Jan. 8, 1952 H. A. YOUNG 2,581,742

RETORT CAN TRAY LOADER

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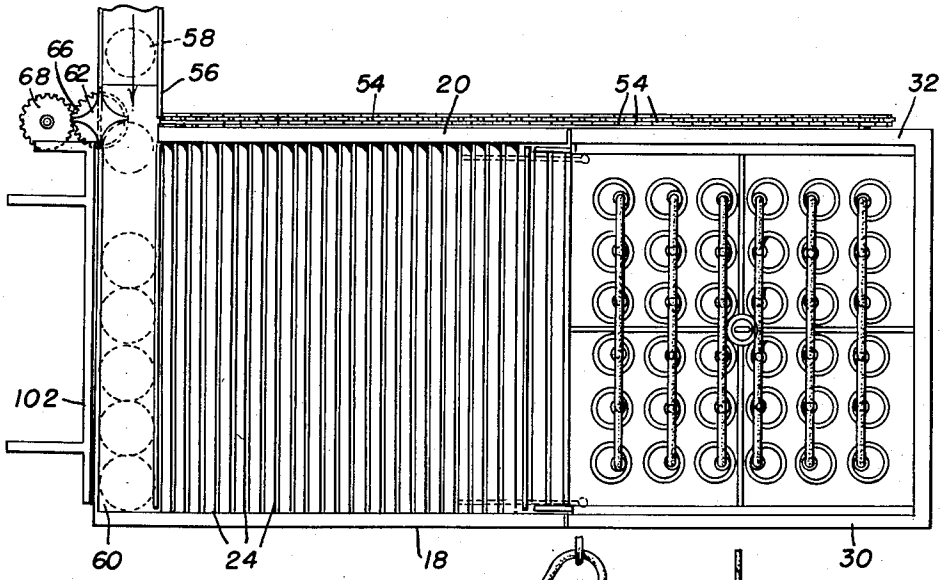


Fig. 1.

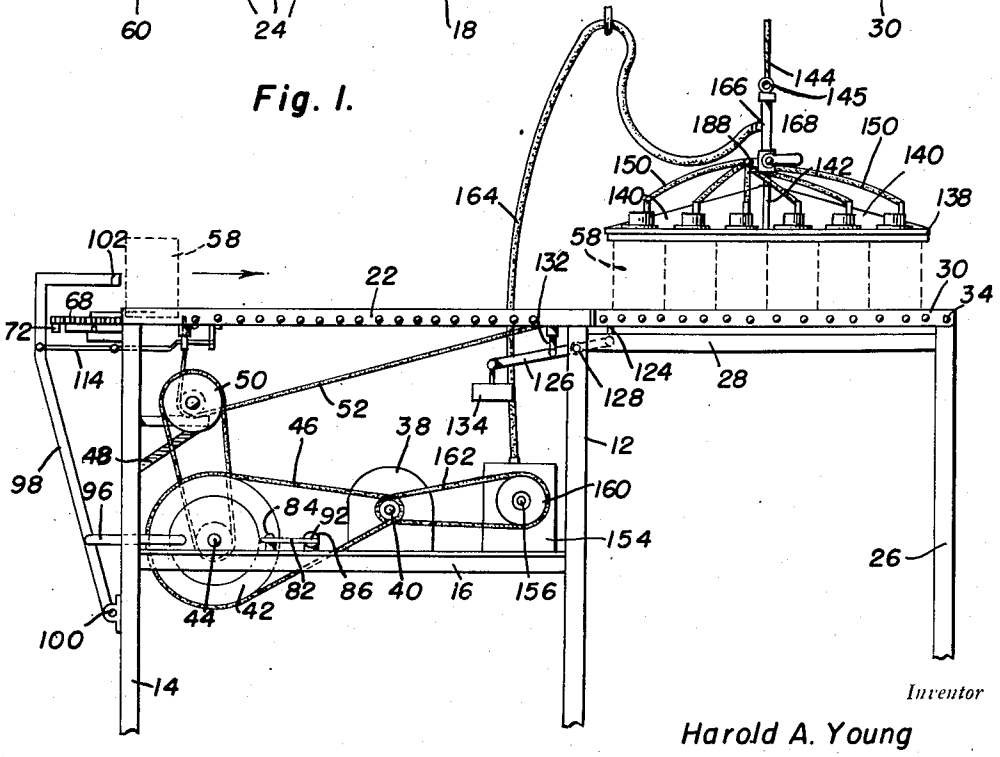


Fig. 2.

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Fig. 3.

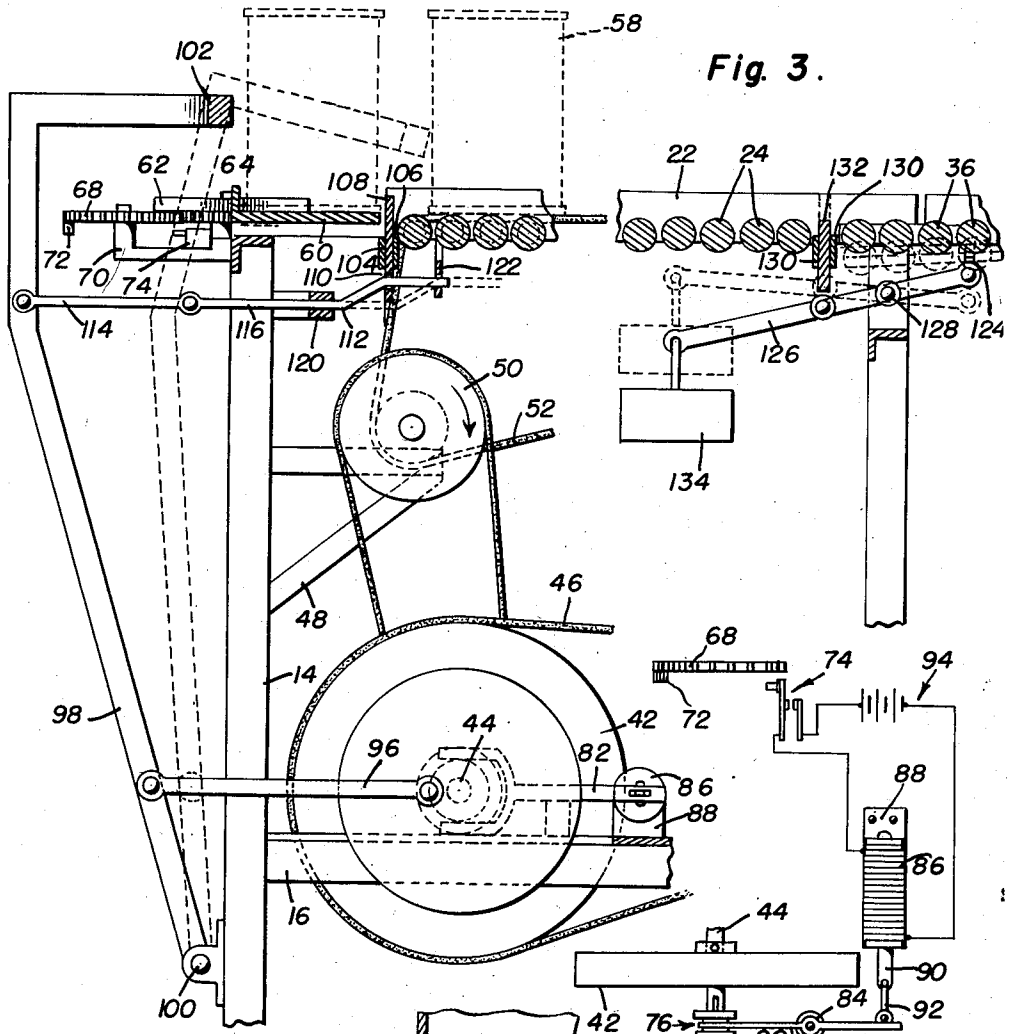


Fig. 4.

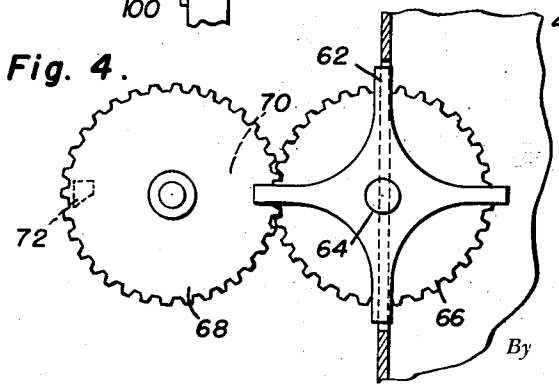


Fig. 9.

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RETORT CAN TRAY LOADER

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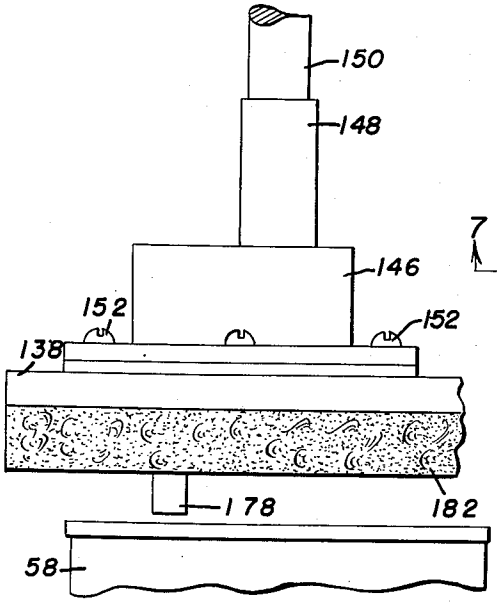


Fig. 5.

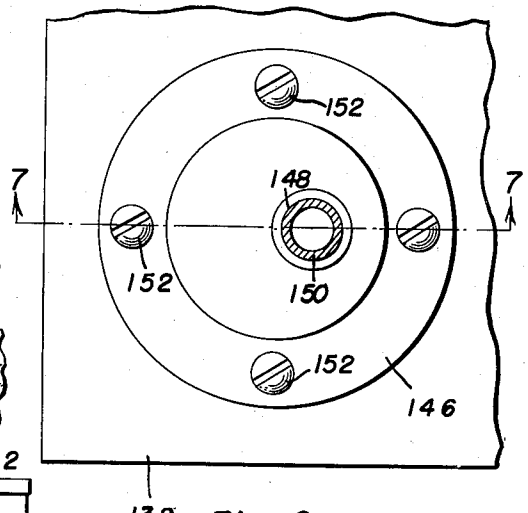


Fig. 6.

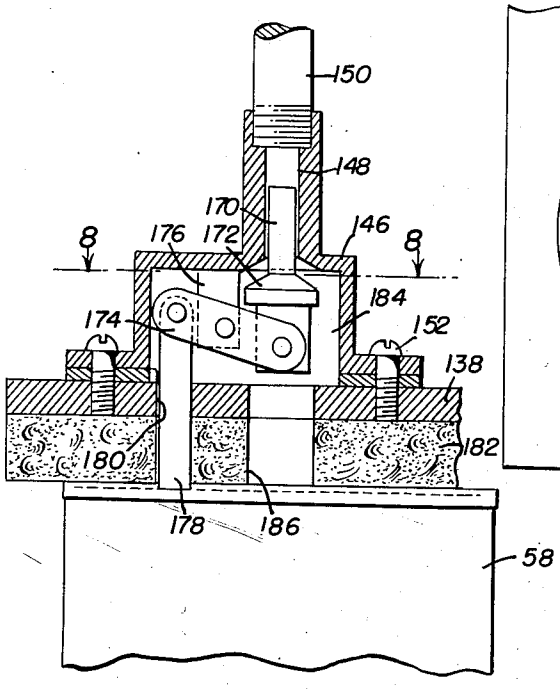


Fig. 7.

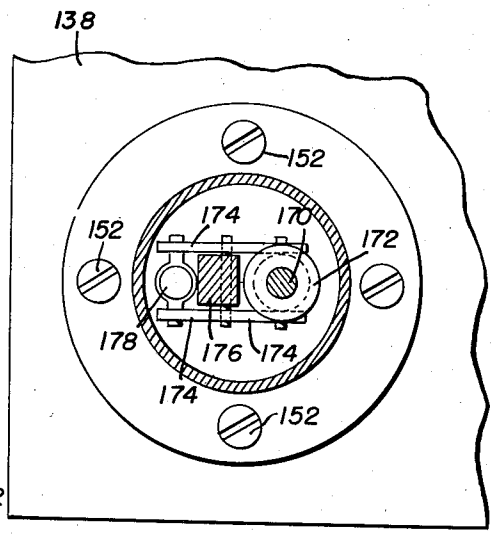


Fig. 8.

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UNITED STATES PATENT OFFICE

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RETORT CAN TRAY LOADER

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Application February 3, 1947, Serial No. 726,064

4 Claims. (Cl. 198—31)

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This invention relates to a device for guiding, moving, grasping and loading cans. An object of this invention is to provide endless means, preferably of the conveyor type, for conducting cans.

Another object of this invention is to provide means for indicating the arrival of a predetermined number of cans on the device.

Another object of this invention is to provide means for urging a bank of cans on said endless means.

Another object of this invention is to provide means for grasping a plurality of cans.

A further object of this invention is to provide means for regulating the effective force of said grasping means.

A still further object of this invention is to provide stop means defining the limits of can travel on the stand.

Another object of this invention is to provide mutual power means for driving said endless conveyor means, said urging or can pushing means and a suction producing means for grasping a plurality of cans.

Other objects and features of novelty will become readily apparent to those skilled in the art, in following the description of the preferred embodiment of the instant invention illustrated in the accompanying drawings, wherein:

Figure 1 is a plan view of the preferred embodiment of the instant invention showing schematically, cans being loaded thereon;

Figure 2 is a side elevational view of the invention disclosed in Figure 1;

Figure 3 is an enlarged fragmentary detail view partly in section and partly in elevation and showing particularly the stop means, clutch means and cam means forming part of the instant invention;

Figure 4 is a plan detail view of the star cam and its associated gear mechanism forming part of the instant invention;

Figure 5 is an elevational fragmentary detail view of the can grasping means forming part of the present invention;

Figure 6 is a plan view, partly in section showing the detail disclosed in Figure 5;

Figure 7 is a sectional view taken substantially on the line 7—7 of Figure 6 and in the direction of the arrows;

Figure 8 is a transverse sectional view of the detail disclosed in Figure 7 and taken substantially on the line 8—8 thereof and in the direction of the arrows;

Figure 9 is a fragmentary schematic view showing the wiring diagram for the electrical apparatus associated with the can urging means and also showing the one way clutch used in conjunction with the instant invention.

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Referring now in detail to the above described illustration of the preferred form of the instant invention, like reference characters are used throughout to indicate similar elements. A suitable stand or table (unnumbered) is composed of any suitable durable material such as iron, steel and the like, is provided with conventional legs 12 and 14 and is provided with a shelf 16 which is preferably secured to said legs. A pair of side members 18 and 20 having upwardly extending flanges 22, is provided at the top thereof and a plurality of rollers 24 are journaled in said flanges 22. An extension of said stand or table is provided by the addition of another pair of legs 26 joined by braces 28 suitably secured to said legs and said table. Edge members 30 and 32 are provided along the top edge of said legs 26 and are pivoted thereto by suitable pivot pins 34. Rollers 36 are journaled in the said members 30 similar to the rollers 24 and the said members 22. It is obvious from an inspection of Figures 2 and 3 that the end members 30 and rollers 36 form a substantial continuation of the table top formed by the rollers 24 and associated bearing members 22.

A source of power, preferably the electric motor 38 is received on the said shelf 16 and is provided with a sheave 40 secured to the conventional armature bearing shaft of the motor. A large sheave-flywheel 42 having a shaft 44 projecting therethrough and journaled in suitable perches secured to said shelf 16, is provided with a belt connection therebetween and the said sheave 40. A suitable stand bracket 48 is secured to said leg 14 and has journaled thereon a double sheave 50. A suitable belt, preferably V grooved, is entrained about one of the peripheral grooves of said double sheave and about the said sheave 42. A third belt 52 is entrained over the second peripheral groove of said double sheave 50 and over extension 54 of said rollers 24 and 36. It is here noted that any other conventional system of belting may be used to drive said rollers, one of which is to provide an extra sheave on the first roller and a fourth belt driven thereby for imparting rotation to the remainder of the rolls. It is apparent that upon rotation of the sheave 40 imparted thereto by the motor 38, the sheaves 42 and 50 will be in turn rotated and accordingly the endless conveyor rollers set in motion.

As is seen from an inspection of Figure 1, a chute 56 is provided adjacent one corner of the

endless conveyor and is adapted to receive and guide cans 58 thereon. The neutral or dead portion of the conveyor 60 is provided as a continuation of the said chute 56 and is adapted to receive the said cans 58 thereon. A star shaped cam or star wheel 62 is removably received on a suitable stub shaft 64 which may be permanently secured to the said table. Fixedly secured to the said star shaped cam 62 is a spur gear 66 adapted to mesh with the second spur gear 68 rotatably journaled on a suitable bracket 70 which is also secured to the said table. A cam 72 depends from the said gear 68 and is adapted to trip or actuate a suitable switch 74 one time per revolution of the gear 68. Any type of electrical circuit breaker may be used in place of the switch 74 and it has been found that the utility of a mercuric type of circuit breaker renders excellent results.

Secured to the shaft 44 is a suitable and conventional single revolution clutch member 76 as seen in Figure 9. The said clutch mechanism 76 is conventional in nature showing a pair of gears 78 and 80 having teeth on the flat faces thereof and adapted to be engaged and disengaged by the fork member 82. The said fork member 82 is pivoted to the shelf 16 by some suitable pivot means such as the pin 84.

A conventional solenoid 86 having a bracket 88 secured thereto, is received on the said shelf 16 by any suitable conventional securing means. The piston 90 of the solenoid has a link 92 pivoted to the end thereof and the other end of said link 92 is pivoted to the said fork member 82. It is apparent now that upon actuation of the said switch 74 the circuit 94 is closed thereby energizing the solenoid 86 and engaging the single revolution clutch 76.

A connecting rod 96 is pivoted at an offset to the axis of rotation of the said member 42 and pivotally received on a pusher bar 98. The said pusher bar 98 is hingedly received on the leg 14 and the corresponding leg of the said table. A suitable hinge 100 of the single shaft pivotal type may be employed for mounting the said pusher bar. A cross member 102 is secured to the said pusher bar 98 and is adapted to contact a bank or predetermined number of cans which accumulate on the dead portion 60 of the live roll. It is obvious that when the cam 72 contacts the switch 74 as hereinabove described the pusher bar 98 will be operative for a single revolution of the said sheave or flywheel 42 thereby moving a bank of cans 58 on the live rollers of the endless conveyor. It is here noted that by interchanging various shapes of cams in place of the cam 62 and various sized gears in place of the gears 66 and 70, any number of cans may be loaded on the dead portion 60 of the live rolls in accordance with the selection of cams and gears.

Depending from the dead portion 60 of the said table top is a pair of guides 104 and 106 adapted to receive a baffle 108 therebetween. An aperture 110 is provided through the said baffle 108 and is adapted to receive an actuating link or cam 112 therein. The said actuating link or cam 112 is composed of two portions the first of which is a link 114 pivotally received on the said pusher bar 98 and a second link 116 pivoted to said link 114. A suitable guide shoe 120 may be provided on the said leg 14 to restrict the travel of the said cam rod 112. A second guide or shoe 122 may be provided on said table to assist in guiding the said member

112. It is apparent from an inspection of Figure 3 that the baffle 108 projects through the top portion of the table until actuated by said cam member 112. Since said member 112 is secured to the pusher bar 98, the stop or baffle 108 will remain in its uppermost position until the pusher bar begins to function. At that point the baffle 108 will be carried down below the uppermost portion of the rollers in the endless conveyor. It is understood that a second cam link 112 is provided on the opposite end of the said pusher rod 98 and since it is identical to the described cam link, duplication of this description is omitted.

Secured to the free end of the said pivoted table extension 30 is a depending lug 124 which has a rod 126 pivoted thereto. The said rod 126 is also pivoted to the said leg 12 by a suitable pin 128. A pair of guide rails 130 is secured to the bottom portion of the table top and a baffle or stop 132 is slidably received therebetween. The said baffle 132 is pivoted at the bottom end thereof to the said member 126. It is apparent from an inspection of Figure 2 that when a predetermined weight of cans are received on the said table extension the pivoted portion will react against and overcome the mass of a counterweight 134 secured to the end of the said rod 126 when the mass of the cans is sufficient to overcome that of the counterweight, the pivoted portion will rotate about 34 as an axis until said portion abuts the link 28. At the same time that the pivoted portion is rotating, the stop or baffle 132 will be lifted into and through the rollers of the endless conveyor. It is here noted that there are two oppositely disposed baffle actuating mechanisms used in conjunction herewith however, since they are both identical only one is described herein.

It is now seen that after the cans are moved on the said pivoted portion of the table, the stop 132 rises thereby impeding the admission of more cans than are desired. In order to grasp the cans on said pivoted extension of the table top, a novel suction actuating means is provided. A base plate 138 is provided with suitable bracing or web members 140 on the top portion thereof. A rod 142 is secured to said webbing at substantially the center of the said base plate 138. There may be provided at the free end thereof a hook and eye 144 and 145 respectively which may be operatively connected to any suitable hoist or chain ball means.

Secured to the said base plate 138 is a plurality of housings 146 having outlets 148 at one end thereof. Each outlet 148 is internally threaded and is adapted to receive a flexible conduit 150 therein. It is here noted that any suitable securing means such as the screws 152 may be used to join the said housings 146 to the said base plate 138.

Received on the said shelf 16 is a conventional vacuum pump 154 having the conventional drive shaft 156 extending from the side thereof. A sheave 160 is conventionally received on the said shaft 156 and a belt drive 162 is entrained around the said sheave 160 and the sheave 40. Obviously, when the power means 38 is energized the vacuum pump 154 is rendered operative. A suitable flexible conduit 164 is secured to the inlet side of the said vacuum pump and terminates in a suitable distribution chamber 166, which has a three way valve 168 operatively secured in the system. A plurality of conduits

150 lead from the said distribution chamber and are joined to their respective housings 146, one of which is shown in Figures 5 to 8. The purpose of installing a three way valve in the system is to release the vacuum when the valve is closed or shut off the housings from the vacuum supply.

Received in the bore of the said outlet 148 is a piston valve 170 having a flared portion 172 formed integral therewith. A toggle link 174 is pivotally received on a suitable perch 176 within the said housing 146. Secured to alternate ends of the said toggle link is the said piston valve 170 and a feeler 178 which projects through the base plate 138 by means of a suitable aperture 180 provided therethrough. If desired, a pair of the said toggle links 174 may be provided as disclosed in Figure 8. A suitable resilient pad, preferably soft rubber, is secured to the lower portion of the said base 138. Said resilient pad, indicated at 182, adapted to abut the cans 58 thereby forming a substantially airtight seal between the said cans and the vacuum chamber 184 in the housing 146. A suitable aperture 186 is provided directly through the said resilient pad and the said base plate 136 thereby affording communication between the top portion of a can 58 and the said suction chamber 184.

The said piston valve 170 is actuated by means of the rod 178 abutting the can. When the position as shown in Figure 7, the rod 178 pulls the piston 170 and the valve bearing skirt 172 downwardly thereby releasing the air trapped in the vacuum chamber to the vacuum pump 154. If by inadvertence a can of improper size is among the cans to be grasped, no suction will be lost through the associated aperture 186, since the valve 170, 172 is sucked into its closed position.

The function of the three way valve 168 is now more clear. After the base plate 138 along with all of its associated grasping mechanism is lowered on a bank of cans to be grasped and lifted, the three way valve is turned to its open position thereby allowing a vacuum to be formed above each can. A conventional hoist then lifts the plurality of cans 58 to be removed and carries said cans to their destination. The valve is then turned to the closed position thereby cutting off the suction produced by the vacuum pump 154. Further, when the valve is turned to its closing position the atmospheric vent 188 is exposed to the atmosphere or opened, thereby permitting atmospheric air or air under atmospheric pressure to be sucked into the vacuum chambers 184. Obviously this last operation will release all the cans 158.

While there has been described and illustrated a preferred embodiment of the instant invention it is apparent to those skilled in the art, that various changes including omissions and additions may be made herein without departing from the spirit of the invention.

Accordingly, limitation is sought only in accordance with the scope of the following claims.

Having thus described the instant invention, what is claimed as novel and improved is as follows:

1. In a can tray loading device, a stand, means for directing cans in a predetermined travel, endless means for conducting cans, power means on said stand, means for urging a bank of cans on said endless means, said last means driven by said power means, means responsive to the number of cans passing through said directing means for rendering said urging means operative, and stop means defining the limits of cans travel on said stand operable by said urging means, said last mentioned means including guides secured to said stand, a baffle disposed within said guides, an actuating bar secured to said urging means and cooperating with said baffle whereby said baffle may be operated upon movement of said urging means.

2. For use with an article handling apparatus, an article handling device comprising a stand, an endless conveyor carried by said stand, means for urging articles on said endless conveyor including a shelf secured to said stand, a pusher pivoted to said stand swingable over said shelf, and means for actuating said conveyor and said pusher including a motor drivingly connected with said endless conveyor, and a clutch connected between said pusher and said motor, means responsive to the actuation of said article urging means for rendering said clutch operative, drivingly connecting said motor and said pusher for a single reciprocatory cycle of operation of said pusher, a baffle having an opening therein mounted between rollers of said conveyor, a cam rod actuated by said pusher and disposed in said opening for lowering said baffle when the pusher urges articles on the conveyor.

3. For use with an article handling apparatus, an article handling device comprising a stand, a roller conveyor carried by said stand, means for urging articles on said conveyor including a shelf secured to said stand, a pusher pivoted to said stand swingable over said shelf, means for actuating said conveyor rollers and said pusher including a motor drivingly connected with said conveyor, a clutch connected between said pusher and said motor, means responsive to the actuation of said article urging means for rendering said clutch operative, drivingly connecting said motor and said pusher for a single reciprocatory cycle of operation of said pusher, a portion of said roller conveyor being mounted for pivotal movement, counterweight means for maintaining said portion in a raised position, said portion of the roller conveyor being downwardly movable when the weight thereon overcomes the counterweight means, and a stop disposed in the remainder of the conveyor which is lowered responsive to weight of articles acting on the conveyor.

4. For use with an article handling apparatus, an article handling device comprising a stand, a roller conveyor carried by said stand, means for urging articles on said conveyor including a shelf secured to said stand, a pusher pivoted to said stand swingable over said shelf, means for actuating said conveyor rollers and said pusher including a motor drivingly connected with said conveyor, a clutch connected between said pusher and said motor, means responsive to the actuation of said article urging means for rendering said clutch operative, drivingly connecting said motor and said pusher for a single reciprocatory cycle of operation of said pusher, a portion of said roller conveyor being mounted for pivotal movement, counterweight means for maintaining said portion in a raised position, said portion of the roller conveyor being downwardly movable when the weight thereon overcomes the counterweight means, and a stop disposed in the remainder of the conveyor raised and lowered responsive to said counterweight means, a baffle having an opening therein and mounted between rollers of said conveyor, a cam rod pivotally secured to and actuated by said pusher and disposed in said

opening for lowering said baffle when the pusher urges the articles on the conveyor.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,222,535	Crum	Apr. 10, 1917
1,247,722	Rogers et al.	Nov. 27, 1917
1,321,072	Mingle	Nov. 4, 1919
1,557,765	Nicholas	Oct. 20, 1925
1,558,691	McDermott	Oct. 27, 1925
1,751,487	McIntyre	Mar. 25, 1930
1,904,720	Douglass	Apr. 18, 1933
2,119,767	Anderson	June 7, 1938
2,131,816	Perkins	Oct. 4, 1938
2,147,055	Perkins	Feb. 14, 1939
2,331,018	Fedorchak	Oct. 5, 1943