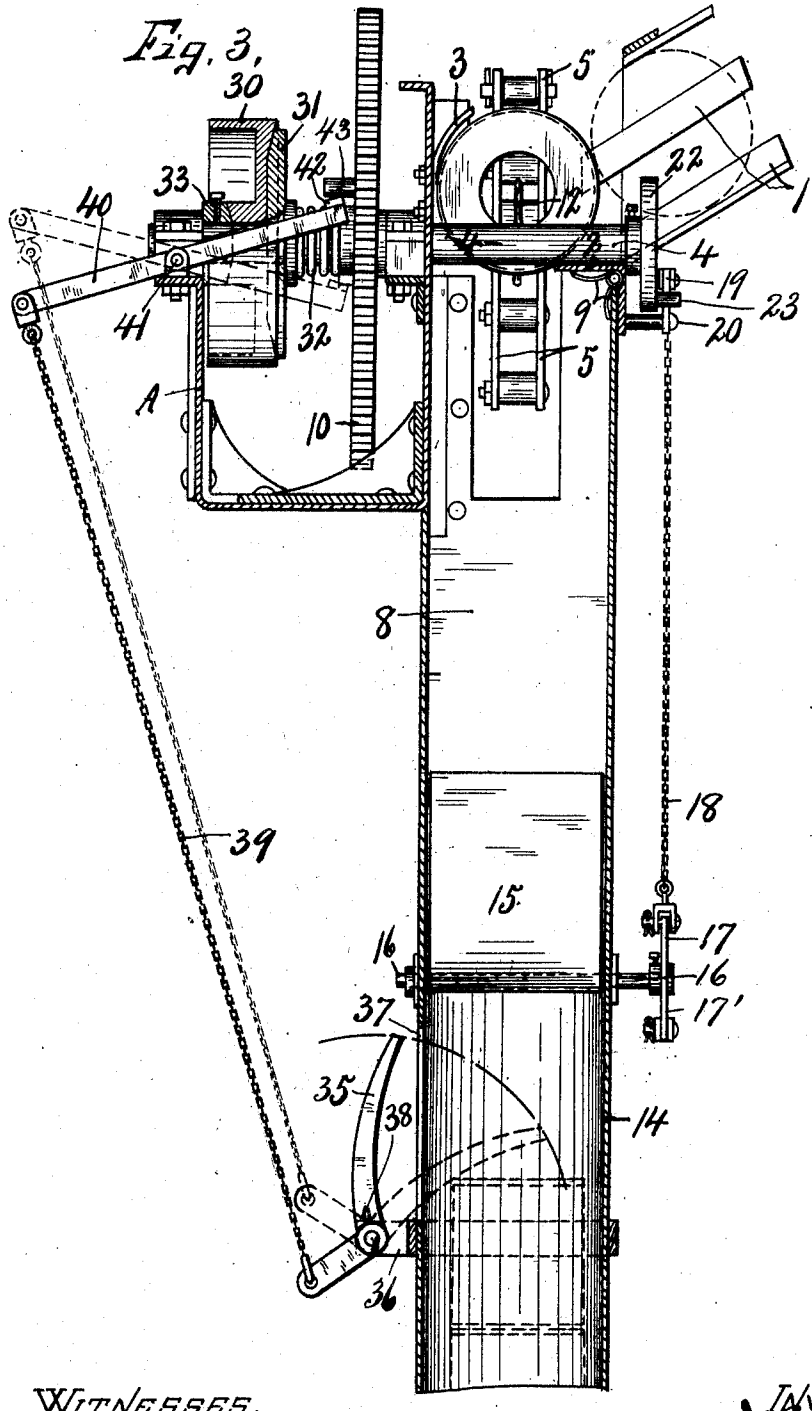
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CAN FEEDING AND RIGHTING MACHINE.

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3 SHEETS—SHEET 3.

Fig. 3.



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UNITED STATES PATENT OFFICE.

MERTON D. BLAKESLEE, OF CAZENOVIA, NEW YORK, ASSIGNOR OF ONE-FOURTH TO HENRY BURDEN, SECOND, OF CAZENOVIA, NEW YORK.

CAN FEEDING AND RIGHTING MACHINE.

No. 878,603. Specification of Letters Patent. Patented Feb. 11, 1908.

Application filed March 5, 1907. Serial No. 360,660.

To all whom it may concern:

Be it known that I, MERTON D. BLAKESLEE, of Cazenovia, in the county of Madison, in the State of New York, have invented new and useful Improvements in Can Feeding and Righting Machines, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

This invention relates to certain improvements in can righting machines embodying the mechanism shown in my pending application No. 337,319 filed October 3, 1906, in which a pair of rotary cam feeding elements act upon the cans as they are successively fed thereto to feed them one by one, right end up, into an underlying chute from which they are conveyed to one or more fillers, not shown.

One of the objects, therefore, of my present invention is to provide means whereby alternate cans may be automatically deposited right side up in separate chutes.

A further object is to provide means whereby the congestion or stoppage of the cans in one of the chutes causes a cessation of the operation of the righting device. In other words, I have provided a slip-feed driving mechanism for the rotary can righting device, which under a predetermined resistance acting directly or indirectly upon the rotary can-feeding elements, causes said elements to stop without unduly straining the same and still permitting the action of the driving means.

Other objects and uses relating to the specific structure of the various mechanisms will be brought out in the following description.

In the drawings—Figure 1 is a top plan of a can righting device embodying the various features of my invention. Fig. 2 is a front elevation of the same showing portions of the can chute in section. Fig. 3 is a transverse vertical sectional view taken on line 3—3, Fig. 2. Fig. 4 is a side elevation of a portion of one of the can chutes showing the slip-feed controlling finger partly in section. Fig. 5 is a sectional view taken on line 5—5, Fig. 4.

In carrying out the objects stated, the cans are fed in any suitable manner into the upper end of an inclined chute —1— along which they roll by gravity onto a yielding platform —2— and against an abutment —3— at the lower end of the chute —1— and between two parallel shafts —4—, and also between two rotary can-feeding arms —5— which are rigidly secured to and rotate with their respective shafts 4.

Each shaft is provided with a pair of these can-feeding arms —5— arranged diametrically opposite each other with their extreme outer ends curved in the direction of rotation, and provided with anti-friction rollers —6— for engaging the upper sides of the cans as they are successively deposited one by one upon the yielding support —2— and against the abutment —3—, the free ends of said arms traveling between the yielding support —2— and said abutment —3— in the upper end of the can chute —8—.

It is now clear that the cans are fed one by one into the open upper end of the chute —8— with their ends facing the opposite shafts—4—which are spaced apart a sufficient distance to permit the cans to pass freely between them as they are fed downwardly by the rotation of the arms —5— against the upper side of the cans, the yielding support —2— and stop —3— being so relatively arranged with reference to the axis of revolution of the feeding cans —5— that as the latter are rotated toward opposite ends of the cans, their extremities, or rather the roller bearings on said extremities simultaneously engage the top face of the can near its ends, and as the rotation of said arms continues their outer ends approach each other and roll along the top face of the cans, at the same time depressing said can and its yielding support —2— against the action of a retracting spring —9— for said yielding support. Each of these arms —5— of one shaft co-acts with one of the other arms on the other shaft to feed the present can downwardly into the chute —8— and as soon as one co-acting pair of arms have forced one of the cans in the chute the other co-acting pair performs a similar operation upon the next succeeding can which rolls by gravity onto the yielding support —2— and against the stop —3— as soon as the preceding can has been discharged into the chute so that two cans are fed into the chute at each rotation of the shaft —4—. In order that these shafts and their can feeding arms may rotate in unison or in synchrony they are geared together

by intermeshing gears —10— rigid on their respective shafts —4—.

The arms —5— of each shaft are arranged in radial alinement with each other, and therefore, travel in the same plane, and are clamped or otherwise secured to a central hub —11— on their respective shafts, each hub being provided with a pair of diametrically opposite can righting fingers —12— as best seen in Figs. 1 and 2, there being one can righting finger for each of the arms —5—. These arms —5— and their corresponding righting fingers 12— travel in planes substantially coincident with the lengthwise centers of the cans, and each arm and its companion righting finger are so relatively arranged that when the roller —6— at the outer end of the arm —5— engages the top face of the can, the outer end of the finger 12— engages or enters the opening in the adjacent end of the can, some of the cans having their open ends facing in one direction, and others having their open ends facing in the opposite direction so that those with their bottoms or closed ends facing one of the projecting righting fingers 12— are engaged by said righting fingers and moved axially, thereby causing the righting fingers at the opposite end of the can to enter the open ends of said cans a sufficient distance so that when the cans are fed downwardly by the outer ends of the arms —5— the open ends of the cans will be temporarily supported upon the adjacent righting fingers 12— causing said can to tilt with its bottom downward into the upper end of the chute —8—, and as the righting finger, together with its companion feeding arm —5— continues to rotate, the righting finger is withdrawn from the open end of the can, allowing the latter to fall by gravity, right side up, into the chute —8—.

In this class of machines it is desirable that every other can which is deposited right side up into the chute —8— be fed into a separate chute, and I have therefore provided the lower end of the chute —8— with two branch chutes 14— and 14′ and an oscillatory deflector gate or plate 15— hinged at —16— at the junction of the branch chutes 14 and 14′ some distance below the lower end of the chute —8— and having its upper end movable back and forth into and out of engagement with opposite sides of the lower end of said chute —8— so that when it is moved to one extreme position, the cans which are fed into the chute —8— will be deflected into one of the chutes, as 14—, and when said gate is moved to the other extreme position the cans are fed or deflected into the other chute 14′—, and vice versa.

As previously stated, the cans as they are successively righted and discharged into the chute —8— are alternately precipitated into the separate chutes —14— and 14′— and in order that this may be accomplished automatically, I provide the shaft —16— with diametrically opposite projecting arms —17— and 17′— of equal radial length, the outer ends of said arms being connected by chains 18— and 18′ respectively to rocking levers 19— and 19′ which are pivoted at 20— and 20′ respectively to the upper end of the hopper each below one of the shafts —4—.

Each shaft is provided with a disk —22— having an eccentric pin or stud —23— which travels in the path of one of the arms of the lever —19—, said eccentric pins —23— and their companion levers 19— being so relatively arranged that when the eccentric pin —23— engages and operates one of the rock levers —19— similar motion is transmitted by the chain —18— and lever —17— to the rocking shaft —16— and to the deflecting plate or gate 15— which is rigid upon the rock-shaft, thereby throwing the free end of said gate to one side of the lower end of the chute —18— causing the cans to slide along the gate 15— into one of the chutes, as 14—. During this action, the other rock-arm, as 19′—, is drawn into position by the lever 17′ and chain 18′ to be engaged by the pin —23— of the opposite disk, whereupon the action of the gate —15— is reversed to cause the next can to be deflected into the other chute, as —14′—. In order that this alternate feeding of successive cans into separate chutes may be automatically and successively carried out each eccentric pin —23— engages and operates its companion lever, as —19—, one-half revolution in advance of the other eccentric pin, which is made necessary because of the fact that two cans are successively righted and discharged into the chute —8— at each revolution of the shafts —4— to which the disks —22— carrying the eccentric pins 23— are secured.

It sometimes happens from one cause or another, as for instance, from the stoppage of the can-filling machine, not shown, but to which the cans are fed from the chutes 14, that the cans will collect and become congested in said chutes, under which conditions it is desirable to provide means for automatically stopping the further feed of the cans by the righting device, and for this purpose I have mounted upon one of the shafts —4— a slip-feed connection consisting of a pulley —30— and a friction disk —31—, the pulley —30— being loosely mounted upon the shaft —4— while the friction disk —31— is rigid thereon and is yieldingly pressed into frictional engagement with the adjacent face of the pulley —30— by a spring —32—, said pulley being held from endwise movement by a collar —33— also rigid on the shaft —4—.

The spring —32— is interposed between the adjacent gear —10— and a hub on the adjacent end of the disk —31— and so ten-

sioned as to produce just sufficient friction between the pulley —30— and disk —31— to drive the adjacent shaft —4— and their mechanisms deriving motion therefrom, the pulley —30— being connected by a belt not shown to any source of power not necessary to herein illustrate or describe, except that the whole device is driven at a comparatively slow speed so as to prevent denting of the cans and allow ample time for the righting fingers to perform their respective functions.

In order that the action of the can righting mechanism may not be interfered with or impaired by the congestion of the cans in the chutes —14—, I have provided what may be termed a stop-pawl —35— which is pivoted to a suitable support —36— in proximity to one side of one of the branch chutes, as 14—, and has its free end movable through a slot —37— in the side of the chute into and out of the path of the cans passing therethrough, said lever being thrown and held to its normal position by a retracting spring —38— and is connected at one end to a lever —40—.

Owing to the fact that the cans are fed alternately first into one chute and then into the other it is evident that the same number of cans will be discharged into each for a given period of time, and, therefore, if one chute becomes clogged with cans the other will also become clogged so that it is necessary to provide but one stop lever as —35— for one of the chutes because this will effectively stop the feed of the cans to both chutes. This latter lever 40 is fulcrumed at —41— upon a portion of the main supporting frame —A— and is provided with a bearing —42— at the opposite side of its fulcrum and adapted to be engaged by an eccentric stud —43— with which each of the gears is provided. Each of these studs —43— is presented at the bearing face —42— a half revolution in advance of the other so as to cause the operation of the finger —35— through the slot —37— and into the path of the can passing through the chute 14— at each half revolution of the shafts —4—, or rather as each can is successively fed into one or the other of the branch chutes —14— or 14′— so that if for any reason the cans should accumulate in the chute 14— and stop within the path of movement of the stop lever —35— the lever 35 will come in contact with the uppermost can in the chute, and its movement would thereby be limited, which would in turn, limit the movement of the lever —40— through the chain connection —39— and thus temporarily stop the rotation of the gears —10— and can feeding and righting elements driven thereby while the driving pulley 30— could continue to rotate in frictional slipping contact with the disk 31—.

The operation of my invention, briefly described, is as follows: The cans are rolled by gravity along the incline —1—, being placed thereon by hand or otherwise with the open ends of some of the cans facing in one direction and the open ends of the other cans facing in the opposite direction, said cans rolling upon the yielding support —2— and against the stops —3— in the upper end of the chute where they are temporarily supported until engaged by the co-acting arms —5— of the rotary hand-feeding device, said arms forcing the cans one by one downwardly and depressing the support —2— against the action of the spring —9—. During this downward movement of the cans the open ends are brought into alinement with one or the other of the co-acting righting fingers 12— which enter said open ends of the cans and temporarily support them with their open ends uppermost while their bottoms gravitate downwardly until said righting fingers are withdrawn from the cans whereupon the righting cans fall right side up into the chute —8—, alternate cans falling into the separate chutes 14— and 14′ by the shifting of the gate 15, as described. If for any reason the cans should accumulate in the branch chutes, as for instance 14, in sufficient numbers so that the upper one would rest in the path of the lever —35— the movement of the latter would be transmitted to the gears —10— through the medium of a chain —39— and lever 40—, thereby stopping the can feeding mechanism until the cans were again removed from the branch chutes, whereupon the can feeding mechanism would automatically resume its operation.

What I claim is:

1. In a can feeding and righting machine, a chute, mechanism for righting the cans and feeding them one by one into the chute, a driving element and slip-feed connections between the driving element and said mechanisms, and additional mechanism brought into action by the accumulations of cans in the chute for stopping the can righting and feeding mechanism irrespective of the driving element.

2. In a can feeding and righting device, a chute, mechanism for righting and feeding the cans into the chute, a movable deflector in the path of the righted cans for diverting alternate cans to different localities, automatic means for operating said deflector, a mechanism brought into action by the accumulation of cans in the chute for stopping the can feeding and righting mechanism.

3. In a can feeding and righting device, two rotary can feeding elements, can righting-fingers on said elements, for entering the open ends of the cans and temporarily holding them with their upper ends uppermost while their opposite ends gravitate downwardly from the fingers, driving mechanism for said rotary elements, a chute for receiv-

ing the righted cans, a stop finger movable into and out of the path of the righted cans, and connections between the driving mechanism and said stop finger for actuating the latter, whereby the stopping of the cans in the chute prevents the action of the stop finger and its actuating mechanism.

4. In a can feeding and righting device, two rotary can-feeding elements mounted on parallel axes spaced apart, means to feed the cans between said elements, can-righting fingers on said elements for entering the open ends of the cans and temporarily holding them with their open ends uppermost while their opposite ends gravitate downwardly from the fingers, and a driving mechanism including a driving element, and a friction disk engaged therewith.

5. In a can feeding and righting device, a chute, and mechanism for righting and feeding the cans into the chute, a movable deflector in the path of the righted cans for diverting alternate cans to different localities, and automatic means for operating said deflector.

In witness whereof I have hereunto set my hand this 23rd day of February, 1907.

MERTON D. BLAKESLEE.

Witnesses:
H. E. CHASE,
MILDRED M. NOTT.