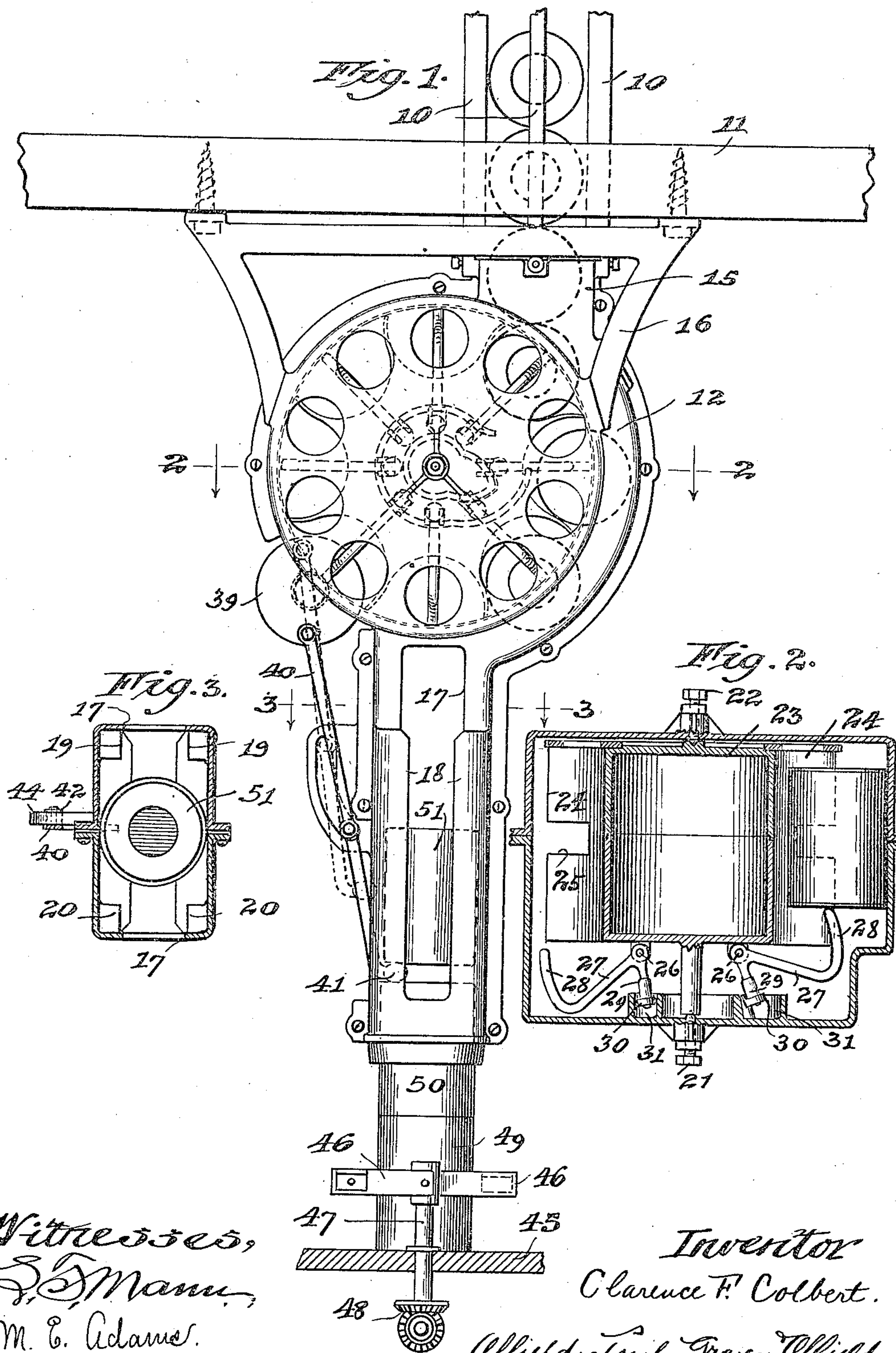


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APPLICATION FILED JUNE 12, 1909.

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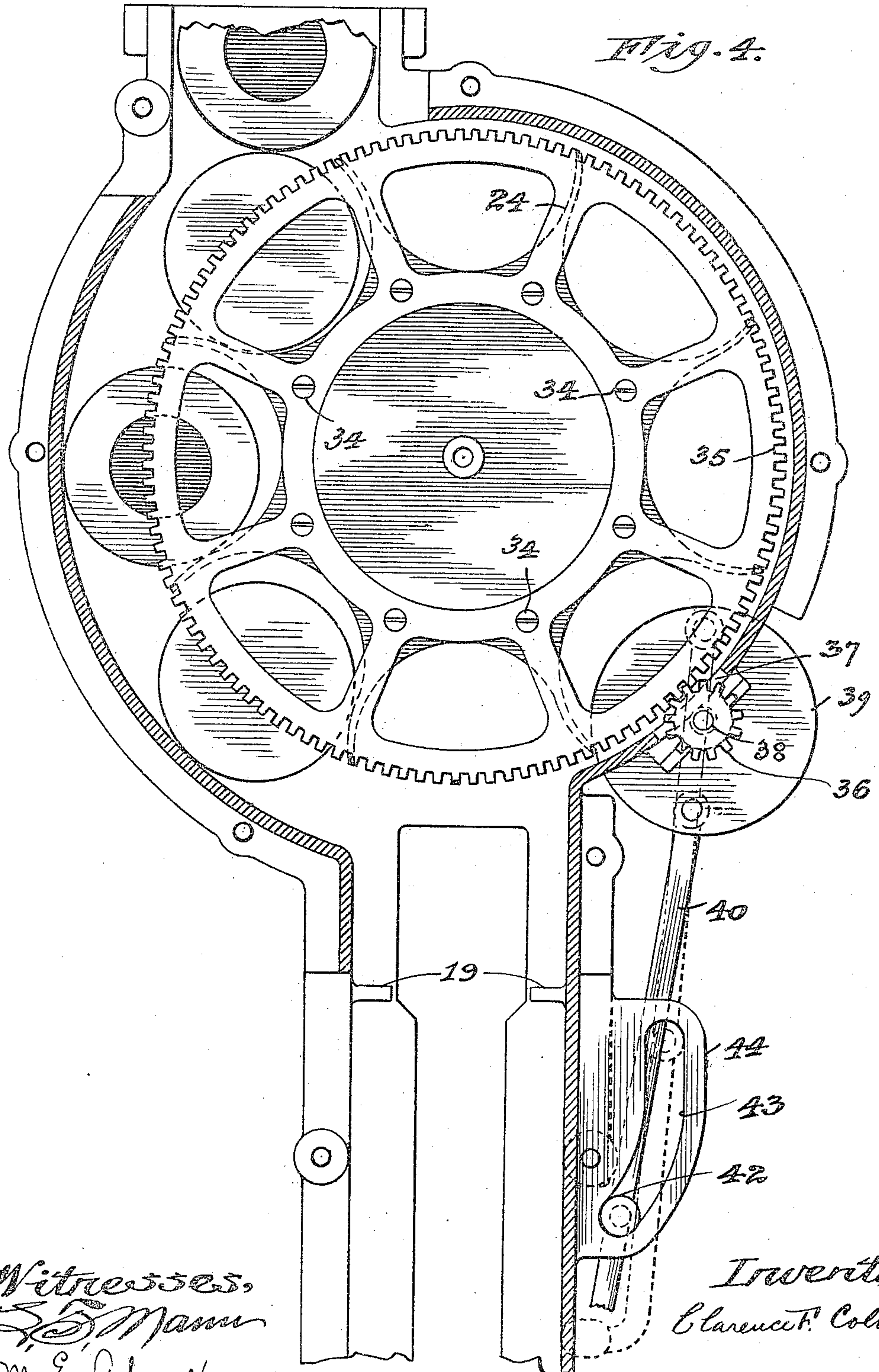
3 SHEETS—SHEET 1.



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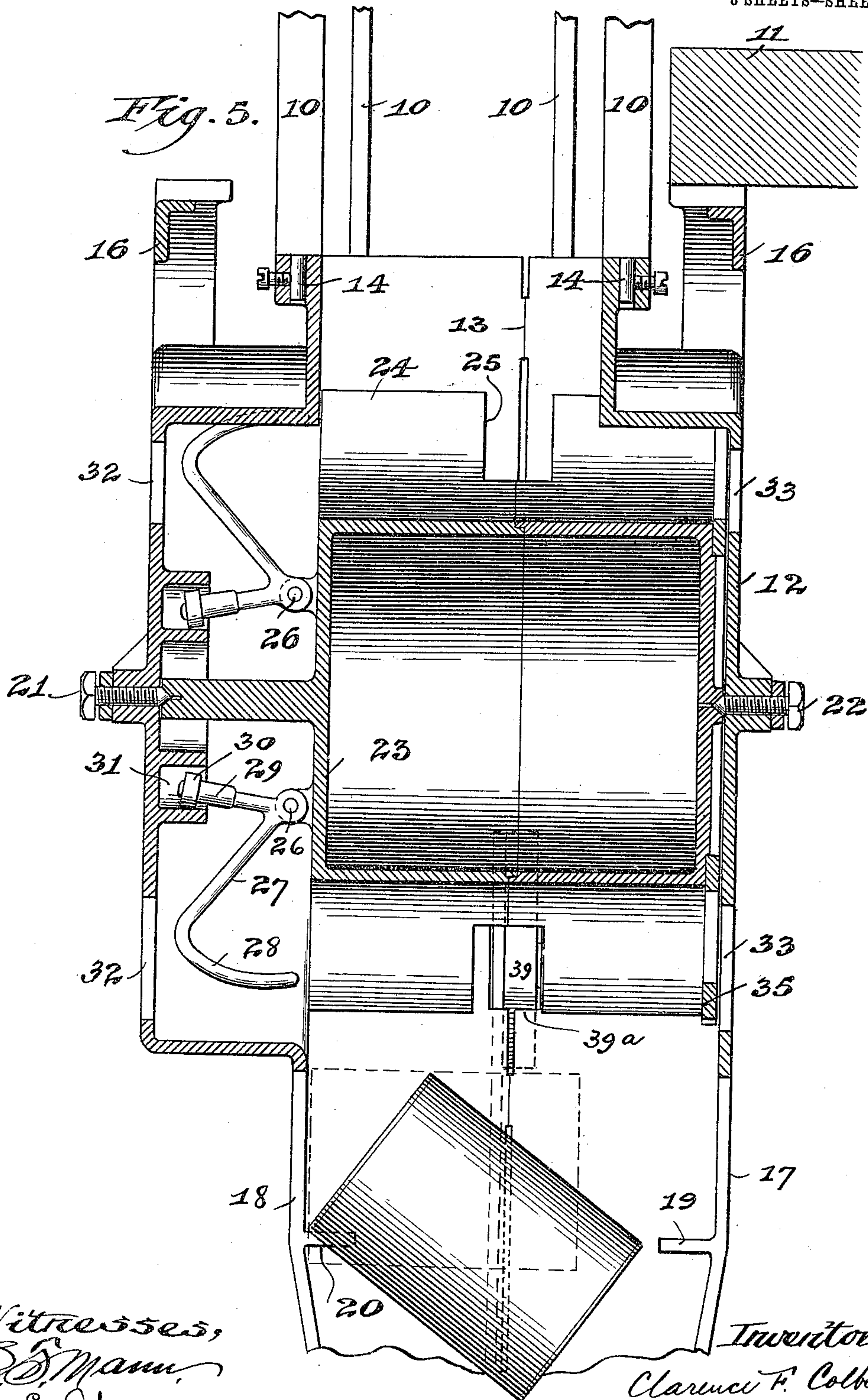
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3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

CLARENCE F. COLBERT, OF OAK PARK, ILLINOIS, ASSIGNOR TO SPRAGUE CANNING MACHINERY COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

CAN-RIGHTING DEVICE.

949,647.

Specification of Letters Patent.

Patented Feb. 15, 1910.

Application filed June 12, 1909. Serial No. 501,720.

To all whom it may concern:

Be it known that I, CLARENCE F. COLBERT, a citizen of the United States, residing at Oak Park, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Can-Righting Machines, of which the following is a specification.

Tin cans before being filled ordinarily have one end closed, the other being wholly or partially open, the object of this invention being to provide a mechanism or device which, while receiving such cans regardless of their arrangement as regards their open and closed ends, will deliver or discharge the same all open end up on a suitable support, the mechanism being actuated entirely by the weight of the cans, and the removal of the discharged or righted ones controlling the passage of others through the appliance.

Briefly stated, the preferred embodiment of this invention includes an admission chute through which the cans are fed individually into cradles or receptacles of a rotary carrier, the weight of the cans in the upright admission chute being employed for rotating the carrier. Beneath such carrier is a vertical discharge chute having two pairs of abutments spaced apart a greater distance than the length of the cans. The admission and discharge chutes are in such relation that the cans passing from one to the other will at one end during their descent strike upon one pair of these abutments, which action temporarily delays the descent of such end of the can, causing a righting of the same with the retarded end uppermost. This carrier is supplied with means for shifting those of the cans lengthwise therein which it is desired shall contact with the other pair of abutments rather than with the first mentioned pair to cause the other end of the can to be uppermost after the righting operation. In the device as constructed it is intended that the open mouth end of the cans shall be permitted to strike the first pair of abutments, but if the cans reach the carrier in the reverse relation, so that their closed ends would engage such first abutments, these latter cans are pushed over so that their open ends will contact and engage with the second pair, whereby all the cans are delivered from the mechanism open-end

uppermost. In addition, this improved device includes means for controlling the rotation or actuation of the carrier, such control being governed by the removal of the righted cans.

Various other features of novelty and improvement will be made clear from a consideration of the following detailed description, which should be read in connection with the accompanying drawings forming a part of this specification.

In these drawings—Figure 1 is an elevation of the appliance; Fig. 2 is a cross-section on line 2—2 of Fig. 1; Fig. 3 is a cross-section on line 3—3 of Fig. 1; Fig. 4 is a vertical section through the casing showing the internal mechanism as viewed from the opposite direction from that indicated in Fig. 1; and Fig. 5 is a transverse vertical section on an enlarged scale.

At the top of the appliance an upright admission chute or can-way composed of a plurality of vertical bars 10 leads through a floor or support 11 to the interior of a vertically transversely divided casing 12 of somewhat cylindrical shape, the division line of which is indicated at 13 (Fig. 5). As is illustrated in the latter figure, the bars or posts 10 of the admission chute may if desired be supplied with cylindrical extensions 14 retained in apertures of ears or the like integral with and at the top of casing 12, it being understood that such casing is supplied with a top integral extension or compartment 15 directly beneath the admission chute, such casing also having brackets or supporting arms 16 adapted for attachment by screws or otherwise to the floor or support 11. At its lower part this casing communicates or connects with a vertical discharge chute 17 integral therewith and open at its sides at 18, such chute at its top portion or junction with casing 12 having one dimension greater than the length of the cans, as is shown in Fig. 5, the chute below such top portion tapering downwardly, as is indicated. Within this discharge chute, and projecting inwardly from its opposite inner faces, I provide two pairs of stationary abutments or shoulders 19, 19 and 20, 20 spaced apart in the direction of the longest dimension of the cross-section of the chute a distance greater than the length of the cans to

be righted, but spaced apart transversely of the chute a distance less than the diameter of the cans, whereby either pair of abutments or stop shoulders may engage an end of the can and temporarily stop or retard its descent, the other end of the can being free to swing down, so that when the can has turned to a vertical position the end which was temporarily retarded by the pair of abutments will be uppermost. It will, therefore, be obvious that if some means is provided whereby the open end only of the cans will engage with either pair of shoulders or abutments, all of the cans will be righted with their open end on top.

Within the divided casing 12, and rotatable on a pair of pivot screws 21 and 22, I provide a hollow divided carrier 23 of substantially the same length as the longer internal dimension of the discharge chute, such rotary carrier being supplied with a plurality of outstanding fins or arms 24 which form between them a number of substantially semi-cylindrical compartments or cradles each adapted to receive one of the cans, it being understood, as is clearly indicated in Fig. 5, that the cans are delivered to this carrier from the admission chute so that they will all occupy the same end portion of their receptacles or compartments of the carrier. These fins or blades 24 may be cut away at their central portion to provide the recesses 25 for a purpose hereinafter indicated. Pivoted at 26 on this carrier I provide a bent pusher-arm 27 for each can receptacle or compartment, each arm having a laterally-bent portion 28 adapted under certain conditions to enter its receptacle and also the open end of the can, provided such open end is at the corresponding portion of the receptacle. If, however, the closed end of the can is adjacent to such pusher-arm, the portion 28 thereof will push or slide the can in the receptacle so as to bring the opposite open end thereof in such position that when the can is discharged into the lower delivery chute 18 such open end will strike the retarding abutments or shoulders 19. Each arm 27 has an outstanding part 29 carrying a roller 30, the latter traveling in a cam groove 31 provided on the inner face of the inclosing or housing casing 12, which casing if desired, for the sake of economy in weight, may be supplied with a plurality of cylindrical apertures 32 and 33. The cam slot 31 is so shaped that the arms 28 will be retracted from their respective receptacles when the cans are received into the same and delivered therefrom, the pushing operation described above occurring during the travel of the can in the carrier from the admission chute to the delivery or discharge chute. Inasmuch as this rotary carrier is actuated by the weight of the cans in the admission chute, and since such chute under ordinary

circumstances always contains such a supply, it is necessary to provide this appliance with some controlling or governing device to prevent a too rapid feeding of the cans therethrough. Accordingly, I fasten to one end of the carrier 23 and concentrically therewith, by a number of screws 34, a comparatively large gear-wheel 35, the teeth of which mesh with those of a small pinion 36, a portion of which projects through an aperture or hole 37 provided therefor in the casing, such pinion being fixed to an external shaft 38 rotatable in suitable bearings, and carrying also a disk 39 likewise projecting through a hole 39^a partially into the interior of the casing, no interference of the blades 24 therewith occurring because of their recesses or cut-away portions 25. A controlling arm 40 is pivotally connected to the disk 39 near its outer margin, and is supplied with a step or foot 41 at its lower end, adapted to be projected into and withdrawn from the discharge chute 17, a suitable opening in the side thereof being provided for its accommodation, it being also understood that this step or foot has a movement lengthwise of the discharge chute, as is indicated, for example, in dotted lines in Fig. 1. In order to give this governing or controlling arm 40 the desired substantially-rectangular movement, I provide thereon a roller 42 traveling in a curved cam slot 43 of a bracket 44 projecting outwardly from the side of chute 17. This cam slot is so shaped that although the upper end of the rocking controlling arm 40 has a circular movement its lower end will be projected into chute 17, descend substantially vertically, be retracted outwardly, and then lifted practically vertically to its first position, this movement being substantially-rectangular, as will be readily understood.

Beneath the lower or discharge mouth of chute 17 a suitable support or table 45 is provided, such table being located a distance below the lower end of the chute greater than the height of the righted can resting thereon, as is indicated in Fig. 1, which construction permits the can to be slid on the table away from the device without interference therewith, and in Fig. 1 I have indicated a pair of arms 46 on a vertical shaft 47 driven by cooperating bevel-gears 48 and adapted to slide or push the cans away from the device on the table. Ordinarily two cans 49 and 50, one on top of the other, rest on this table, the step or foot 41 of controlling arm 40 contacting with the top of can 50 with the arm almost at dead center, such arrangement locking the disk 39, the carrier 23, and their associated parts from rotation. Also ordinarily a can 51 rests upon the top of foot 41.

The operation of this improved appliance or device takes place in practically the fol-

lowing manner: The cans are fed in any approved manner to the vertical admission chute composed of the bars 10, such cans lying on top of one another, being disposed horizontally, and placed therein wholly regardless of the arrangement of their open and closed ends. Obviously, the weight of these cans tends to rotate the carrier and the cans contained therein, the latter of course assisting in this rotary movement, since the compartments or receptacles of the carrier on only one side thereof are adapted to receive and accommodate such cans. When the removing device 46 slides the can 49 on the table away from beneath the can 50, the latter of course drops on to the table, and as soon as it begins to descend the controlling arm 40 is freed, permitting the disk 39 to rotate, the latter in turn permitting the carrier to rotate. The revolution of disk 39 retracts the foot 41 from the discharge chute, whereupon the can 51 immediately descends and rests on top of the can 50, the latter of course at this time being supported on the table. At the time the disk 39 has completed about one-half of its single revolution, the foot 41 is again projected into the discharge chute and begins its descent therein, and during such downward movement of the foot one of the cans in the carrier is delivered to the chute in righted condition, taking the place of the can 51. During the travel of each can from the admission chute to the discharge chute in the carrier, the pusher 28 corresponding to the compartment containing such can is actuated by the cam groove 31. If the open end of the can happens to be at the end of the carrier supplied with the pusher 28 the can is uninfluenced by the latter, because such pusher merely enters and is retracted from the open mouth of the can. If, however, the closed end of the can resides at the end of the carrier supplied with the pusher, the latter will slide or push the can in its receptacle to the farther or remote end of its compartment or cradle. In the first instance the open end of the can in descending in the discharge chute would contact with the abutments or shoulders 20 and turn into righted condition, as indicated in Fig. 5. In the second instance the open end of the can being at the opposite end of the carrier would contact with the shoulders 19, and because of the retarding occasioned thereby the can would also be dropped into the lower part of the discharge chute on to the foot 41 with the open end uppermost. Under any condition, therefore, the open end of the can will be uppermost.

It is to be understood that this invention, while capable of embodiment in the style and form of device shown in the drawings and set forth above, is susceptible of a considerable variety of embodiments, and is,

therefore, not limited and restricted to the precise and exact structural features shown and described.

I claim:

1. In a can-righting device, the combination of means to drop cans, a stationary abutment or shoulder lying in the path of travel of one end of the cans as they descend and adapted to temporarily retard the descent of such ends so that the cans will turn and be righted with the retarded ends uppermost, another stationary abutment or shoulder, and means to shift some of the cans out of the path of and before they strike the first abutment so that their other ends will engage and be retarded by the second abutment instead of the first and will be righted with such other ends uppermost, substantially as described.

2. In a can-righting device, the combination of means to drop horizontally-disposed cans each having an open and a closed end, a pair of stationary abutments, and means to cause the open end only of each can to strike one or the other of said abutments, whereby such end is temporarily retarded in its descent and the can turned to upright position with its open end uppermost, substantially as described.

3. In a can-righting device, the combination of means to drop horizontally-disposed cans each having an open and a closed end, an abutment or shoulder lying in the path of travel of one end of the cans as they descend, a second abutment or shoulder out of the path of travel of such cans, and means to shift those only of the cans whose closed ends would strike the first abutment if such cans were not shifted so as to bring their open ends into position to engage said second abutment, whereby the descent of the open ends of all the cans will be temporarily retarded by one abutment or the other, permitting the cans to turn and be righted with their open ends uppermost, substantially as described.

4. In a can-righting device, the combination of means to drop horizontally-disposed cans each having an open and a closed end, a pair of abutments spaced apart a distance less than the diameter of the cans and lying in the path of travel of one end of the cans as they descend, a second pair of abutments similarly spaced and out of the path of travel of such cans, and means to shift those only of the cans whose closed ends would strike the first pair of abutments if such cans were not shifted so as to bring their open ends into position to engage said second pair of abutments, whereby the descent of the open ends of all the cans will be temporarily retarded by one pair of abutments or the other, permitting the cans to turn and be righted with their open ends uppermost, substantially as described.

5. In a can-righting device, the combination of an admission can chute, a movable carrier adapted to receive horizontally-disposed cans from said chute and drop the same, an abutment or shoulder lying in the path of travel of one end of the cans as they descend, a second abutment or shoulder out of the path of travel of such cans, and means to shift those only of the cans whose closed ends would strike the first abutment if such cans were not shifted so as to bring their open ends into position to engage said second abutment, whereby the descent of the open ends of all the cans will be temporarily retarded by one abutment or the other, permitting the cans to turn and be righted with their open ends uppermost, substantially as described.

6. In a can-righting device, the combination of an admission can chute, a rotary carrier adapted to receive a horizontally-disposed can from said chute and drop the same, an abutment or shoulder lying in the path of travel of one end of the cans as they descend, a second abutment or shoulder out of the path of travel of such cans, and means to shift those only of the cans whose closed ends would strike the first abutment if such cans were not shifted so as to bring their open ends into position to engage said second abutment, whereby the descent of the open ends of all the cans will be temporarily retarded by one abutment or the other, permitting the cans to turn and be righted with their open ends uppermost, substantially as described.

7. In a can-righting device, the combination of an admission can chute, a carrier adapted to receive horizontally-disposed cans from said chute and drop the same, an abutment or shoulder lying in the path of travel of one end of the cans as they descend, a second abutment or shoulder out of the path of said cans, means to shift those only of the cans whose closed ends would strike the first abutment if such cans were not shifted so as to bring their open ends into position to engage the second abutment, whereby the descent of the open ends of all the cans will be temporarily retarded by one abutment or the other, permitting the cans to turn and be righted with their open ends uppermost, and means controlling the removal of the righted cans for governing the actuation of said carrier, substantially as described.

8. In a can-righting device, the combination of an admission can chute, a discharge can chute, a rotary carrier provided with a plurality of receptacles each adapted to receive a horizontally-disposed can from said admission chute and drop the same into said discharge chute, an abutment or shoulder in said discharge chute lying in the path of travel of one end of the cans as they de-

scend, a second abutment or shoulder in said discharge chute out of the path of travel of such cans, and separate means for each receptacle of said carrier to shift those only of the cans whose closed ends would strike the first abutment if such cans were not shifted so as to bring their open ends into position to engage said second abutment, whereby the descent of the open ends of all the cans will be temporarily retarded by one abutment or the other, permitting the cans to turn and be righted with their open ends uppermost, substantially as described.

9. In a can-righting device, the combination of an admission can chute, a discharge can chute, a rotary carrier provided with a plurality of receptacles each adapted to receive a horizontally-disposed can from said admission chute and drop the same into said discharge chute, each of said cans having an open and a closed end, an abutment in said discharge chute lying in the path of travel of one end of the cans as they descend, a second abutment or shoulder in said discharge chute out of the path of travel of said cans, a plurality of pivoted arms on said carrier to shift those only of the cans whose closed ends would strike the first abutment if such cans were not shifted so as to bring their open ends into position to engage said second abutment, whereby the descent of the open ends of all the cans will be temporarily retarded by one abutment or the other, permitting the cans to turn and be righted with their open ends uppermost, and a cam to actuate said pivoted arms, substantially as described.

10. In a can-righting device, the combination of an admission can chute, a discharge can chute, a rotary carrier provided with a plurality of receptacles each adapted to receive a can from said admission chute and drop the same into said discharge chute, each of said cans having an open and a closed end, an abutment or shoulder in said discharge chute lying in the path of travel of one end of the cans as they descend, a second abutment or shoulder in said discharge chute out of the path of travel of said cans, means to shift those only of the cans whose closed ends would strike the first abutment if such cans were not shifted so as to bring their open ends into position to engage said second abutment, whereby the descent of the open ends of all the cans will be temporarily retarded by one abutment or the other, permitting the cans to turn and be righted with their open ends uppermost, means to arrest the descent of and support the righted cans, and a carrier controlling arm adapted to contact with one of the cans supported by said means and lock said carrier against rotation until one of said cans is removed from said support, substantially as described.

11. In a can-righting device, the combina-

tion of an admission can chute, a discharge
can chute, a rotary carrier provided with a
plurality of receptacles each adapted to re-
ceive a horizontally-disposed can from said
admission chute and drop the same into said
discharge chute, each of said cans having an
open and a closed end, an abutment in said
discharge chute lying in the path of travel
of one end of the cans after they are dis-
charged from the carrier as they were de-
livered to said carrier from said admission
chute, said abutment being adapted to tem-
porarily retard the descent of such ends so
that the cans will fall in said discharge
chute with such retarded ends uppermost,
another abutment in said discharge chute,
means to shift some of the cans while in
said carrier whereby their other ends will
engage the second abutment instead of the
first in their descent in the discharge chute
and will fall with such other ends upper-
most, means to arrest the descent of and sup-
port the righted cans, a carrier controlling
arm adapted to contact with one of the cans
supported by said means and lock said car-
rier against rotation until one of said cans
is removed from such support, and means to
give said controlling arm a motion with
the cans in the discharge chute and an up-
ward movement outside of said chute, sub-
stantially as described.

12. In a can-righting device, the combina-
tion of an admission can chute, a discharge
can chute, a rotary carrier provided with a

plurality of receptacles each adapted to re-
ceive a can from said admission chute and
drop the same into said discharge chute, an
abutment in said discharge chute lying in
the path of travel of one end of the cans
after they are discharged from said carrier
as they were delivered to said carrier from
said admission chute, said abutment being
adapted to temporarily retard the descent
of such ends so that the cans will fall in
said discharge chute with such retarded ends
uppermost, another abutment in said dis-
charge chute, means to shift some of the cans
while in said carrier, whereby their other
ends will engage the second abutment in-
stead of the first abutment in their descent
in the discharge chute and will fall with said
other ends uppermost, means to arrest the
descent of and support the righted cans, a
carrier controlling arm adapted to contact
with one of the cans supported by said
means and lock said carrier against rotation
until one of said cans is removed from such
support, a cam with which said controlling
arm coöperates, and means driven by said
carrier to rotate the upper end of said arm
whereby to give the latter a motion with the
cans in the discharge chute and an upward
movement outside of said chute, substan-
tially as described.

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