Oct. 3, 1944. C. M. HESSON 2,359,522

CAN ARRANGING MECHANISM

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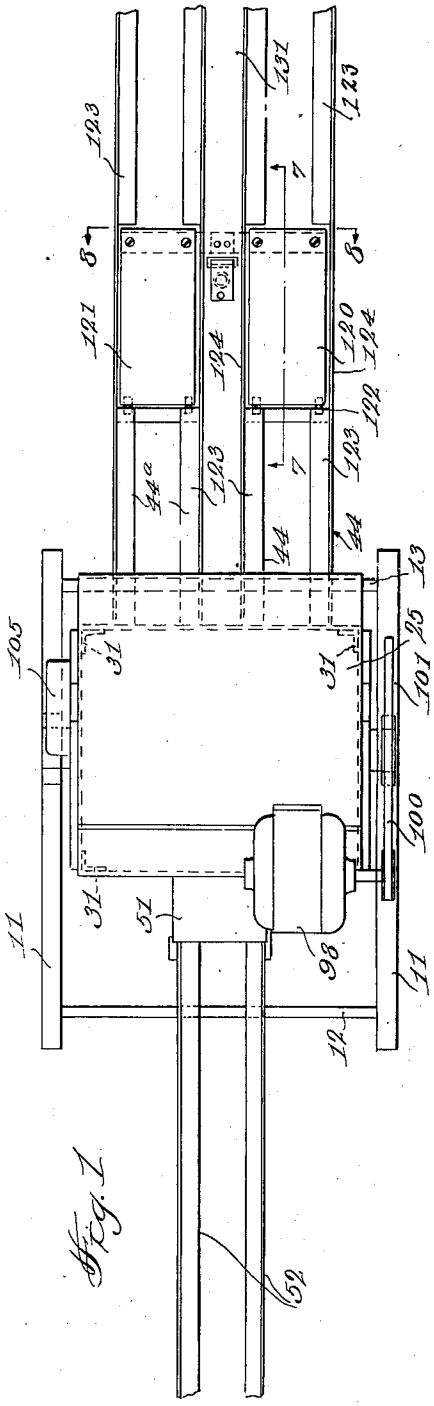


Fig. 7.

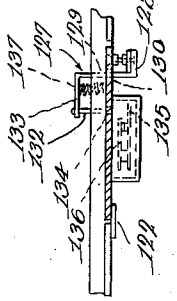


Fig. 8.

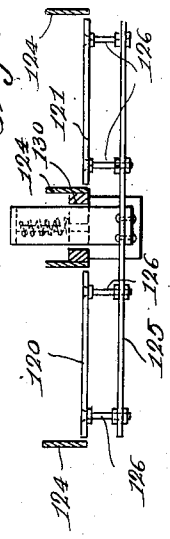
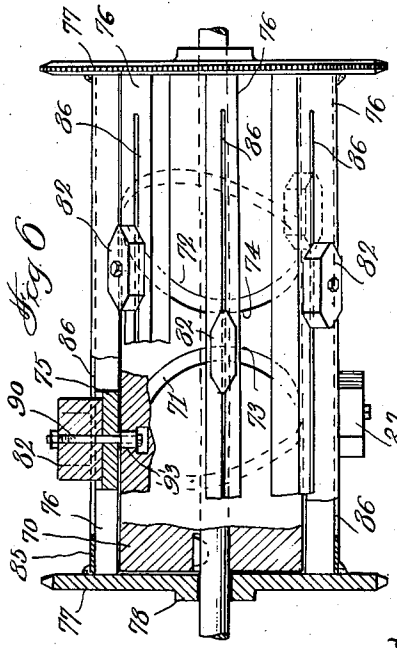


Fig. 6.



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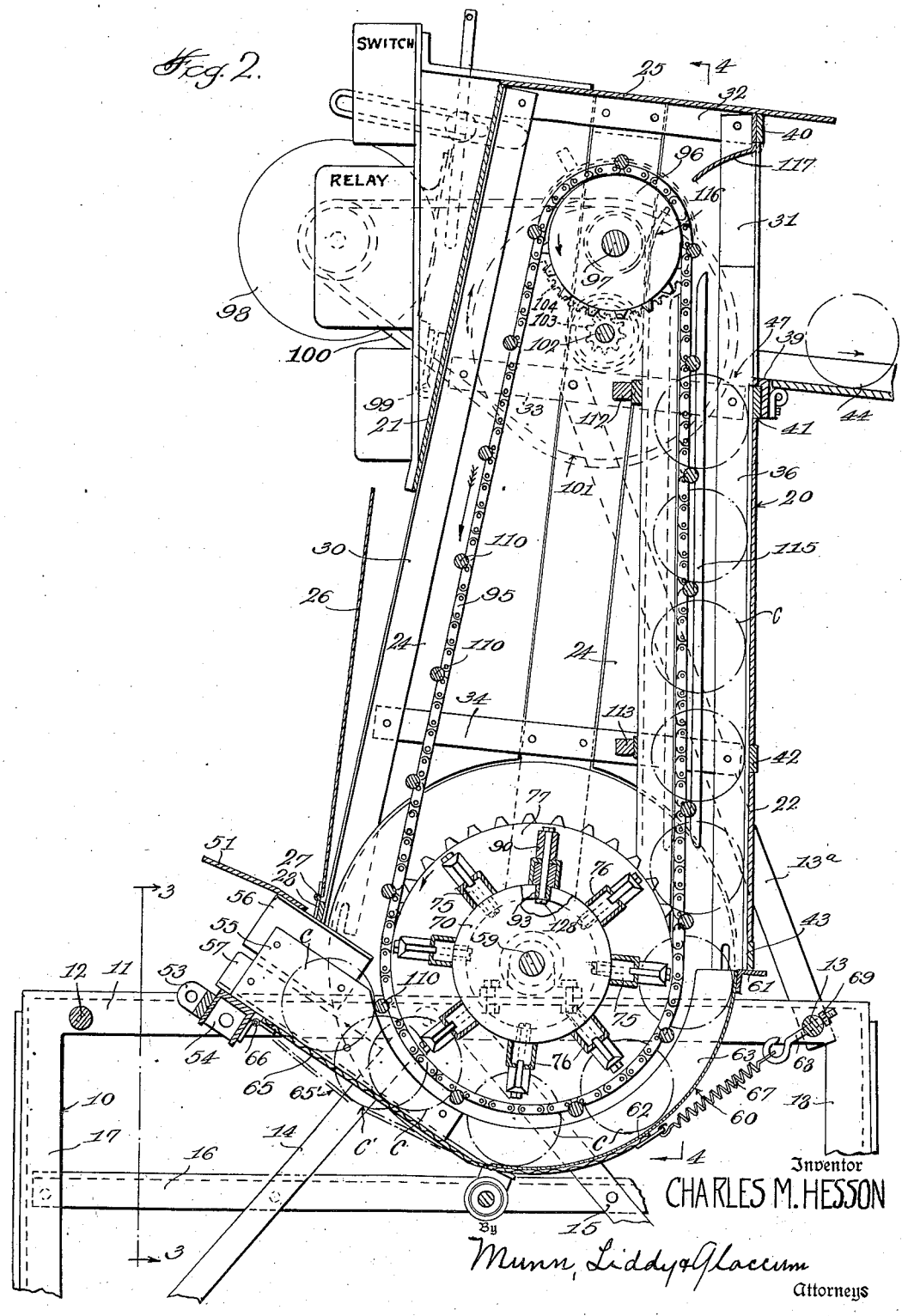
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CAN ARRANGING MECHANISM

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Fig. 2.



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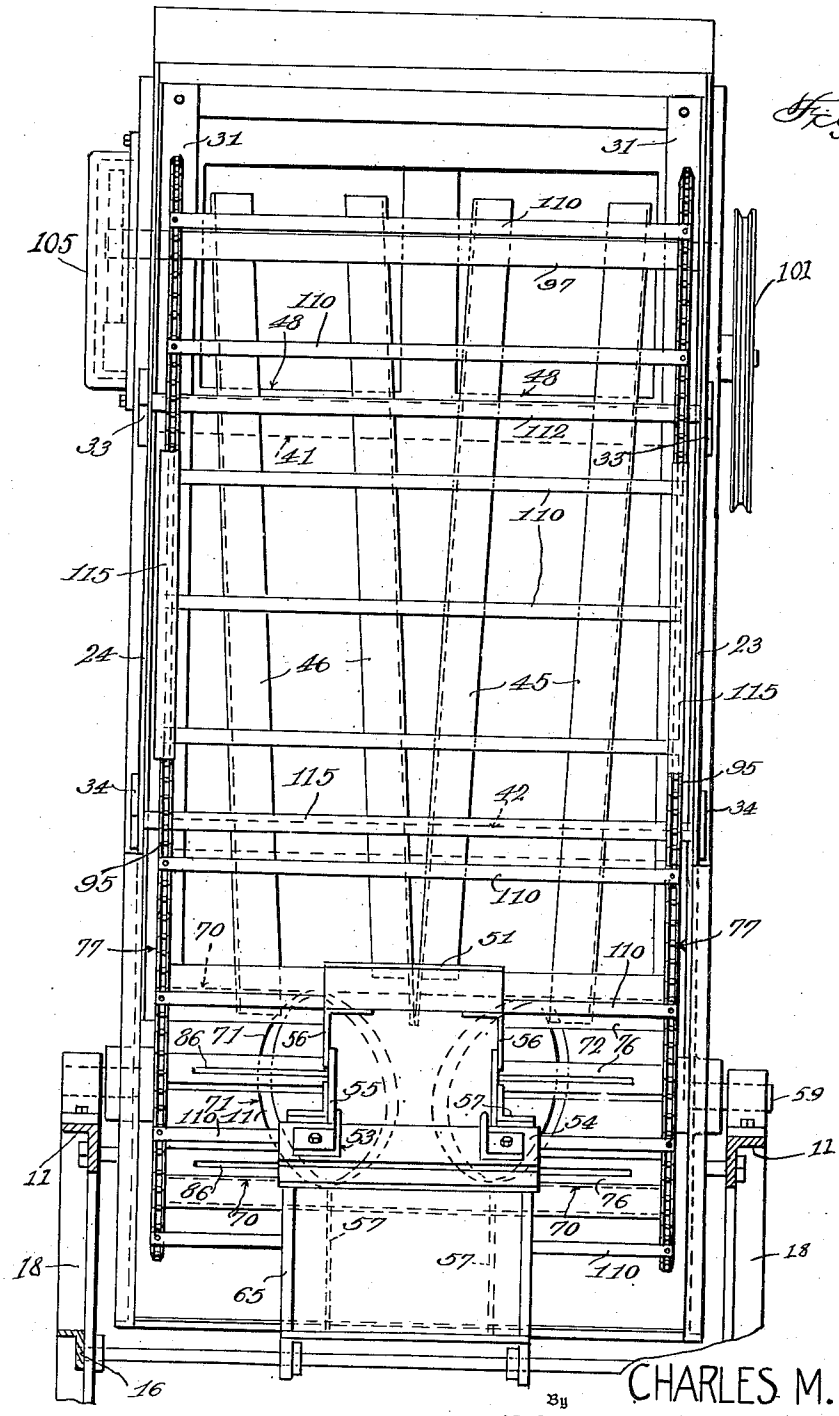
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Oct. 3, 1944. C. M. HESSON 2,359,522

CAN ARRANGING MECHANISM

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Fig. 3.



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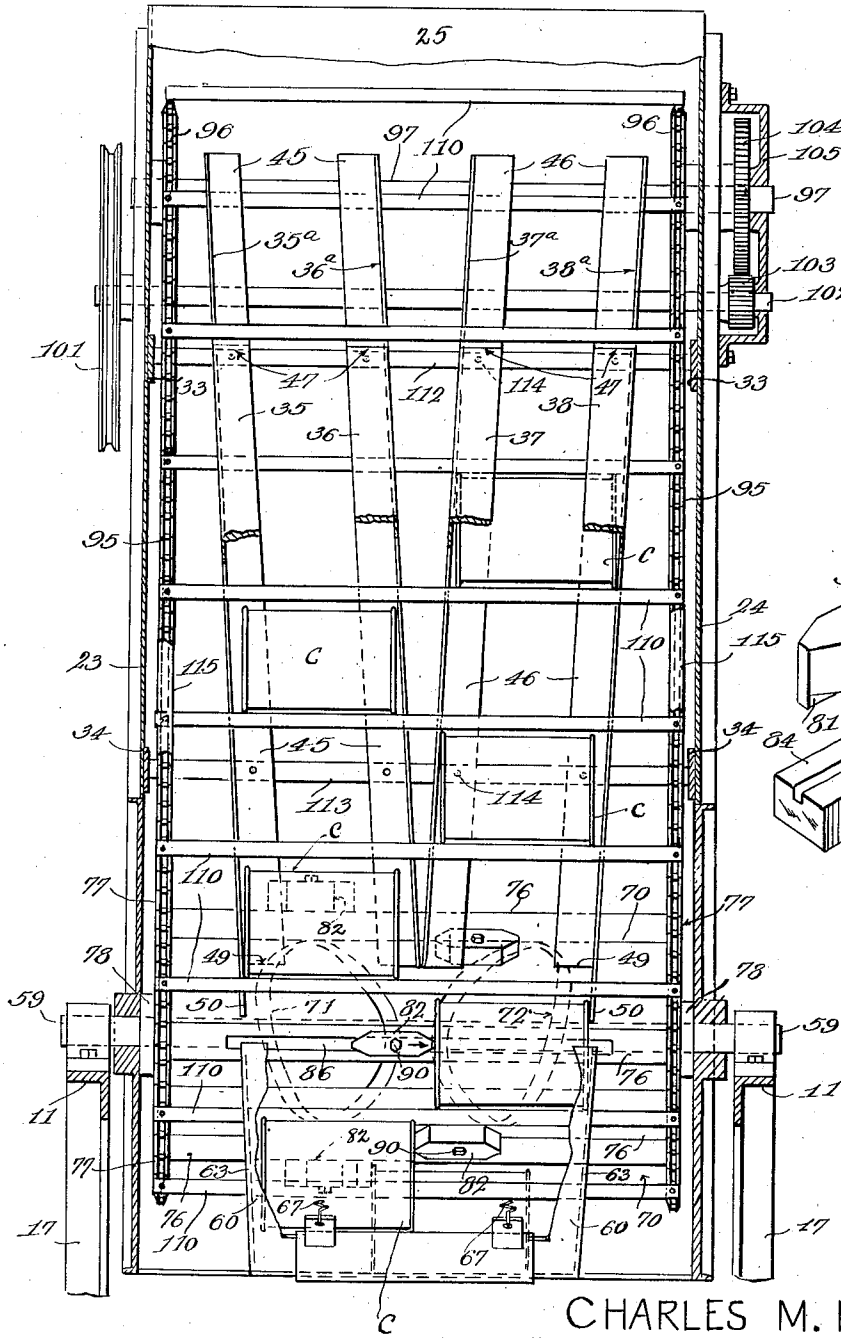
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CAN ARRANGING MECHANISM

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Fig. 4.



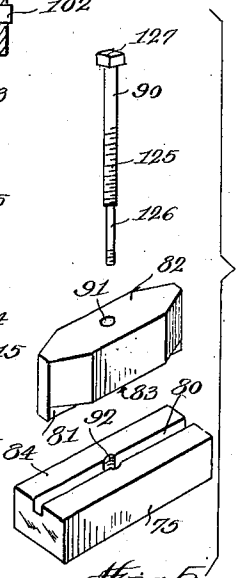


Fig. 5.

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Patented Oct. 3, 1944 2,359,522

UNITED STATES PATENT OFFICE

2,359,522

CAN ARRANGING MECHANISM

Charles M. Hesson, Hanover, Pa.

Application July 2, 1942, Serial No. 449,530

14 Claims. (Cl. 198—31)

This invention relates to a machine for converting a single line of articles into a plurality of lines.

An object of the invention is the provision of a machine which is adapted to receive a single line of articles with means therein for moving alternately disposed articles into one track of a double track and for moving the other articles into the second track so that when the articles emerge a double line of articles will be discharged to facilitate rapid packing of the articles in boxes.

Another object of the invention is the provision of a machine having means therein for transferring cans from a single track to a double track with the double track continuing to a discharge point so that a double line of cans will emerge to facilitate the rapid packing of the cans in containers for shipping purposes, means being employed for moving the cans along the single path after the cans have entered the machine and for moving the cans along the double path, the moving means being employed for operating a plurality of shifting means for alternately placing the cans in the double track.

A further object of the invention is the provision of a machine for converting a single line of cans or other articles into a plurality of lines with means for moving the cans in the single line toward and through the plurality of lines or paths, said moving means being adapted to alternately operate a plurality of shiftable means for forcing the cans in alternation from the single line into a plurality of lines, the single line of cans being supported in a machine by a flexible strip which may be depressed by a can when it has been engaged by an element of the moving means and when the can is forced directly downwardly instead of being carried along its definite path.

A further object of the invention is the provision of a machine for converting a single line of cans into a plurality of lines with means incorporated in the path of travel of the cans both in the single and plurality of lines, for stopping the operating parts of the machine when the cans are crowded along the plurality of lines or when the cans fail to follow in successive order along the single line.

This invention will be best understood from a consideration of the following detailed description, in view of the accompanying drawings forming a part of the specification; nevertheless, it is to be understood that the invention is not confined to the disclosure, being susceptible of such changes and modifications as define no material departure from the salient features of the invention as expressed in the appended claims.

In the drawings:

Figure 1 is a plan view of the machine constructed according to the principles of my invention.

Figure 2 is a vertical section showing the working parts in side view.

Figure 3 is a front view of the machine with parts removed and partly in section.

Figure 4 is a transverse vertical section taken along the line 4—4 of Fig. 2.

Figure 5 is a view in perspective of the can shifting means shown in detached relation.

Figure 6 is a view in elevation of the operating means for the can shifting elements shown partly in section.

Figure 7 is a fragmentary longitudinal section taken along the line 7—7 of Fig. 1.

Figure 8 is a transverse vertical section taken along the line 8—8 of Fig. 1.

Referring more particularly to Figs. 2, 3 and 4 it will be seen that a framework generally designated by the numeral 10 is formed of angle irons secured together and forming a base for supporting the machine. The base includes a pair of horizontally disposed bars 11 running longitudinally of the base and connected together by rods 12 and 13. Pairs of diagonally disposed reinforcing bars 14 and 15 are located at each side of the base member and these bars are connected intermediate their ends to reinforcing bars 16. The upper ends of the bars are connected to the adjacently disposed horizontal bars 11 and extend downwardly at an acute angle to each other. Legs 17 and 18 extend downwardly at right angles from the ends of the bars 11 for supporting the machine above the floor. While one particular form of support is illustrated and described many variations may be employed for the purpose.

A housing generally designated by the numeral 20 consists of a front plate 21, rear plates 22, side plates 23, 24 and a cover plate 25. The front wall 21 is provided with a door 26 which is hingedly connected at 27 to a transverse bar 28 at the lower end of the housing.

A reinforcing framework is located within the housing and secured to the various plates or walls thereof. This framework consists of pairs of front angle irons 30 and pairs of rear angle irons 31 to which the front, rear and side walls are secured. At spaced points bars 32, 33 and 34 are secured to the angle irons 30 and 31. As will be presently explained other pairs of spaced angle

irons 35, 36, 37, 38 form part of the double tracks through which cans are carried to a discharge table 39 and these bars aid in reinforcing the framework. Biased bars 13a are located at each side of the housing 20 and are connected at their upper ends to the bars 33 while the lower ends are perforated to receive the transverse rod 13.

It will also be noted that transverse bars 40, 41, 42, and 43 are secured in spaced relation to the framework which is enclosed within the housing 20. The space between the bars 40 and 41 is left open to provide openings 48 for the cans which roll out onto a table or platform 39 and are carried away by a pair of runways generally designated by the numerals 44 and 44a.

Two inner pairs 45 and 46 of tracks are located in spaced relation with the tracks 35 to 38 inclusive and the inner tracks are in line with the last mentioned tracks. The outer tracks 35 to 38 inclusive have the respective flanges 35a, 36a and 37a, 38a extending above the upper termini 47 of the tracks 35 to 38 inclusive. The upper termini 47 of the last mentioned tracks are in alinement with the platform 39 and the discharge tracks 44 and 44a as shown more particularly in Figs. 2 and 4. The reason the tracks 35 to 38 inclusive are cut away is to permit the cans generally designated by the numeral C to roll out over the table 47 and onto the tracks 44 and 44a in pairs while the side flanges 35a to 38a inclusive maintain the cans in the proper upward position so that when they are discharged they will roll onto the respective tracks 44 and 44a.

The lower ends of the inner tracks 45 and 46 which are located within the machine are cut away along one flange at a point indicated by the numeral 49 (Fig. 4), thus leaving a single side flange on the outer members of the tracks 45 and 46 as shown at 50 for engagement with the end closures of the cans C.

The cans are fed through an opening (Fig. 2) at the front of the machine and below a lip 51 from a single inlet track generally designated by the numeral 52 which is hingedly mounted upon ears 53 secured to a U-shaped bar 54 located transversely of the machine and secured to the side bars 11.

A pair of spaced plates 55 are secured to angle irons 56 and 57. These angle irons are secured in any well known manner to the frame and housing of the machine. The angle irons extend inwardly and terminate at a point adjacent a vertical plane passing through the longitudinal axis of a shaft 59.

A curved metal member 60 is secured to a transversely disposed angle iron 61 at its upper rear end. This curved member has a base portion 62 upon which the cans are adapted to ride and a pair of vertically disposed side flanges 63 as shown in Figs. 2 and 4. The ends of the cans are adapted to engage the side flanges for maintaining the cans in the proper position to be guided into the paths between the pairs of tracks 45, 35, 36 or between the tracks 46 and 37, 38, at a time when the cans are being shifted from a single path in alternation to the double path which leads from the machine.

As shown more particularly in Fig. 2, a flexible supporting member 65 is hingedly mounted at 66 on the inverted U-shaped bar 54. This flexible member extends downwardly beneath the lower edge of the angle irons 57 and is carried beneath the undersurface of the curved member 60. A pair of coil springs 67 are secured to the inner end of the flexible member and eye bolts 68 connect the outer ends of the springs with the transverse rod 13. These bolts are threaded after passing through perforations in the bar 13 and a nut 69 on each bolt is adapted to increase or decrease the tension on the springs and likewise on the flexible member 65 when the nuts are adjusted. The flexible member 65 serves a particular purpose and acts as a single track to receive the incoming cans before they are moved to the double tracks as will be presently explained.

Shifting elements for moving the cans in alternation from the single track on the flexible member 65 to the double discharge tracks is illustrated in Figs. 2, 4 and 6. A fixed cylinder generally designated by the numeral 70 is provided with a pair of cam tracks 71 and 72 at the surface thereof. These tracks extend around the cylinder in opposite directions with the portions of the respective cam tracks which are indicated by the numerals 73 and 74 being located close together at the rear portion of the cylinder and where the cans C are positioned at their outermost limits either to the right or to the left of the machine as shown in Fig. 4, and where the cans are in a position to be carried either to one of the double tracks or to the other.

A pusher element is shown in Fig. 5 in separated condition and each element consists of a block or carriage 75 which is slidably mounted in a U-shaped bar 76 (Fig. 2) and a plurality of these bars are mounted in close contact and in circumferentially spaced relation on the outer surface of the cylinder 70. However, these U-shaped bars with their open faces in engagement with the cylinder walls are revolved around the stationary cylinder since they are connected at their ends to a pair of disks 77 which have their hubs 78 rotatably mounted on the stationary shaft 59.

Each member 75 has a longitudinal central slot 80 which is adapted to receive a depending rib 81 located at the underface of a pusher element 82. Since the rib 81 has greater depth than the depth of the slot 80 there will be a space between the bottom 83 of the member 82 and the upper face 84 of the member 75. This space is sufficient to slidably receive the bight portion 85 of a U-shaped bar 76. It will also be noted that the bight portion is provided with a slot 86 of restricted width so that the portions of the bight 85 of the member 76 will be neatly engaged between the bottom 83 of the member 82 and the upper surface 84 of the member 75. A rod 90 passes through perforations 91 in the member 82 and through an alined perforation 92 in the member 75. A roller 93 is mounted on the inner end of the rod 90 and is adapted to ride in one of the cam tracks 71 or 72 depending upon whether the pusher element is located to the right or to the left of a plane passing centrally and transversely of the cylinder 70 as shown in Fig. 6.

In view of the fact that a number of the U-shaped bars 76 are located around the cylinder 70, a similar number of pusher elements will be carried around the cylinder and will be alternately reciprocated back and forth by the pair of cam grooves 71 and 72.

The disks 77 due to the plurality of spaced teeth at their peripheries are in effect sprockets which receive chains 95 and these chains are extended upwardly and trained on sprockets 96 which are located in spaced relation at the upper

end of the machine and are secured to a shaft 97 which has bearings in the side walls of the housing.

A motor 98 is hingedly mounted at 99 on the front wall 21 of the housing or the motor if desired may be hingedly mounted on the top 25 of the housing. The position of the motor however is immaterial since either position mentioned above will give satisfactory results. This motor drives a belt 100 which in turn revolves a pulley 101 secured to a shaft 102. A gear 103 is secured to the outer end of the shaft 102 and meshes with a gear 104 which is secured to the shaft 97. Since the shaft 97 revolves the sprockets 96, the chains 95 will be driven as will be the sprockets 77.

The gears 103 and 104 are housed within a casing 105 secured to a side wall of the machine.

Referring more particularly to Figs. 2 and 4 it will be seen that a plurality of spaced rods 110 are connected to the chains 95 and these rods are adapted to be carried downwardly at the front portion of the machine as indicated by the arrow in Fig. 2. If the cans are being normally fed these rods will move downwardly and neatly engage between a pair of the cams and contact substantially a mid portion of the side wall of the cans when they are fed into the machine from the single track 52. However the uniformity of delivery may be disturbed in some manner so that a can may fall directly below the conveyor rod 110 whence the rod will press directly downwardly on the can along points which are in a plane passing vertically and diametrically of the longitudinal axis of the can. In that event the can will be forced downwardly on the flexibly supported section 65 of the incoming track and since the member 65 is resiliently supported by the springs 67, the member 65 will give sufficiently until the conveyor rod slips over the top of the can whence the next oncoming conveyor rod will be engaged between a pair of cans so that the cans will be moved forwardly and upwardly to the discharge point at the table 39.

The inner pairs of tracks 45 and 46 are secured to transverse bars 112 and 113. These bars have their ends secured to the side walls 23 and 24 at points where the respective bars 33 and 34 are secured to said side walls. The tracks are riveted to the supporting bars 112 and 113 as shown at 114. A pair of guards 115 which are U-shaped in cross section embrace the chains at points adjacent the outlet of the cans at the rear of the machine. These guards are supported in any approved manner by the side walls of the housing.

It will be noted that the upper ends of one of the flanges as indicated at 116 in Fig. 2 are curved outwardly toward the discharge openings at the rear of the machine in order to aid in guiding the cans to the conveyors 44 and 44a A curved lip 117 which depends from the upper edge of the discharge openings 48 cooperates with the curved portions 116 of the tracks 45 and 46 for aiding in discharging the cans onto the conveyors 44 and 44a.

As shown more particularly in Figs. 1, 7 and 8, the discharge conveyors 44 and 44a are provided at points with a device for stopping the motor 98 when the cans are held on the conveyors due to some disturbance in the uniform delivery of the cans to the packing machine. When this happens the weight of a can or cans will be sufficient to depress a lever which will open the switch to the motor.

The specific embodiment of such a device includes a pair of levers 120 and 121 which are hingedly connected at 122 to the respective tracks 44 or 44a. In view of the fact that each device is a counterpart of the other only one of the devices will be described and the same reference numerals will be employed in each case. It will be noted that the angle irons 123 which form the bottoms and the side walls of the tracks 44 and 44a are cut away so that the levers 120 and 121 will span the space between the side flanges 124 of the angle irons 123 whereby the depressible levers may be freely moved between the side flanges.

A rod 125 extends transversely of the tracks 44 and 44a adjacent the forward end of each lever 120 and 121 and in spaced relation with the free ends of said levers. The rod is connected by depending bolts 126 which are rigidly secured at their upper ends to the levers 120 and 121 and at their lower ends to the rod.

An angularly shaped arm 127 has its lower portion 128 secured to the rod 125 and then has a vertical portion 129 extending through an opening 130 in a longitudinally disposed spacing bar 131 which is located between the pairs of tracks 44 and 44a and secured thereto in any approved manner. A pin 132 is secured to the free end of a horizontal portion 133 of the member 127 and this pin is adapted to be moved through an opening 134 formed in the bar 131 to engage a spring contact member 135 carried by a casing 136 secured to the underface of the bar 131. A stationary contact member 136 is located above the member 135 and is normally in engagement with the member 135 for closing the circuit to the motor 98. A coil spring 137 located between the bar 131 and the horizontal member 133 of the arm 127 tends to maintain the member 127 in its uppermost position and also tends to maintain the levers 120 and 121 in a horizontal plane which passes through the bottom flanges of the angle irons 123.

The operation of my device is as follows: The cans are fed through the single track 52 into the front end of the machine and the cans as shown at C roll downwardly on the inclined flexible member 65 towards the rigid curved member 60. The motor 98 at this time is in operation for driving the sprockets 96 on the shaft 97 and the chains 95 are likewise driven so that the sprocket wheels 77 are likewise revolved. In view of this the transverse conveyor bars 110 are moved downwardly in the direction indicated by the arrow in Fig. 2 and these bars will normally move between a pair of cans so that the oncoming bar will always engage the rear portion of the can and move it along the single track leading into the machine and below the revolving U-shaped bars 76.

Since the U-shaped bars are revolved around the stationary cylinder 70 and since the rollers 93 on the lower ends of the bolts 90 are moving through the cam grooves 71 or 72 as the case may be, the members 82 will be shifted back and forth as they revolve around the cylinder 70 by the U-shaped bars 76.

It will be seen that the cam grooves 71 and 72 are so constructed that each one of the pusher members 82 in alternation at each side of a vertical plane passing transversely through the center of the cylinder 70 will engage the cans in the track and continuously shift these cans gradually towards the side walls 63 of the member 60 which extends from the rear of the ma-

chine at the bottom in a curved manner and then downwardly and beneath the cylinder **70**. Each pusher element **82** when it engages an end of the cam moves the can completely to one side of the transverse plane so that the can will be in a position to be moved by the conveyor bars **110** into one of the pairs of tracks **45** and **46**, and since these conveyor bars move around the cylinder **70** and then upwardly at the rear of the machine the cans shown in Fig. 2 are carried upwardly until they reach the platform **39** whence they will roll out onto one of the respective tracks **44** or **44***a*.

The continued discharge of cans in double rows will be maintained until for some reason the cans are held against movement on the tracks **44** and **44***a* whence the weight of a can will depress the levers **120** and **121**.

As has been stated, the stoppage of the travel of the cans along the tracks **44** and **44***a* will cause the free ends of the levers to be depressed whereby the member **127** will be carried downwardly causing the pin **132** to engage the contact **135** and move it away from the contact **136** and since these contacts are included in the circuit (not shown) which controls the operation of the motor **98**, the motor will be stopped and will not be set in operation again until the cans on the tracks **44** and **44***a* begin to roll normally along these tracks to a packing machine.

A device similar to that shown in Figs. 7 and 8 may also be included in the single track **52** so that if for any reason the cans are held up in their normal rate of travel into the machine, a lever will be depressed causing the breaking of a circuit to the motor **98**. Such mechanism, however, has not been shown because the same is similar in construction to that illustrated in Figs. 7 and 8, as described above.

As has been previously described, when the cans are passing through the entrance to the machine and over the flexible member **65** in an orderly manner, the conveyor bars **110** should move down between a pair of cans as shown in Fig. 2 so that the bars will engage the longitudinal side wall of the can and carry them through the single track at the entrance and thence into the double tracks, after which they are discharged. However, a delayed action on the part of some of the cans may cause one of the cans to fall directly beneath a conveyor bar **110** as shown at C' in Fig. 2. When this occurs the bar will press downwardly on the can and since the ends of this track **65** are supported by the spring **67** at the inner end, said flexible member will be moved to the dotted line position as indicated at **65'**.

Since the bar **110** continues its movement a can may be forced forwardly or rearwardly, depending upon the exact point of contact between the can and the conveyor bar. However, the downward bend or flexing of the track **65** will take care of any strain imposed on the can or on the machine and the can will be freed from the pressure and will move in its normal manner thereafter through the tracks.

Each bolt **90** has a threaded portion **125** which after passing through the vertical passage **91** in the pusher element **82** is screwed into the threaded passage **92** in the block or base member **75**. The unthreaded portion **126** of the bolt acts as an axle for the roller **93**. A head **127** and a nut **128** hold the bolt and the roller in place.

I claim:

1. A machine for converting a single line of cans into a plurality of lines comprising a frame, a fixed axle in the frame, a cylinder secured to the axle and provided with an annular cam track in each half portion, a sprocket rotatably mounted on the axle at each end of the cylinder, means for rotating the sprockets simultaneously including chains trained on the sprockets, spaced rods secured to the chains, a single track for feeding cans into the spaces between the rods, a pair of tracks branching off from the single track and adapted to discharge cans in a double line from the framework, the moving rods being adapted to carry the cans along the tracks, and means having engagement with the cam tracks and carried by the sprockets in a circle around the stationary cylinder for contacting and moving alternate cans into one branching track while shifting the other cans into the other branching track, said cam tracks being oppositely disposed.

2. A machine for converting a single line of cans into a plurality of lines comprising a frame, a fixed axle in the frame, a cylinder secured to the axle and provided with an annular cam track in each half portion, a sprocket rotatably mounted on the axle at each end of the cylinder, means for rotating the sprockets simultaneously including chains trained on the sprockets, spaced rods secured to the chains, a single track for feeding cans into the spaces between the rods, a pair of tracks branching off from the single track and adapted to discharge cans in a double line from the framework, the moving rods adapted to carry the cans along the tracks, means having engagement with the cam tracks and carried by the sprockets in a circle around the stationary cylinder for contacting and moving alternate cans into one branching track while shifting the other cans into the other branching track, said cam tracks being oppositely disposed, the single track including a section adapted to be flexed when a can is depressed vertically downwardly by a moving rod.

3. A machine for converting a single line of cans into a plurality of lines comprising a frame, a fixed axle in the frame, a cylinder secured to the axle and provided with an annular cam track in each half portion, a sprocket rotatably mounted on the axle at each end of the cylinder, means for rotating the sprockets simultaneously including chains trained on the sprockets, spaced rods secured to the chains, a single track for feeding cans into the spaces between the rods, a pair of tracks branching off from the single track and adapted to discharge cans in a double line from the framework, the moving rods adapted to carry the cans along the tracks, channel members having the ends thereof secured to the sprockets and disposed in spaced circumferential relation with the cylinder, slidable means in the channel members and each having a projection, alternate projections being located in one cam track while the remaining projections being located in the other cam track so that when the channel members are revolved around the cylinder alternate slidable means will move alternately disposed cans in the single track laterally into one of the branching tracks while the other slidable means will move the other cans into the other branching track, said cam tracks being oppositely disposed.

4. A machine for converting a single line of cans into a plurality of lines comprising a frame having a single track for feeding cans into the machine and a pair of tracks merging at their inner ends into the outlet end of the single track

for dividing the single line of cans into a plurality of lines and for discharging a plurality of lines of the cans from the machine, means for moving the cans through the single and the pair of tracks, means for shifting alternate cans in the single track to one of the tracks of the pair, means for shifting the other cans in the single track to the other track of the pair, means operated by the moving means for the cans for causing the shifting means to be carried around in a circular path, a stationary cylinder provided with diversely arranged cam tracks, and means projecting from the shifting means into the cam tracks for causing said shifting means to be reciprocated back and forth across the path of the moving cans at the juncture between the single and the pair of tracks.

5. A machine for converting a single line of cans into a plurality of lines comprising a frame having a single track for feeding cans into the machine and a pair of tracks merging at their inner ends into the outlet end of the single track for dividing the single line of cans into a plurality of lines and for discharging a plurality of lines of the cans from the machine, means for moving the cans through the single and the pair of tracks, a stationary cylinder adjacent the juncture of the tracks provided with oppositely disposed cam tracks, a plurality of channel members revolved around the cylinder by the moving means, a shifter member slidably mounted in each channel member and having a depending roller, alternate rollers received by one of the cam tracks, the remaining rollers being received by the other can track, said shifter members being alternately reciprocated back and forth across the juncture of the cam tracks for moving the cans from the single track alternately into the pair of tracks.

6. A machine for converting a single line of cans into a plurality of lines comprising a frame having a single track for feeding cans into the machine and a pair of tracks merging at their inner ends into the outlet end of the single track for dividing the single line of cans into a plurality of lines and for discharging a plurality of lines of the cans from the machine, means for moving the cans through the single and the pair of tracks, a stationary cylinder adjacent the juncture of the tracks provided with oppositely disposed cam tracks, a plurality of channel members revolved around the cylinder by the moving means, a shifter member slidably mounted in each channel member and having a depending roller, alternate rollers received by one of the cam tracks, the remaining rollers being received by the other cam track, said shifter members being alternately reciprocated back and forth across the juncture of the cam tracks for moving the cans from the single track alternately into the pair of tracks, said single track having a flexible section adapted to be depressed when a can is forced out of the plane of travel on the single track by the moving means.

7. A machine for converting a single line of cans into a plurality of lines comprising a frame having a single track for feeding cans into the machine and a pair of tracks merging at their inner ends into the outlet end of the single track for dividing the single line of cans into a plurality of lines and for discharging a plurality of lines of the cans for the machine, means for moving the cans through the single and the pair of tracks and including spaced rods to receive the cans therebetween and traveling along the tracks, a pair of oppositely disposed cam means adjacent the juncture of the tracks, a plurality of shifter members encircling the cam means, spaced means revolving around the cam means by the can-moving means and slidably supporting the shifter members, means on each of the alternate shifter members cooperatively engaging one of the cam means for causing reciprocation of said members, and for moving alternate cans from the single track to one of the pair of tracks, means on each of the other shifter members and cooperatively engaging the other cam means for causing reciprocation of the other shifter members and for moving the other cans from the single track to the other one of the pair of tracks, and means for actuating the moving means.

8. A machine for converting a single line of cans into a plurality of lines comprising a frame having a single track for feeding cans into the machine and a pair of tracks merging at their inner ends into the outlet end of the single track for dividing the single line of cans into a plurality of lines and for discharging a plurality of lines of the cans from the machine, means for moving the cans through the single and the pair of tracks and including spaced rods to receive the cans therebetween and traveling along the tracks, a pair of oppositely disposed cam means adjacent the juncture of the tracks, a plurality of shifter members encircling the cam means, spaced means revolving around the cam means by the can-moving means and slidably supporting the shifter members, means on each of the alternate shifter members cooperatively engaging one of the cam means for causing reciprocation of said members and for moving alternate cans from the single track to one of the pair of tracks, means on each of the other shifter members and cooperatively engaging the other cam means for causing reciprocation of the other shifter members and for moving the cans from the single track to the other one of the pair of tracks, and means for actuating the moving means, the single track having a resiliently supported section which is adapted to be depressed by a can when said cans roll directly beneath a spaced rod.

9. In a machine of the class described having a single inlet track merging into a pair of outlet tracks, means for shifting articles from the single track to the pair of tracks in alternation including slidably mounted pusher elements movable towards and away from the single tracks and engageable with the articles, each pusher element being composed of a base member having a longitudinal groove in the top, an article engaging member having a longitudinal depending rib received by the groove, the last-mentioned member and the base member having vertically alined passages, a bolt received by the passages and having a portion threaded into the passage in the base member, and a roller on the bolt below the base member.

10. In a machine of the class described having an inlet track, spaced rods moving over the track and engaging the side walls of cans for forcing the cans along a definite path through the machine, means for moving the rods along the path, said track being formed of flexible material, means resiliently mounting the material so that when a can is engaged directly on the top portion by a rod and forced downwardly, the material will give until the can slips away from the contacting rod.

11. A can arranging mechanism for elevating and separating cans into a plurality of columns, comprising an endless movable conveyer so arranged that its flights move vertically, a rotary means supporting the lower end of the conveyer, laterally movable can engaging means supported by the rotary means for arranging the cans in a plurality of rows, a stationary means, cooperating means on the stationary means and the can engaging means for causing lateral shifting of said engaging means, vertical tracks to receive the cans to be elevated by the conveyer after said cans have been shifted to form vertical columns, means feeding a single row of cans into the lower end of the mechanism and a plurality of elevated discharge means receiving the cans from the rising columns.

12. A can arranging mechanism for separating cans into a plurality of rows, comprising an endless movable conveyer, a rotatable means supporting one end of the conveyer, laterally movable can engaging means slidably supported by the rotatable means for arranging the cans in a plurality of rows, means feeding a single row of cans into operative relation with the can engaging means, a stationary means embraced by the rotatable means, cooperating means on the stationary means and the can engaging means for causing lateral shifting of said can engaging means and likewise the cans into a plurality of rows, and a plurality of discharge means for receiving the rows of cans.

13. A can arranging mechanism for forming a plurality of columns of cans and for elevating the columns to a discharge point, comprising an endless movable conveyer so arranged that its flights move vertically, means feeding cans in a single row into the lower end of the conveyer, a rotatable means supporting the lower end of the conveyer, a stationary means, laterally movable can engaging means supported by the rotatable means, and adapted to be revolved around the stationary means, cooperating means on the can engaging means and the stationary means for causing lateral shifting of the can engaging means and likewise the cans into a plurality of rows, vertically disposed tracks receiving the rows of cans which are elevated by the conveyer in vertical columns, and a plurality of discharge means receiving the cans from the rising columns.

14. In a can arranging mechanism for elevating and separating cans into a plurality of columns, comprising an endless movable conveyer so arranged that its flights move vertically and in opposite directions, said conveyer having spaced transverse bars upon which the cans rest when fed downwardly into the descending flight of the conveyer and to support the cans when the flight is ascending, a plurality of tracks to form vertical discharging columns of the cans, means to feed cans into the descending flight, a single track receiving the cans, a rotatable means supporting the lower end of the conveyer, means shifting the cans from the single track to the plurality of tracks, the single track being curved around and outwardly of the rotatable means, said curved track being formed of flexible material and hinged at one end, a resilient means supporting the other end of the flexible material so that when a can is engaged accidentally and directly on the top portion by a rod during descent and forced downwardly the material will give until the can slips away from the contacting rod.

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