No. 876,291. PATENTED JAN. 7, 1908.

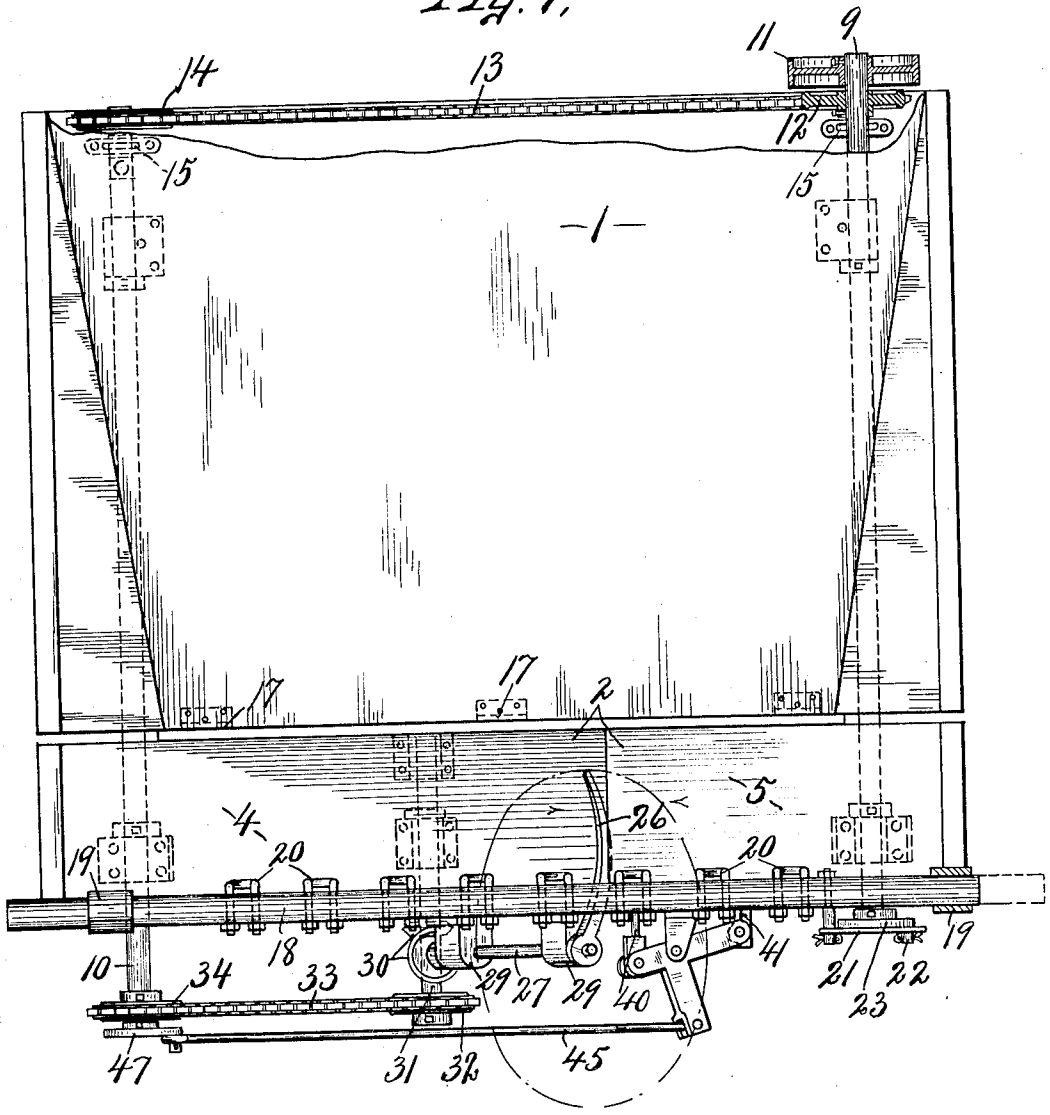
M. D. BLAKESLEE.

MECHANICAL CAN ROLLER.

APPLICATION FILED FEB. 11, 1907.

3 SHEETS—SHEET 1.

Fig. 1.



Witnesses
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3 SHEETS—SHEET 2.

Fig. 2.

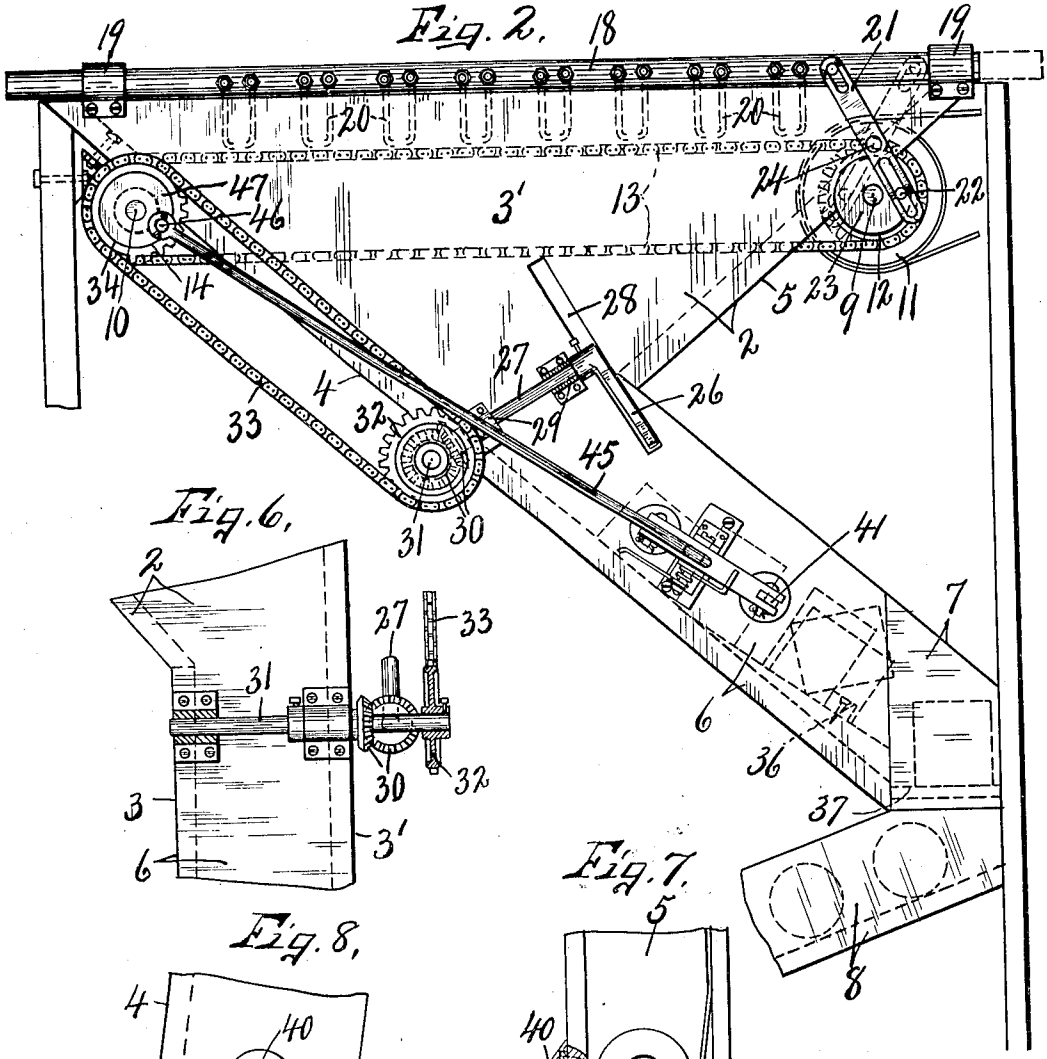


Fig. 6.

Fig. 7.

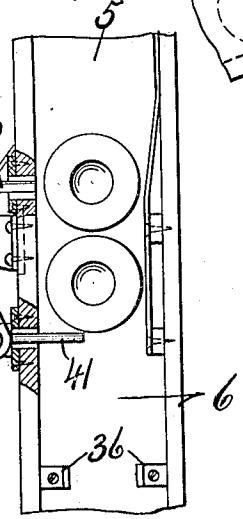
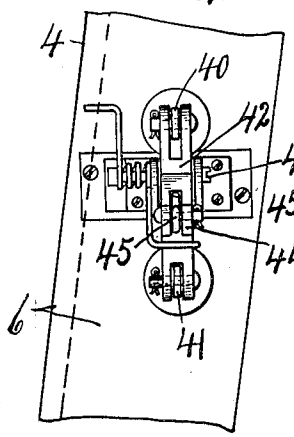


Fig. 8.



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3 SHEETS—SHEET 3.

Fig. 3.

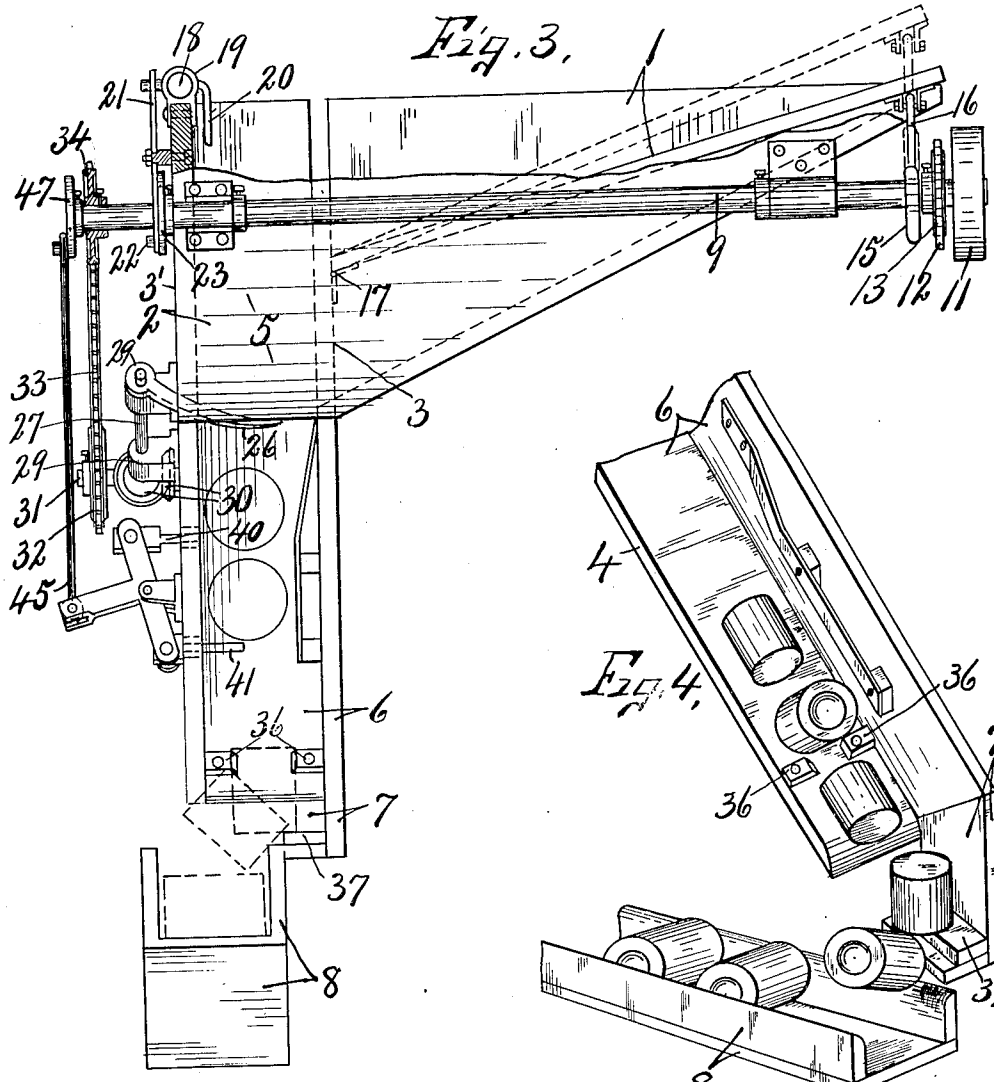
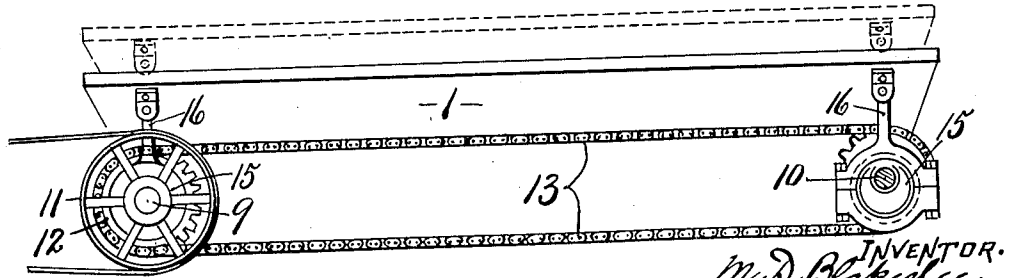


Fig. 4.

Fig. 5.



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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.

MECHANICAL CAN-ROLLER.

No. 876,291. Specification of Letters Patent. Patented Jan. 7, 1908.

Application filed February 11, 1907. Serial No. 356,876.

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 Mechanical Can-Rollers, 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 mechanical can rollers, in which the cans may be promiscuously dumped or deposited in quantities, and are automatically separated or selected and fed by gravity, one by one, either by allowing them to slide endwise, or by rolling down a suitable incline or inclines, during which operation the cans are all finally adjusted or arranged to follow each other in a rolling position to a final discharge chute or conveyer leading to the righting device of the character described in one of my pending applications No. 337,319, filed October 3, 1906. In other words, I have sought to provide a simple and practical device into which the cans may be shoveled or dumped, and which will operate to automatically adjust the cans and feed them one by one successively in a rolling position to any suitable righting device where they may be brought to an upright position ready for filling.

Other objects and uses relating to the specific parts of my improved mechanical can roller will be brought out in the following description.

Figure 1 is a top plan of a mechanical can-rolling and feeding device embodying the various features of my invention. Figs. 2 and 3 are respectively a side elevation and an end view of the device seen in Fig. 1. Fig. 4 is a perspective view, partly in section, of portions of the inclined chutes or guides along which the cans feed, in a sliding position, and by which they are finally brought to a rolling position, one following the other. Fig. 5 is a front elevation of the vibratory portion of the hopper and its actuating mechanism. Fig. 6 is a side view of a portion of the inclined can chute showing the mechanism for operating the rotary agitator or sweep seen in Fig. 2. Figs. 7 and 8 are respectively top plan and rear view of a portion of the inclined chute showing the can-tripping or selecting mechanism for causing the cans to feed down the chute, one at a time.

The cans are shoveled, dumped or otherwise deposited promiscuously in quantities upon an inclined vertically vibratory hopper —1— which is actuated or vibrated by suitable mechanism hereinafter described for causing the cans to feed by gravity into the upper end of a fixed hopper —2— having vertical front and rear walls —3— and —3'— spaced apart a distance somewhat greater than the diameter of the can, said hopper 2— being provided with oppositely inclined sides —4— and —5— converging downwardly, the inclined side —4— being extended beyond the plane of the intersection of the inclined side —5— for forming an inclined chute —6— extending downwardly and laterally some distance beyond the lower end of the inclined side —5— of the hopper —2—, and also of substantially the same width from front to rear as the fixed hopper so that the cans which are agitated by the vertical vibration of the hopper section —1— are caused to gravitate along the inclined sides —4— and—5— and into and along the chute —6—.

It is obvious that by making the transverse width of the fixed hopper —2— and chute —6— substantially equal to or slightly greater than the diameter of the can, such cans must necessarily slide along the inclined bottoms of the hopper and chute either on their ends or sides, and in order to facilitate the gravitation of the cans in this position the inclined bottom of the chute —6— is rather steep and terminates at its lower end in a comparatively short vertical chute —7— of substantially the same cross sectional form and size as the chute —6— from which the cans are automatically discharged by gravity in a rolling position upon an additionally inclined chute —8—, as best seen in Figs. 2, 3, and 4.

At the opposite sides or ends of the vibratory hopper section —1— are located two parallel shafts —9— and 10—, the shaft —9— being provided with a pulley —11— which may be connected to any available source of power, not shown, for rotating the shaft —9—, the latter being provided with a sprocket wheel —12— which is connected by a link belt —13— to a second sprocket wheel —14— on the shaft —10— and whereby rotary motion is transmitted from the shaft —9— to the shaft —10—. Each of these shafts —9— and —10— is pro-

vided with an eccentric —15— which is connected by links —16— to the front end of the vibratory hopper section —1— to vibrate the latter vertically, the rear end of said hopper section —1— being hinged at —17— to the front side —3— of the hopper —6—. This vibratory action of the hopper section —1— agitates the cans thereon and causes them to be fed by gravity along the inclined bottom of said section into the upper end of the fixed hopper —6— and against the rear wall 3'— thereof, which rear wall extends some distance above the adjacent end of the vibratory hopper section —1—, thereby forming a limiting stop for said cans, and causing them to slide vertically on end or endwise along the inclined bottoms —4— and —5— thereof. A large majority of the cans which are thus agitated and fed rearwardly by the vibration of the hopper section —1— will be caused to roll against the rear wall or side 3' of the fixed hopper and in order that all of the cans may be automatically arranged lengthwise of the inclined bottoms —4— and —5— along which they are adapted to slide so as to enter the chute —6—, I provide a second agitator consisting in this instance, of a sliding bar —18— which is guided in suitable bearings —19— on the upper edge of the rear wall 3' of the fixed hopper —2— and is provided with a series of forwardly and downwardly projecting fingers —20— which are adapted to slide along the inner face of the rear wall 3'— in the path of the cans as they are fed from the vibratory hopper section —1— into the upper end of the fixed hopper —2— so that if any cans are presented endwise against the agitator fingers —20— they are immediately deflected from this position by said fingers so as to fall upon the inclined guides —4— and —5— either upon their ends or upon their sides, but always the narrowest way in their direction of movement or lengthwise of the guides —4— and —5— along which they slide. This agitator consisting of the bar —18— and fingers —19— is moved endwise by means of a lever —21— and pin —22— which is mounted eccentrically upon a rotary disk —23— on the shaft —9— and engaged with the lever —21— at one side of its fulcrum, as —24—, whereby the movement of the agitator is synchronized with the action of the vibrating hopper section —1—.

The inclined bottom —5— terminates a sufficient distance above the inclined bottom —4— to permit the cans to easily slide thereon in an upright position on the inclined bottom —4—, and in order to prevent any congestion of the cans at this point, I provide a rotary sweep or agitator arm —26— which is secured at one end to a rotary shaft —27— and is movable through an elongated slot —28— in the rear side 3'— of the fixed hopper —2— near its junction with the inclined chute —6—, said rotary sweep or arm —26— moving in a plane a sufficient distance above the inclined bottom —4— to clear the cans when sliding on their ends along said inclined bottom, the purpose of this agitator arm —26— being to single the cans out and cause them to fall singly down the inclined chute —6—. This shaft —27— is journaled in suitable bearings —29— at the rear side of the fixed hopper —2— and is driven by intermeshing gears —30— from a transverse shaft —31—, as best seen in Figs. 1, 2, 3 and 6.

The shaft —31— is provided with a sprocket-wheel 32— which is connected by a link belt —33— to a companion sprocket wheel —34— on the shaft —10— from which the shaft —31— derives its motion.

As previously stated, some of the cans will slide along the inclined bottom —4— upon their ends, while others will similarly slide endwise upon their sides, the latter being in the position to which they must be brought before finally discharged from the lower terminal end of the chute —6— and in order that those which are sliding upon their ends may be automatically tripped or tilted to slide endwise upon their sides, I provide a pair of trip stops or abutments —36— which are secured to the upper face of the inclined bottom of the chute —6— a sufficient distance above its lower terminal end to engage the lower ends of the cans which may stand upright on the inclined bottom so that the momentum of such cans sliding along said bottom will cause them to be tripped or tilted so as to lie lengthwise on the inclined bottom, in which position they slide from the lower terminal end onto a fixed abutment or rest —37—, forming a part of the bottom of the vertical chute —7—, the tripping stops or abutments —36— being spaced apart leaving an intervening passage sufficiently wide to permit the cans which are sliding endwise down the chute to readily pass between the abutments so that all the cans which slide along the inclined bottom of the chute —6— are discharged endwise by gravity upon the ledge or shelf —37—. This ledge —37— is narrower transversely than half the diameter of the can and is located in one side of the vertical chute —7— so that as the cans fall end foremost upon said ledge they tilt by gravity laterally into the inclined chute —8—, which is directly under and at one side of the ledge —37—. In this manner the cans are successively deposited upon their sides, one by one, in rolling position in the inclined chute —8— which may extend to any suitable conveying or righting device, not shown, although the object of automatically arranging the cans in the manner just described, is

to arrange them in suitable position to be operated upon by a righting device similar to that set forth in my pending application previously referred to, and by which the cans are brought to an upright position ready to be filled.

As a further means for regulating the feed of the cans one by one along the inclined chute —6— I provide a suitable escapement consisting of alternately acting reciprocatory pawls or plungers —40— and —41— which are guided in suitable openings in the rear side of the chute —6— and are pivotally connected to a lever —42— at opposite sides of its fulcrum —43—, said lever being provided with a rearwardly projecting arm —44— which is connected by a link —45— to a pin —46—, the latter being secured eccentrically to a disk —47— on the shaft —10—.

The plungers —40— and —41— are movable into and out of the path of the cans as they slide along the chute —6— and are spaced apart in the direction of movement of said cans a distance substantially equal to one and a half diameters of the can so that as the cans slide down the incline, as shown in Fig. 7, while the plunger —40— is drawn back, the first can will engage the inwardly projecting plunger or stop —41— a sufficient distance above its bottom to prevent tilting of the can, thereby temporarily checking the movement of the downwardly feeding cans until the lever —42— is operated to withdraw the plunger —41— from the path of the cans to advance the next succeeding can being engaged near its center by the plunger —40— and forced against the yielding buffer —46— where it is held until the first advancing can which has just been released by the withdrawal of the plunger —41— has moved beyond the latter plunger whereupon the next movement of the lever withdraws the plunger —40— from holding engagement against the adjacent can and again advances the plunger —41— into the path of the first downwardly feeding can when the operation is repeated, the plunger —40— being preferably yielding endwise to prevent jamming of the can engaged thereby.

In the operation of my invention, the cans are first dumped or otherwise deposited in considerable quantities upon the vertically vibrating hopper-section —1— upon which they are agitated and caused to roll or slide into the upper end of the fixed hopper —2— which is just wide enough transversely to easily receive the cans the narrowest way, while those which happen to be lodged crosswise of the opening are forced with their ends against the agitator arms —20—, which operate to deflect the adjacent ends of the cans laterally and to arrange them lengthwise of the fixed chute —2— into which they drop, and together with the other cans which have previously rolled into the chute, slide down said chute to the regulator into engagement with one or the other of the regulator fingers or plungers —40— and —41—. At this point the cans are separated and caused to feed one by one along the remaining portion of the chute —6—, those which are sliding upon their sides endwise readily passing between the shoulders —36—, while those which are sliding upon their ends encounter the stops —36—, and the momentum of movement of such cans causes them to tilt or fall upon their sides so that they, like the rest of the cans, which are sliding upon their sides continue to slide off from the lower terminal end of the chute —6— from which they drop in an upright position upon the ledge —37—, this ledge being narrower than half and at one side of the diameter of the can causes said can to tilt therefrom to a horizontal rolling position and into the guide —8— along which they roll or from which they may be fed to a suitable righting device, not shown.

What I claim is:

1. In a mechanical can roller, a receptacle into which the cans are promiscuously deposited, an inclined can guide, mechanism for agitating and feeding the cans into said guide, additional mechanism for causing the cans to slide endwise along said guide, a second inclined guide at the lower terminal end of the first named guide, and means at the lower terminal end of the first named guide engaged by the cans whereby said cans are tilted to a horizontally rolling position into the second guide.

2. In a mechanical can roller, a hopper having a vibrating inclined bottom upon which the cans are promiscuously deposited, means for vibrating said bottom an inclined chute at the lower end of the inclined bottom of the hopper for receiving the cans discharged from said hopper a sliding bar having can righting fingers in the path of the cans, and means for actuating said bar.

3. In a mechanical can roller, a hopper having a vertically vibratory inclined bottom upon which the cans are promiscuously deposited in quantities, means for vibrating said bottom, an inclined chute at the lower end of the bottom for receiving the cans discharged therefrom a sliding bar having can righting fingers in the path of the cans as they pass from the hopper to the chute, and means for actuating said bar.

4. In a mechanical can roller, a hopper having an inclined bottom upon which the cans are deposited promiscuously in quantities, said hopper having an opening at the low end of the inclined hopper, a sliding agitator movable along the low side of the hopper in the path of some of the cans, and means to operate the agitator.

5. In a mechanical can roller, a hopper having an inclined bottom and an upright

wall spaced apart from the low end of the bottom forming an intervening can opening at the low end of said bottom, a reciprocatory agitator having fingers movable along the inside of the upright, and means to operate said agitator.

6. In a mechanical can roller, a hopper having a vibratory inclined bottom and a fixed upright wall at the low end of said bottom and forming therewith an intervening space through which the cans may fall, means for vibrating said bottom, a reciprocatory agitator movable along the inside face of the upright wall in the path of some of the cans as they are fed from the inclined bottom, and means for agitating said agitator.

7. In a mechanical can roller, a hopper having a vertically movable inclined bottom section upon which the cans are adapted to be deposited promiscuously in quantities, a rotary shaft, and means for transmitting motion from said shaft to said section, a sliding agitator at the low end of the vibratory section and means for transmitting motion from said shaft to the sliding agitator, said agitator being located in the path of some of the cans as they are fed by gravity from the vibratory bottom section.

8. In a mechanical can roller, a fixed chute for receiving the cans, means for feeding the cans in quantities into the upper end of the chute, a sliding can agitator in the upper end of said chute for engaging and arranging the cans the narrowest way in the chute and means for actuating said agitator.

9. In a mechanical can roller, a hopper into which the cans are deposited promiscuously in quantities, an inclined chute leading from the mouth of the hopper, means to cause the cans to slide upon their sides along the chute, and a rotary sweep at the junction of the hopper with the chute to agitate and prevent congestion of the cans at this junction, and means to rotate the sweep.

10. In a mechanical can roller, an inclined can chute along which the cans slide, means acting upon the cans which slide by gravity along said chute to cause them to slide endwise one by one therefrom, and means for shifting the cans from a sliding to a rolling position as they are discharged from the chute.

11. In a mechanical can roller, an inclined chute along which the cans are adapted to slide on end, and fixed abutments or tripping stops on the bottom of the chute adapted to be engaged by the end of the can which rests upon said bottom, whereby the can is caused to tilt end foremost on its side.

12. In a mechanical can roller, an inclined chute and means to feed the cans thereinto, whereby some of the cans will slide down the chute endwise, while others will slide down the chute on their end, fixed tripping stops in the chute spaced apart to permit those cans which are sliding endwise to pass between them, said stops being adapted to be engaged by the lower ends of the cans which are sliding on their ends, whereby such cans are tripped and caused to tilt forwardly by their own momentum.

13. In a mechanical can roller, an inclined chute into which the cans are fed, some of said cans sliding on their sides endwise, and others sliding on their ends sidewise, fixed stops in the bottom of the chute for tripping the cans which are on ends to cause them to fall upon their sides, a pair of plungers movable transversely of the chute into and out of the path of the cans, and means for moving said plungers simultaneously in opposite directions, whereby when one plunger is presented to the cans the other is withdrawn.

14. In a mechanical can roller, an inclined chute into which the cans are fed, some of the cans sliding on their sides endwise, and others sliding on their ends sidewise, a pair of plungers movable transversely of the chute into and out of the path of the cans, and means for moving said plungers simultaneously in opposite directions, whereby when one plunger is presented to the cans the other is withdrawn, and a yielding buffer at the side of the chute opposite to that through which the plungers are movable to form a yielding buffer against which one of the cans is forced by one of the plungers when the preceding can is liberated.

15. In a mechanical can roller, an inclined chute and a vertical chute at the lower terminal end of the inclined chute, said vertical chute having a ledge at one side and of less transverse width than the bottom of a can whereby as each can falls from the lower end of the chute endwise upon the ledge it tilts from said ledge to a horizontal position, and means for receiving and retaining the cans in this position.

In witness whereof I have hereunto set my hand this 8th day of February 1907.

MERTON D. BLAKESLEE.

Witnesses:
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C. M. MCCORMACK.