July 14, 1953 F. WINTERS 2,645,328

APPARATUS FOR STACKING FLAT CANS

Filed Sept. 15, 1950 3 Sheets-Sheet 1

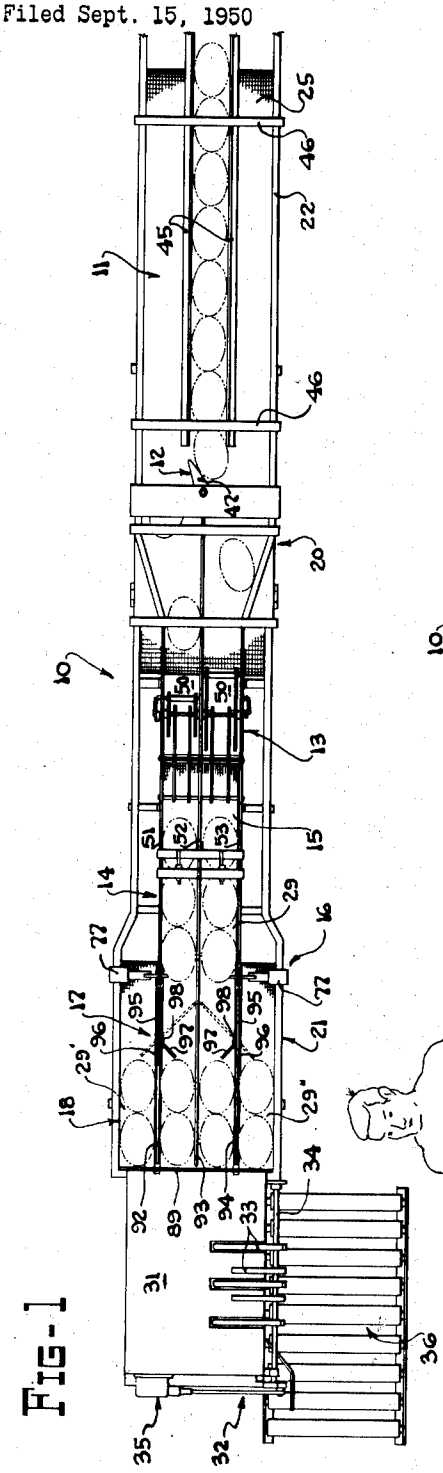


FIG-1

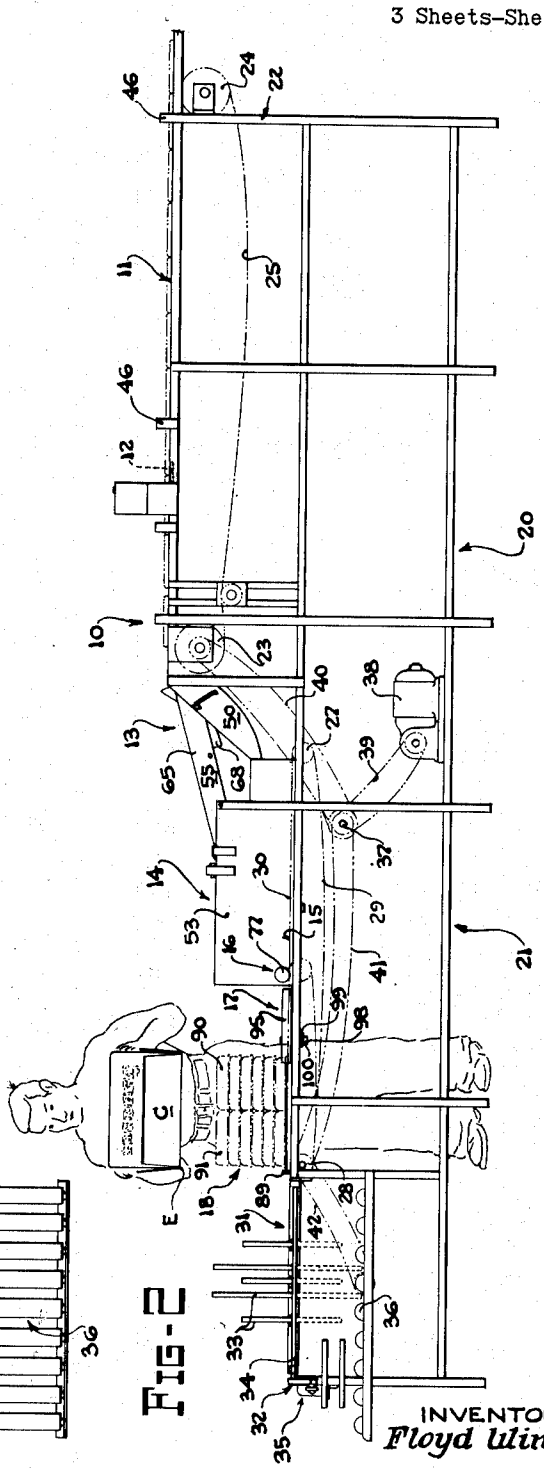


FIG-2

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APPARATUS FOR STACKING FLAT CANS

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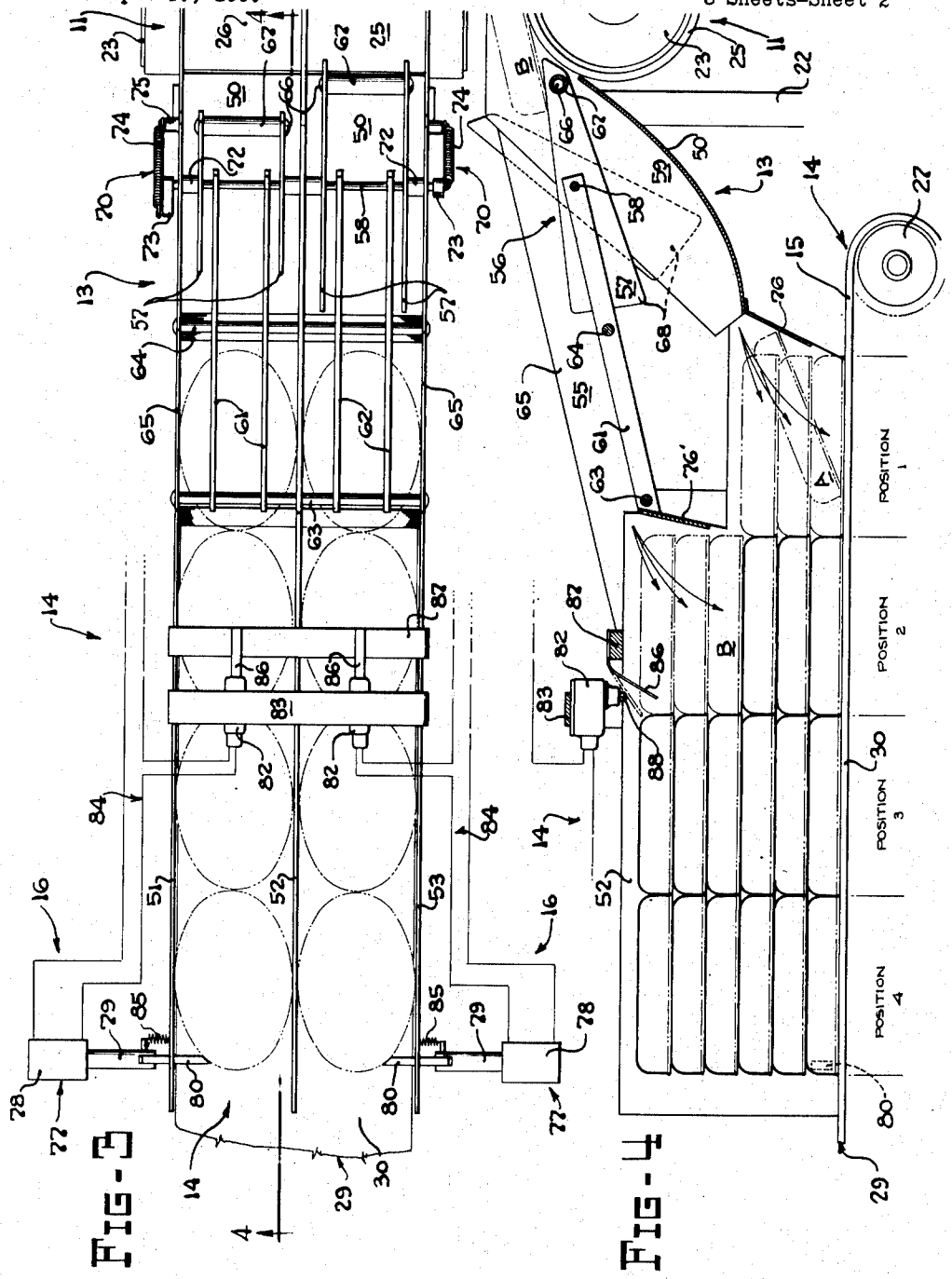


FIG-3

FIG-4

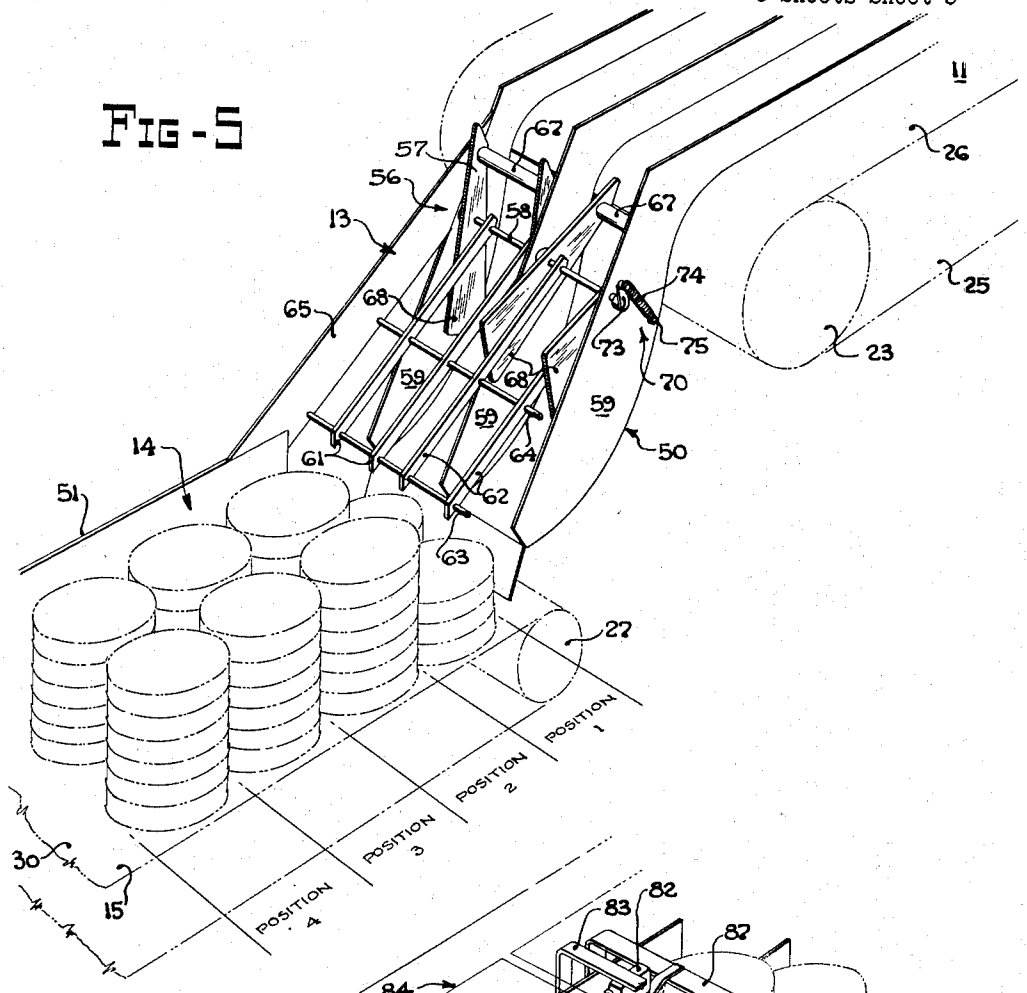
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July 14, 1953 F. WINTERS 2,645,328

APPARATUS FOR STACKING FLAT CANS

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FIG - 5



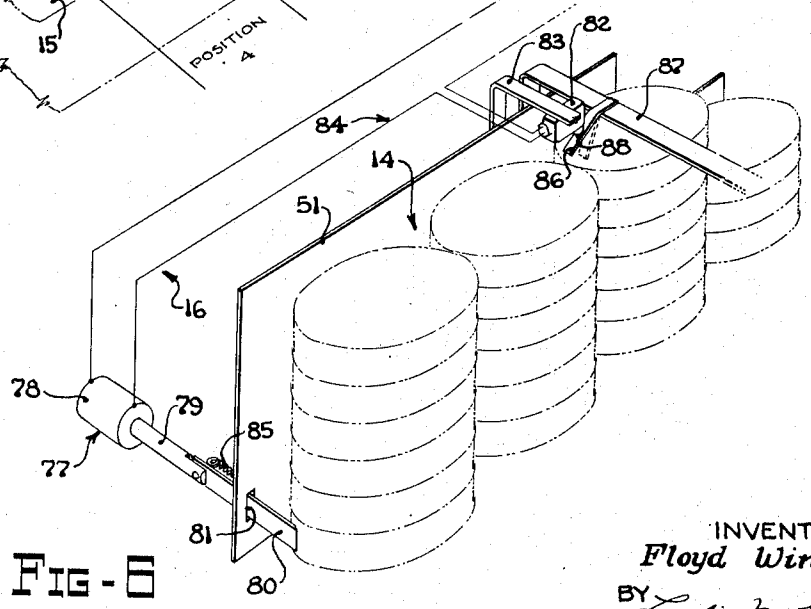


FIG - 6

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UNITED STATES PATENT OFFICE

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APPARATUS FOR STACKING FLAT CANS

Floyd Winters, Monterey, Calif.

Application September 15, 1950, Serial No. 184,937

18 Claims. (Cl. 198—35)

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This invention relates to can handling equipment and more particularly to apparatus for stacking cans incident to placement of the cans into cartons.

The device of the present invention is specifically directed to the stacking of flat type cans such as are used in the fish canning industry. Such cans are usually rectangular in shape with rounded corners, or are oval shape and in some cases round. The depth of these cans varies in accordance with the quantity of food stuff to be contained in them.

It is a principal object of this invention to provide an apparatus for automatically placing flat type cans in stacks of a predetermined number of cans in height and arranging such stacks in groups for confinement in cardboard cartons.

Another object is to provide an apparatus for stacking cans which is simple in construction, automatic and positive in operation, and highly efficient in use.

A further object is to provide an apparatus into which cans are fed in successive order for arrangement into stacks of predetermined height and for grouping of the stacks into uniform rows of order for reception into a carton placed over the stacks of cans by hand.

These and other objects and advantages of the present invention will become more apparent from a reading of the following specification in which:

Fig. 1 is a top view of an apparatus for stacking cans for placement into cartons.

Fig. 2 is a side elevational view of the apparatus shown in Fig. 1.

Fig. 3 is an enlarged top plan view of the can stacking portion of the apparatus shown in Fig. 1.

Fig. 4 is a longitudinal section of Fig. 3 taken along line 4—4 thereof.

Fig. 5 is a fragmentary perspective view of a portion of the can stacking device shown in Figs. 3 and 4.

Fig. 6 is a fragmentary perspective view of the other portion of the can stacking device shown in Figs. 3 and 4.

Referring to Figs. 1 and 2 of the drawings the apparatus 10 therein comprises a feed conveyor 11 including a deflector 12 for separating the incoming cans into a plurality of lines incident to admission of the cans into a dual level chute 13. The cans discharging from the dual level chute are stacked to predetermined levels in a can stacking chamber 14 on a discharge conveyor 15, movement of the stacks of cans being controlled

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automatically by control mechanism 16 intermittently operable to discharge the stacked cans in groups. Further separation of the stacked cans into additional tiers is accomplished by a novel gate means 17 operable by the stacks of cans as they are moved by the discharge conveyor toward a carton filling station 18 at the discharge end of the discharge conveyor.

The apparatus 10 includes a frame 20 of a length suitable to embody the foregoing principal portions of the apparatus. This frame 20 includes a section 21 of counter height and a section 22 at the forward or receiving end of the frame 20 which must be slightly higher than a stack of cans to be received on the discharge conveyor. This section 22 supports the feed conveyor 11 which comprises a driven pulley 23 and a floating pulley 24 over which is trained an endless belt in the form of a chain or link type web 25.

The floating pulley 24 is journaled for rotation about an axis transverse of the frame 20 and with the upper periphery of the pulley 24 tangent to the upper extremity of the section 22 of the frame. The driven pulley 23 is likewise journaled on the opposite extremity of the section 22 so as to support the upper reach 26 of the belt 25 parallel to the upper extremity of the section 22 of the frame. Suitable intermediate rolls, (not shown) extending transversely beneath the upper reach 26 of the belt, are journaled on the upper structural sides of the section 22 to maintain the reach 26 horizontal.

The discharge conveyor 15 comprises a pair of pulleys 27 and 28 around which a chain web or belt 29 is trained. The front pulley 27 freely floats in bearings disposed on the counter height section 21 slightly in advance of the driven pulley 23 of the feed conveyor. The rear pulley 28 is disposed sufficiently beyond the front pulley 27 to accommodate the can stacking chamber 14, gate means 17 and the carton filling station 18 hereinbefore mentioned.

Both pulleys 27 and 28 are disposed with their upper peripheries at counter height level so as to support the upper reach 30 of the belt 29 at counter height, there being underlying rolls (not shown) beneath the reach 30 to maintain the latter horizontal.

Beyond the discharge end of the discharge conveyor 15 the frame 20 is provided with a flat top table 31 comprising a part of a carton turning device 32. This device 32 may be of any well known construction, the one in the present disclosure including right angled arms 33 disposed

to receive a filled carton in inverted (upside down) position. The arms 33 turn on an axis 34 through operation of a drive mechanism 35 for turning the filled cartons over onto a roller conveyor 36 by which the filled carton (open side up) is conveyed to a carton sealing machine (not shown).

All of the conveyors herein are driven from a common countershaft 37 suitably supported on the frame 20 adjacent a motor 38 bolted onto a platform provided on the frame. A belt 39 drivingly connects the motor 38 to the countershaft 37 and the latter is connected by belts 40 and 41 to the driven pulley 23 of the feed conveyor and the rear pulley 28 of the discharge conveyor respectively. The rolls of the roller conveyor 36 may be driven by a belt 42 from the rear pulley 28. The direction of movement of all conveyors is such as to advance cans from front to rear relative to the frame 20 and all belts are constantly driven so that movement of the cans is interrupted only by obstructing devices as later to be made apparent.

The cans are fed onto the feed conveyor in single file, usually directly from a labeling machine, and upon entering the feed conveyor pass between spaced rails 45 supported above the upper reach 26 of the belt 25 from overhead cross bars 46 carried by the upper section 22 of the frame.

The rails 45 terminate in advance of the deflector 12 also carried by overhead cross supports of the frame 20. This deflector 12 consists of a conventional butterfly valve 47 which may be operable by solenoids (not shown) when a can passes to one or the other side of the valve for changing the position of the valve 47 to deflect the next can to the opposite side of the valve. From the foregoing it will be apparent that two lines of cans flow toward the dual level chutes, it being obvious, however, that the number of lines of cans may be further increased provided the number of dual level chutes are similarly increased.

The dual level chute 13 comprises a stationary chute 50 secured at its forward end to the uprights of the upper section 22 of the frame and at its rearward end to partitions 51, 52 and 53 which form separate stacking chambers 14 for each line of cans. This chute 50 has its upper edge disposed tangential to the belt 25 as it turns over the pulley 23 so that cans discharging from the feed conveyor enter the chute 50.

The dual chute 13 in addition to the lower stationary chute 50 includes an upper chute 55 which acts to divert cans from the lower chute and position No. 1 to the upper chute and position No. 2. This upper chute 55 comprises a counterbalanced valve means 56 consisting of a pair of wedge shaped arms 57 pivotally mounted midway their ends on a shaft 58. This shaft 57 is supported by the upstanding side walls 59 of the lower, stationary chute 50.

Also secured to the shaft 58 are a plurality of rails 61 and 62 having their opposite ends secured to a crossbar 63 carried by the upstanding panels 51, 52, and 53 of the stacking chamber 14. These rails 61—62 are also supported intermediate their ends by a crossbar 64 carried by side walls 65 extending from the rails 45 on the feed conveyor to the outer panels 51 and 53 of the stacking chamber.

The arms 57 are joined at their forward or apex ends by a tie bar 66 carrying a lead sleeve 67 of suitable weight to counterbalance the rearward or enlarged ends 68 of the arms 57. The enlarged ends of the arms 57 are so formed as to extend into the path of a can sliding down the stationary chute 50 so that the descending can, upon striking the enlarged ends 68, tilt the arms 57 clockwise, Fig. 4. The apex end of each arm 57 is formed to fit close to the periphery of the feed belt 25 as it rounds the pulley 23. In this manner the next can discharging from the feed belt 25 slides down the upper chute 55. As a can sliding down the chute 55 passes the shaft 58 it weighs the upper edge of the enlarged end of the arms 57 down causing the valve means 56 to return toward its initial position (dotted lines, Fig. 4).

In order to effect a positive action in rocking the movable chute into one or the other of its extreme positions, an over center device 70 is associated with each of the pairs of arms 57. In other words, a sleeve 72 connected to the outermost of the arms 57 extends through the side wall 65 of the chute 50. A crank arm 73 extends from the sleeve 72 outside the side wall of the dual chute. A tension spring 74 has one of its ends secured to the free end of the crank arm 73 and its opposite end anchored to a pin 75 secured to the side wall 65. The pin 75 is disposed in a position to cause the crank arm 73 to rock to one or the other side of a center position as effected by initial movement of the movable chute by a can in the manner as previously explained.

Since flat or oval type fish cans are limited in length, the number of cans stacked from a particular chute is limited to a height less than the length of such can. Consequently, the lower edge of the chute 50 is disposed above the discharge conveyor 15 a distance suitable for this stacking height. In the present disclosure about three cans in height are the most that can be stacked from any one of the stacking chutes 50 or 55.

It should here be noted that the cans to be stacked have an integral container portion to which a lid is applied by a seamer in the usual manner. Consequently, the lid of these cans is depressed which is conducive to a partial nesting of the cans with respect to each other when they are stacked. In the present disclosure the cans are fed from the conveyor 11 upside down due to the fact that the cartons are to be placed over them and later inverted. Obviously, aside from this purpose, the cans may be fed in the present apparatus either right side up or upside down, as desired.

A deflector strip 76 is supported angularly below the lower edge of the chute 50 and terminates approximately one can height above the upper reach 30 of the discharge conveyor belt 29. The partitions 51, 52 and 53 forming the stacking chambers 14 extend along the receiving end of the discharge conveyor a number of can lengths. In the present disclosure four can positions, designated 1, 2, 3, and 4 (Figs. 3 to 5), are provided within the stacking chambers 14. At the rearward end of each chamber 14 a solenoid 77 is provided, its coil 78 being suitably mounted on the counter height frame 21 and its armature 79 movable in a direction transversely of the path of movement of the cans. Each armature 79 has a stop arm 80 extending through a guide passage 81 formed in the respective outside panel 51 or 53 so as to extend into the path of a can resting on the belt 29 for obstructing movement of the cans.

The cans on the upper reach 30 of the belt 29

are permitted to move intermediately dependent upon the completion of the second stack at position No. 2. This is accomplished automatically by a microswitch 82 disposed on a crossbar 83 above the panels 51 to 53.

As best seen in Fig. 6 the microswitch 82 controls a circuit 84 for supplying electrical current to the coil 78 of the solenoid. Since the coil 78 is normally de-energized, a spring 85 secured to the armature and anchored to the adjacent panel 51 or 53 urges the armature into fully withdrawn position so as to extend the stop arm 80 into obstructing position with respect to the cans at position No. 4. As soon as the last can arrives on the top of the stack at position No. 2 this last can engages a flexible finger 86 carried by a crossbar 87 to urge the same into engagement with the control button 88 of the microswitch 82. The circuit 84 is thereby closed causing current to flow through the coil 87 whereupon the armature 79 is withdrawn against the action of spring 85. Thus the stop arm 80 is withdraw from obstructing position with respect to the lowermost can in position No. 4 allowing the cans in all four positions (1 through 4) to move as a unit with the upper reach 30 of the discharge conveyor belt 29. As soon as the top can of stack No. 2 passes out of engagement with the finger 86 the microswitch 82 is released, breaking the circuit 84 whereupon the coil 78 is de-energized. Consequently, the spring 85 immediately pulls the armature 79 causing the stop arm 80 to again extend into can obstructing position. This time the stack which was previously at position No. 3 will be stopped at position No. 4 and all stacks to the rear of the latter will be obstructed.

The stack of cans thus released from position No. 4 moves with the belt 29 up to a depressable stop bar 89 by which the cans are stopped temporarily awaiting additional stacks to arrive. The depressable stop bar 89 is disposed between the carton filling station 18 and the table top 31 forming a part of the carton turning device 32.

The apparatus is set into automatic stacking operation preferably by filling up the stacks at positions No. 4 and 3 and one half the stack (three cans) at position No. 2, as indicated in solid outline in Fig. 4. The first can coming off of the feed belt 25 gravitates down the stationary chute 50 and is discharged onto the discharge conveyor as indicated at A, Fig. 4. As the leading end of can A strikes the moving belt 29 of the discharge conveyor 15 the can A is caused to fall flat on belt 29 in position No. 1 where it is obstructed from further movement by the cans in position No. 2.

As can A passed the enlarged end 68 of the arms 57 of the valve means 56 the latter was rocked clockwise Fig. 4 into full line position whereupon the second can B coming off of the feed belt 25 will gravitate over the top of the upper chute 55. Thus can B glides down the rails 61—62 and discharges onto the top of the half stack disposed in position No. 2. However, as can B passed the enlarged end 68 of the arms 57 of the valve means 56 the latter was rocked back to its initial or dotted line position, Fig. 4, thus opening up the stationary chute for the receipt of the next successive can.

The foregoing operation is repeated until three cans are deposited in position No. 1 and the sixth can arriving at position No. 2 engages the flexible finger 86 to operate the microswitch 82 whereupon the solenoids 77 are energized withdrawing the stop arms 80 from engagement with the cans in position No. 4. Thereafter all of the cans on the discharge conveyor 15 are advanced therewith until the topmost can in position No. 2 passes beyond the flexible finger 86. Thus the microswitch 82 is immediately released to break the circuit to the solenoid coils 78 whereupon the stop arms 80 and armatures are urged by springs 85 into can obstructing position.

The foregoing advancement of the stacks of cans within chamber 14 is reasonably sudden so that the next can discharging from the stationary chute 50 will repeat the operation as explained in connection with can A above.

It should here be noted that the cans discharging from the upper chute 55 into position No. 2 are guided by a deflector strip 76' supported angularly below the lower edges of the rails 61, 62. In this connection the momentum of the cans discharging from the rails 61, 62 is such that each can glides onto a preceding can. Thus each can discharged into position No. 2 finally comes to rest upon the preceding can due to the tendency of the cans to nest with respect to each other in the manner and for the reasons hereinbefore explained.

As best illustrated in Figs. 1 and 2, when a sufficient number of stacks of cans arrive at the carton filling station 18 a carton C is placed over them manually. The number of cans to a carton may vary with marketing desires and usually consists of 24 or 48 cans to a carton.

When 24 cans are to be placed in a carton only two tiers 90 and 91 discharging from the stacking chamber 14 need be employed. In this connection guide rails 92, 93 and 94 in alignment with the panels 51, 52 and 53, respectively, of the stacking chamber, are suitably supported above the upper reach 30 of the discharge conveyor belt 29 in a manner well known in the art.

When 48 cans are to be placed in a carton the aforementioned gate means 17 is employed. One such gate means is associated with each tier 90 and 91 by being placed in the outermost rails 92 and 94 respectively. Each gate means 17 comprises a Y-shaped lever 95 in which one arm 96 is straight and the other arm 97 diverges therefrom. Where these arms 96—97 converge a pin 98 extends downwardly from them and through a cross bar 99 carried by the counter height frame 21. A nut 100 on the end of the pin 98 secures the Y-shaped lever 95 to the frame 20 at either side of the discharge conveyor belt 29.

A supplemental belt 29' and 29'' is provided at the side of the main discharge belt 29 adjacent the rails 90 and 91, respectively. These belts 29' and 29'' are driven by the drive pulley 28 of the discharge conveyor so as to move simultaneously with the main belt 29 thereof. Consequently, as the gate means 17 functions to divert cans from the main belt 29, the diverted can is immediately picked up by the supplemental belt 29' or 29'' and continues to advance toward the depressable bar 89.

The lever 95 is arranged so that when its straight arm 96 is disposed in alignment with the rail 92 or 94 its other arm 97 extends into the tier 90 or 91 above the main belt 29. Thus when the first (1st) can passes the arm 97 the lever 95 is rocked from full to dotted line position (Fig. 1) so that the second (2nd) can is deflected from the main belt onto the supplemental belt 29' or 29''. After a can passes from the main to the supplemental belt it is beyond the pivot point of the

lever arm 96 and hence as the can advances with the supplemental belt the extended end of the arm 96 is pressed back toward alignment with the rail 92 or 94 with which it is associated. In this manner a row of four stacks of cans, 6 cans high, (24 cans) come to rest against the arresting bar 89 in the carton filling station 18. When a second similar row of 24 cans is in position behind this first row of 24 cans (Figs. 1 and 2) the entire 48 cans are ready for the reception of a carton C.

When the carton C is pressed down over the cans at the station 18 one edge E of the carton will be forced down upon the depressable bar 89 against the action of its springs. Thus the cans with carton over them are no longer obstructed for movement with the belt 29 and the filled carton is advanced onto the table top 31 of the carton turning device 32. Thereafter the depressable bar 89 is released to again assume can obstructing position at the end of the discharge conveyor 15.

When the filled carton on the table 31 is placed within the right angled arms 33 and the drive mechanism 35 therefor operated in the conventional manner, the shaft 34 is turned to invert the filled carton depositing it bottom side down upon the roller conveyor 36. Thence the cartons are conveyed to a carton sealing machine or are sealed by hand.

Having thus described the best mode of carrying out my invention it will be apparent that the mode described may be varied, modified or altered without departing from the spirit of my invention. I therefore desire to avail myself of all variations, modifications and/or alterations as fairly come within the purview of the appended claims.

What I claim as new and desire to protect by Letters Patent is:

1. Apparatus for stacking flat cans comprising means for feeding cans in single file, a can stacking chamber of a length to receive a plurality of laterally adjacent cans, for receiving cans from said feeding means, a moving belt at a lower level than said feeding means and forming a bottom for said chamber, a dual level chute between said feeding means and said chamber including a lower chute for directing cans onto said moving belt to a predetermined number of cans in height, yieldable means in said chamber for obstructing movement of the stacks of cans therein by said moving belt, said dual level chute including an upper chute discharging into said chamber one can length in advance of said lower chute for depositing an additional number of cans on a stack thereof previously stacked by said lower chute and can engaging means engageable by the topmost can of a stack of predetermined height stacked by said upper chute, said can engaging means being operatively connected with said yieldable means obstructing the cans for releasing the yieldable means from can obstructing position while a can is in engagement with said can engaging means.

2. Apparatus for stacking flat cans comprising a stationary chamber including a continuously moving bottom, means in said chamber for releasably obstructing movement of stacks of cans by said continuously moving bottom, means for feeding a single file of cans toward said chamber, and a dual level chute for receiving cans from said feeding means and for discharging said cans into said chamber, said dual level chute comprising a stationary lower chute disposed to direct cans into a first position in said chamber to a predetermined height, an upper chute disposed to direct cans into a second position one can length in advance of said first position, and at a greater height than said first chute, and trip means in said chamber above said second position engageable by the top can of a stack of predetermined height received therein and operable to release said can obstructing means whereby the completed stacks of cans in both positions advance a distance sufficient with the continuously moving bottom to move the stack of cans in the second position from beneath said trip means, and to move the stack of cans from the first position into the second position.

3. A can stacking device comprising a stacking chamber having a continuously moving bottom for advancing cans therethrough, releasable means adjacent said chamber and normally urged into the same for obstructing a predetermined number of stacks of cans therein to thereby provide a first and a second stacked can position of one can length each within said chamber, means for feeding cans in single file toward said chamber from a level above the same, a dual level chute between said can feeding means and said chamber including a lower chute terminating at a predetermined height above the continuously moving bottom of said chamber for discharging cans in stacked relation within the first can position in said chamber, and an upper chute terminating at a greater height than said lower chute above the moving bottom of said chamber to discharge cans into the second stacking position in said chamber on a partly formed stack advanced thereto from the first stacking position, and means mounted to release said releasable obstructing means upon the attainment of a predetermined height by the stack in the second can position in said chamber to free the stacks for movement by the moving chamber bottom.

4. A can stacking device comprising a stacking chamber having a continuously moving bottom for advancing cans therethrough, releasable means adjacent said chamber and normally urged into the same for obstructing a predetermined number of stacks of cans therein to thereby provide a first and a second stacked can position of one can length each within said chamber, means for feeding cans in single file toward said chamber from a level above the same, a dual level chute between said can feeding means and said chamber including a lower chute terminating at a predetermined height above the continuously moving bottom of said chamber for discharging cans into the same in stacked relation within the first can position in said chamber, an upper chute terminating above the moving bottom of said chamber at substantially twice the height of the terminal end of said lower chute therefrom for discharging cans in stacked relation into the second can position in said chamber, and on top of a stack thereof previously formed in said first can position valve means in said dual chute for directing alternate cans from said feed means into said lower and then into said upper chute, and means engageable by the last of a predetermined number of cans stacked in said second can position for operating said releasable means to withdraw the same from can obstructing position relative to said chamber to permit advance of the stacks of cans therein by one can length.

5. Apparatus for stacking flat cans comprising a can stacking chamber having two can stacking positions therein, each of said positions being disposed to receive cans one upon the other therein, said chamber having a continuously moving

bottom moving in a direction from a first toward a second of said can stacking positions, means in said chamber for releasably obstructing movement of cans in said chamber by said continuously moving bottom, a dual level chute between said can feeding means and said chamber including a lower stationary chute for depositing cans in stacked relation into said first position to the height of said lower chute, an upper chute for discharging cans in stacked relation into said second position, valve means mounted to direct alternate cans from said can feeding means into first one and then the other of said first and second positions, and means controlled by the top can of a stack of cans of predetermined height in the second position to release said obstructing means to free the stack of cans in the first position for movement by said bottom into the second position, and to free the stack of cans in the second position for movement by said bottom beyond said first and second positions.

6. Apparatus for stacking flat cans comprising a can stacking chamber having two can stacking positions each of said positions being disposed to receive cans in stacked relation one upon the other, said chamber having a continuously moving bottom moving in a direction from a first toward a second of said can stacking positions, means in said chamber for releasably obstructing movement of stacks of cans in said positions by said continuously moving bottom, means for feeding cans toward said chamber from a higher level than the latter, a dual level chute between said can feeding means and said chamber including a lower stationary chute for depositing cans in stacked relation into said first position to a predetermined height, an upper chute for discharging cans into said second position at a height greater than said predetermined height for the stack of cans in the first position, valve means in said dual level chute for directing alternate cans from said can feeding means into first one and then the other of said positions, and means in said chamber overlying said second position and engageable by the topmost can of a stack of predetermined height therein, said overlying means being operatively connected with said can obstructing means for releasing both stacks of cans for movement of the stack thereof in the second position beyond said overlying means, and for movement of the stack in the first position into the second position.

7. In an apparatus for stacking flat cans comprising a can stacking chamber having two can stacking positions disposed to receive cans stacked one upon the other, means for feeding cans toward said chamber from a higher level than the latter, a dual level chute between said can feeding means and said chamber including a lower stationary chute for depositing cans into a first of said positions at a predetermined height, and an upper chute for discharging cans into said second position at a predetermined height greater than that of said lower chute, valve means in said dual level chute for directing cans from said can feeding means alternately into the lower and upper chutes of said dual level chute, said valve means comprising an arm tiltably mounted midway its ends, and having one position for guiding said cans onto said upper chute whereby the cans so guided weigh down the arm to tilt the latter to a second position for admitting a succeeding can into said lower chute, a portion of said arm projecting into the path of movement of a can passing through the lower chute for tilting said arm back to its position for guiding cans onto the upper chute.

8. Apparatus for stacking flat cans comprising a dual level chute having an upper and a lower incline chute, means for feeding cans into said dual level chute, and valve means in said dual level chute for directing cans received from said feeding means alternately into the upper and then the lower inclined chute, said valve means comprising a pair of wedge shaped arms pivotally mounted midway their ends at the threshold of said upper chute to dispose the apexes of said arms adjacent said feeding means for the reception of cans therefrom, said wedge shaped arms being normally disposed with their enlarged ends extending slightly beyond parallelism with said inclined upper chute for depression by a can as it passes over said enlarged ends of said arms to tilt the apexes of said arms away from said feeding means whereby the next can discharged from the latter enters said lower chute, said enlarged ends of said wedge shaped arms being engageable by a can descending the lower chute for tilting said arms back toward normal position with their apexes in can receiving position relative to said feeding means.

9. Apparatus for stacking flat cans comprising a dual level chute having an upper and a lower inclined chute, means for feeding cans into said dual level chute, and valve means in said dual level chute for directing cans received from said feeding means alternately into the upper and then the lower inclined chute, said valve means comprising a pair of wedge shaped arms pivotally mounted midway their ends at the threshold of said upper chute to dispose the apexes of said arms adjacent said feeding means for the reception of cans therefrom, said wedge shaped arms being normally disposed with their enlarged ends extending slightly beyond parallelism with said inclined upper chute for depression by a can as it passes over said enlarged ends of said arms to tilt the apexes of said arms away from said feeding means whereby the next can discharged from the latter enters said lower chute, said enlarged ends of said wedge shaped arms being engageable by a can descending the lower chute for tilting said arms back toward normal position with their apexes in can receiving position relative to said feeding means, and an overcenter device operatively connected to said pivotally mounted wedge shaped arms for releasably maintaining the latter in one or the other of its extreme positions relative to said dual level chute.

10. The combination with a pair of inclined chutes disposed one above the other for directing cans into different positions of discharge and means for feeding cans in single file toward said pair of chutes for discharge into the lowermost one thereof, of valve means in the form of a counterbalanced extension of the uppermost one of said pair of inclined chutes comprising a movable can runway pivotally mounted at the threshold of said uppermost one of said chutes, said movable can runway including a wedge shaped arm pivoted therewith to dispose the enlarged end of said arm in the path of a can descending said lowermost one of said chutes for tilting said movable can runway toward substantial parallelism with the uppermost one of said chutes whereby the next can discharged from said can feeding means is received by said movable can runway for descent along said uppermost one of said chutes, said enlarged end of said arm being depressable by a can gliding thereover for tilt-

ing said movable can runway out of substantial parallelism with said uppermost one of said chutes to again dispose the enlarged end of said wedge shaped arm in the path of a can descending said lowermost one of said chutes.

11. The combination with a pair of inclined chutes disposed one above the other for directing cans into different positions of discharge and means for feeding cans in single file toward said pair of chutes for discharge into the lowermost one thereof, of valve means in the form of a counterbalanced extension of the uppermost one of said pair of inclined chutes comprising a movable can runway pivotally mounted at the threshold of said uppermost one of said chutes, said movable can runway including a wedge shaped arm pivoted therewith to dispose the enlarged end of said arm in the path of a can descending said lowermost one of said chutes for tilting said movable can runway toward substantial parallelism with the uppermost one of said chutes whereby the next can discharged from said can feeding means is received by said movable can runway for descent along said uppermost one of said chutes, said enlarged end of said arm being depressable by a can gliding thereover for tilting said movable can runway out of substantial parallelism with said uppermost one of said chutes to again dispose the enlarged end of said wedge shaped arm in the path of a can descending said lowermost one of said chutes, and an overcenter device for positively urging said movable can runway and said wedge shaped arm into one or the other of its positions relative to said pair of chutes dependent upon descent of cans along the same.

12. Apparatus for stacking flat cans comprising a table having a carton filling station at one end thereof and a can stacking chamber having two can stacking positions therein at the other end thereof, means for feeding cans toward said stacking chamber, a dual level chute between said feeding means and said chamber including a lower chute for discharging cans one by one to build up a stack thereof of predetermined height within a first can position in said chamber, an upper chute for discharging cans one by one into a second can position in said chamber upon a stack thereof previously built up at the first can position in said chamber, means urging the cans in the first chamber toward the second chamber, means releasably resisting action of said urging means, and means operable by the topmost can of a stack thereof of predetermined height received in said second can position for releasing the stacks of cans in both of said stacking positions for advance by said urging means a distance equal to one can length.

13. An arrangement according to claim 12 wherein the cans are advanced by a conveyor underlying the chamber, and gate means are mounted between the chamber and the carton filling station for diverting alternate stacks of cans from said second position into separate lanes for travel toward the carton filling station.

14. In a can stacking machine, a dual chute for receiving cans in succession for discharge alternately into a first and then into a second stacking position, said dual chute comprising a first chute discharging into the first stacking position and terminating at a height equal to substantially one half a predetermined height of a completed stack of cans, a second chute discharging into the second stacking position and terminating at a height to complete therein a stack of said predetermined completed height, means tending to advance cans in both stacking positions in a direction from the first toward the second stacking position, releasable means preventing such advance, means actuated upon the completion of a stack of cans of predetermined height in the second stacking position to free the completed stack for movement beyond the second stacking position and to free the partially completed stack in the first stacking position for movement into the second stacking position.

15. Apparatus for stacking flat cans comprising a can stacking chamber having a plurality of can stacking positions therein, means for feeding cans toward said chamber, stacking means mounted between said can feeding means and said chamber including a member for stacking cans to less than a predetermined height in a first of said stacking positions, and a member for completing a stack of cans to said predetermined height in a second of said stacking positions, counterbalanced means mounted for movement from one position wherein it directs cans from said feeding means to one stacking member, to another position wherein it directs cans from said feeding means to the other stacking member, said counterbalanced means having portions thereof positioned for engagement by a can directed to either of said stacking members for turning the counterbalanced means to direct the next can from said can feeding means to the other stacking member, and means for advancing stacks of cans in both stacking positions a distance equal to one can length upon attainment of said predetermined height by the stack in the second stacking position.

16. An arrangement according to claim 15 wherein the counterbalanced means comprises a pair of wedge shaped rails pivotally mounted intermediately of their ends.

17. In a can stacking machine in which flat cans are stacked to a predetermined height on a moving belt, releasable means adjacent the receiving portion of said belt for obstructing movement of cans out of a first and a second can stacking position thereon, means for feeding cans onto said moving belt in succession comprising a lower chute discharging into said first can stacking position from a height substantially comparable to the length of one of said flat cans above said belt and an upper chute discharging into said second can stacking position from a height substantially double the length of one of said flat cans above said belt for completing to said predetermined height a stack of cans received from said first can stacking position, control means overlying said second can stacking position operatively connected to said releasable means for releasing the stacks of cans for movement with said moving belt, and means engageable by the last can to be received in said second can stacking position for operating said control means until the partial stack of cans in said first can stacking position arrives at said second can stacking position.

18. Apparatus for stacking flat cans comprising a can stacking chamber having two can stacking positions therein, means for feeding cans into said stacking chamber, said can feeding means including a first means for discharging cans one by one to build up a stack thereof of predetermined height within a first can position in said chamber, and a second means for discharging cans one by one into a second can posi-

tion in said chamber upon a stack thereof previously built up at the first can position in said chamber, means urging the cans in the first chamber toward the second chamber, means releasably resisting the action of said urging means, and means operable by the topmost can of a stack thereof of predetermined height received in said second can position for releasing the stacks of cans in both of said stacking positions for advance by said urging means a distance equal to one can length.

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