

July 21, 1931.

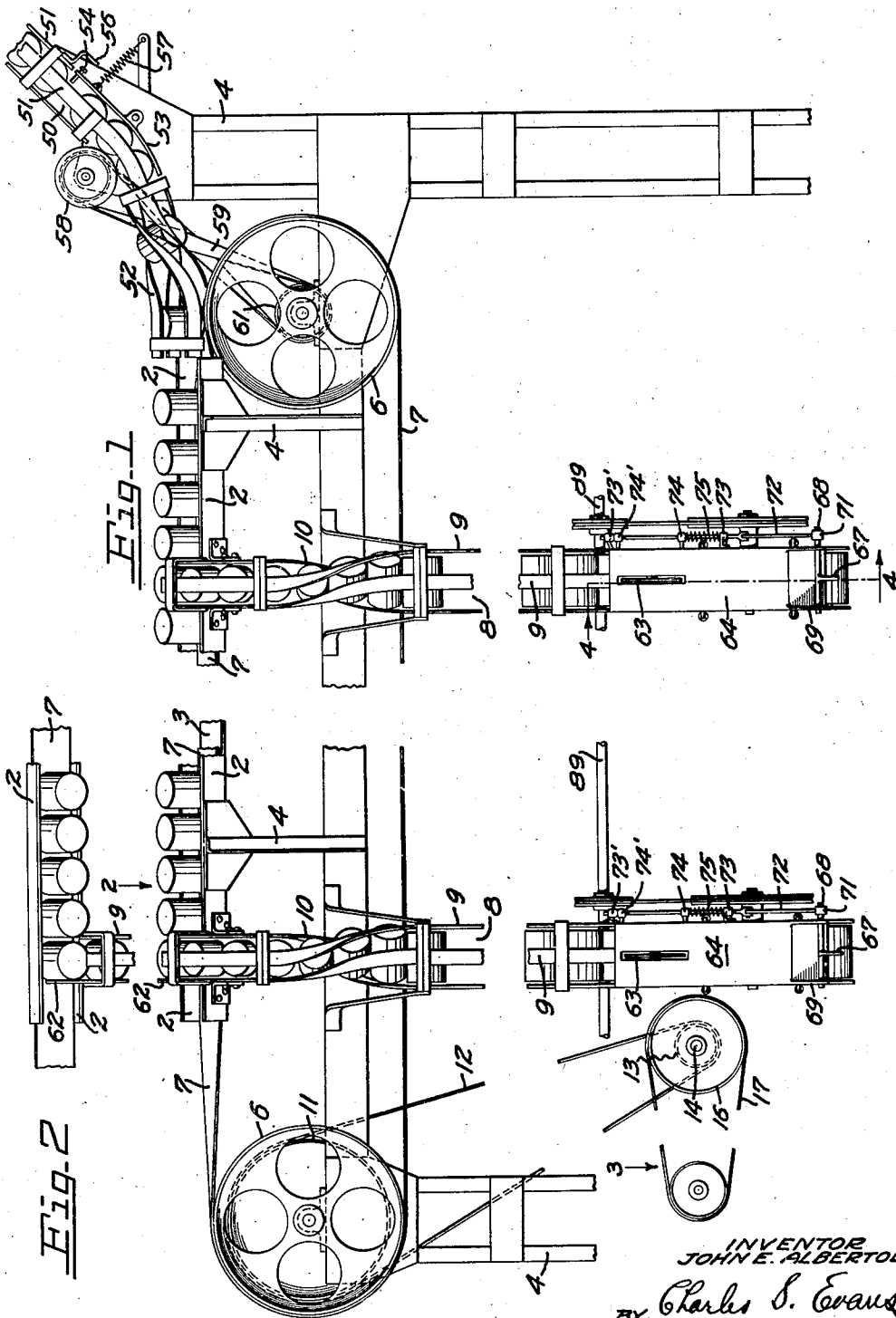
J. E. ALBERTOLI

1,815,029

DISTRIBUTING SYSTEM FOR OBJECTS

Filed April 24, 1929

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

Fig. 5

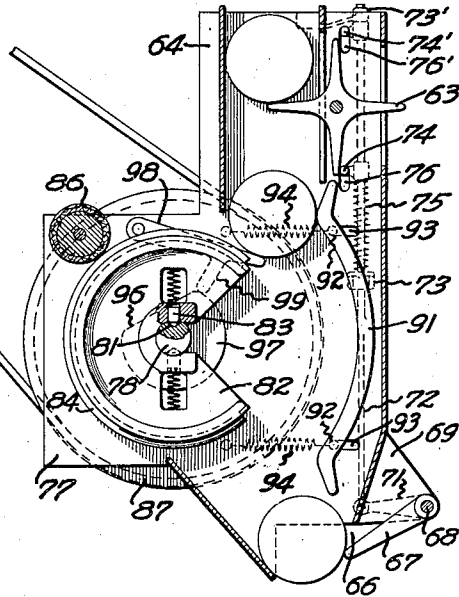
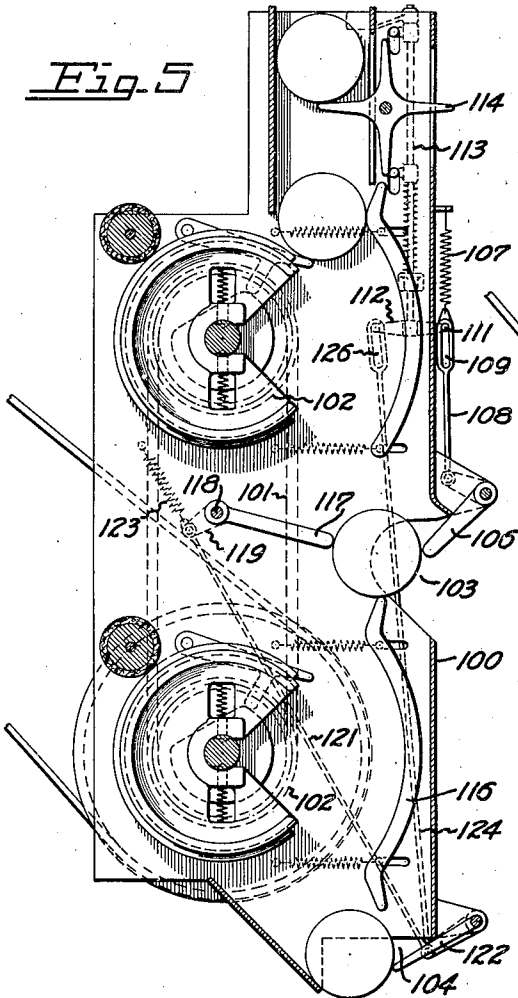


Fig. 4

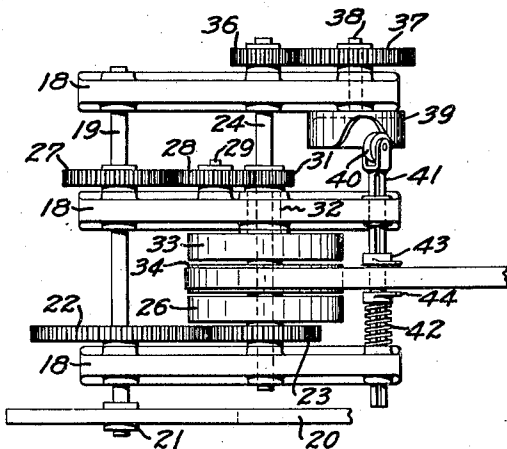
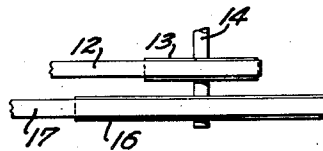


Fig. 3



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DISTRIBUTING SYSTEM FOR OBJECTS

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My invention relates to conveyors for objects, and particularly to conveyors for distributing cans.

One of the objects of the invention is the provision of a distributing system for the efficient and continuous feeding of objects to a plurality of chutes.

Another object of the invention is the provision of conveying mechanism in which means are provided for preventing jamming of objects over the mouths of the chutes.

Another object of the invention is the provision, in a conveying mechanism of the character described, of means for controlling the passage of objects onto the conveyor so as to deliver them in spaced groups, to prevent crowding of the objects.

Another object of the invention is the provision of a can conveying system for distributing the cans, and by which the cans are carried on end, thus eliminating noise which would otherwise occur by rolling of the cans, and also making it possible to move large size cans without injuring them, which might otherwise occur if they were rolled.

A further object of the invention is the provision of markers for the cans, positioned adjacent the chutes.

My invention possesses other objects and valuable features, some of which will be set forth in the following description of my invention which is illustrated in the drawings forming part of the specification. It is to be understood that I do not limit myself to the showing made by the said description and drawings, as I may adopt varying forms of my invention within the scope of the claims.

Figure 1 is a front elevation of a distributing system embodying this invention. Portions of the structure are omitted to shorten the view.

Figure 2 is a fragmentary plan view of the distributing system, the direction of the view being indicated by arrow 2 of Figure 1.

Figure 3 is a plan view illustrating the driving means for the conveyor belt, the direction of the view being indicated by arrow 3 of Figure 1.

Figure 4 is a vertical sectional view, partly in elevation; of a can marker used in

combination with a can chute, and illustrating means for controlling the passage of cans by the marker. The plane of section being indicated by line 4—4 of Figure 1.

Figure 5 is a view similar to Figure 4, but illustrating a plurality of can markers.

In terms of broad inclusion, the distributing system of this invention, when used for the distribution of cans, comprises a plurality of downwardly extending can chutes conveniently arranged adjacent the workers' stations and opening at their upper ends into a can trackway, the bottom of which is preferably inclined at an angle to the horizontal, so that cans moved therealong on end may slide from the trackway into the chutes. Means are provided for moving a succession of cans along the trackway; and to prevent jamming of the cans adjacent the mouths of the chutes, means are also provided for interrupting and/or intermittently reversing the movement of the succession of cans, so that any pressure between the cans is relieved by the reverse movement and the cans readily fall into the can chutes.

A feed chute is provided for passing or feeding cans onto the trackway; and to prevent crowding of cans, means are provided for passing them onto the trackway in spaced groups. Each can chute is provided with means to retain the cans therein, until the bottom can is extracted by the worker, whereupon the column of cans in each can chute moves downwardly one step and a fresh can enters at the top of the chute. It is preferred to position can markers in combination with the chutes, in order that the cans may be marked for identification purposes; and means are provided for controlling the passage of cans by the marker.

In greater detail, the distributing system of my invention comprises a trackway, substantially U-shaped to form the sides 2 and bottom 3, the trackway being positioned with its bottom at an oblique angle to the horizontal and supported on any suitable framework 4. Adjacent the ends of the trackway and journaled in suitable bearings on the framework are a pair of pulleys 6, over which runs an endless belt 7. The pulleys are so posi-

tioned that their upper surfaces are on a line with the bottom of the trackway; and the upper reach of the belt is supported on the bottom of the trackway in an inclined position.

5 Opening from the side of the trackway and extending downwardly therefrom are a plurality of can chutes 8 formed of bars 9, and thru which the cans pass in single file. Each chute, adjacent the trackway is provided with
10 a twist section 10 for changing the position of cans which pass from the trackway into the chute. The cans are carried on end on the belt 7; and upon movement of the belt along the trackway, the cans, reaching an empty
15 chute, will slide from the trackway and into the chute. Preferably, each chute leads to a worker's station, where cans are extracted from the chute.

Means are provided for moving the belt in
20 order to carry the cans along the trackway; and means are also provided for interrupting the motion at intervals to impart long forward steps to the belt combined with short backward steps, to prevent jamming of cans
25 over the mouths of the chutes. Mounted for rotation with one of the pulleys 6 is a wheel 11, over which runs a belt 12 connected with a pulley 13 mounted on a shaft 14. The shaft 14 also carries a pulley 16 over which runs a
30 belt 17 that may be driven by any suitable prime mover for imparting the back and forth movement to the belt 17, and hence to the belt 12 and conveyor belt 7 to perform the action described.

35 Although any suitable reverse mechanism may be employed, I prefer to use the reverse mechanism which is illustrated in Fig. 3. This mechanism comprises spaced bearing plates 18 in which is journaled the shaft 19
40 adapted to be driven at a comparatively slow speed from any suitable prime mover, by means of a belt 20 running over a pulley 21 fixed to shaft 19. Shaft 19 carries a large gear 22 in mesh with a smaller gear 23 fixed
45 for rotation with the shaft 24, also journaled in bearing plates 18; and a pulley 26 keyed to the shaft 24 is continuously driven in one direction by means of the gears 22 and 23. When the belt 17 is on the pulley 26, the conveyor belt 7 is moved in a forward direction
50 to carry cans along the trackway.

Mounted for rotation with shaft 19 is a second gear 27 in mesh with reverse gear 28 journaled on the stub shaft 29 fixed to the
55 central bearing plate 18; and the reverse gear meshes with a gear 31 mounted on the collar 32 journaled on the shaft 24. Collar 32 has also mounted for rotation therewith a pulley 33, which is spaced from pulley 26 and is
60 journaled about shaft 24. It is thus seen that the pulley 33 is driven continuously in a direction opposite to that of pulley 26; therefore when the belt 17 is on the pulley 33, the conveyor belt 7 moves in a backward direction.

Means are provided for alternately moving the belt 17 from pulley 26 to pulley 33, and from pulley 33 back to pulley 26 to impart to the conveyor belt 7 the back and forth movement. Journaled on the shaft 24 and positioned between the pulleys 26 and 33 is a
70 transfer pulley 34 over which the belt 17 may pass in its travel from one pulley to the other. Shaft 24 carries a gear 36 in mesh with a gear 37 mounted on the shaft 38 journaled in an end bearing plate 18. A cylindrically
75 shaped and peripherally notched cam 39, against which bears roller 40 mounted on the shaft 41 which is slidable in two of the bearing plates, is also mounted for rotation
80 with shaft 38; and a spring 42, surrounding the shaft 41 and interposed between a collar 43 fixed to the shaft 41 and an end bearing plate, urges the roller into engagement with the cam.

The collar 43 has prongs 44 which engage the sides of belt 17; and upon rotation of the cam 39, reciprocation of shaft 41 is effected, and the belt is moved back and forth between pulleys 26 and 33, by means of the
90 collar prongs 44. In order to provide a comparatively short backward movement of the belt 17 with respect to its forward movement, and thereby effect a corresponding movement of conveyor belt 7, cam 39 is notched for only
95 a short distance along its periphery.

Means are provided for passing or feeding cans onto the belt 7 moving along the trackway 2; and to insure against jamming and allow plenty of space when the cans are moved
100 backward, means are provided for delivering the cans onto the trackway in spaced groups. A feed chute 50 comprising the bars 51 and along which cans roll, is provided with a can twist 52 adjacent its discharge end for
105 delivering the cans onto the belt 7, so that the cans stand on end on the belt. The under side of the chute ahead of the twist is provided with a pivotally mounted section 53, forming a gate having an adjustable stop
110 54 at the end farthest away from the trackway, the stop being yieldingly urged against stop 56 fixed to the under side of the trackway, by means of a spring 57. When a predetermined number of cans contact with or are supported on the gate, it will close, elevating
115 stop 54 and thereby preventing further movement of cans onto the trackway; and when the cans are all off of the gate, it will open due to the action of spring 57, thereby permitting further traffic of cans.

In order to hold the gate closed and to move objects in contact with the gate until all the cans thereon are removed, a feed roller
125 58, adapted to contact with cans on the gate, is journaled above the gate. The roller 58 is driven, by a belt 59 from the pulley 61 mounted for rotation with the pulley 6 adjacent the feed chute, to insure against open-
130

ing of gate until all the cans thereon are fed onto the trackway.

It is thus seen that plenty of space is provided between groups of cans to preclude crowding; and due to the back and forth movement, jamming of cans over the mouths of the chutes is prevented.

To prevent a can moved backwardly from having its seam caught at the lower edge of the twist 52, the lower side thereof adjacent the trackway is cut away so as to project below the uppermost portion of the pulley 6 adjacent thereto. By this construction, cans may slide from the belt 7 into the twist when moved backwardly, thereby preventing obstruction of the trackway at this point. Also to insure against cans overrunning the trackway, a stop 62 is located at the far end of the trackway and adjacent the last can chute 8.

Means are provided for yieldingly retaining a column of the cans in each of the chutes 8. The positioning of the retaining means is such that when a chute is full of cans, the uppermost can of the column will lie substantially even with the side of the trackway 2, thereby permitting cans to travel along the trackway without obstruction. For this purpose, a star wheel 63 is placed in each chute, means being provided for holding the star wheel against rotation until the lowermost can in the chute is removed, but permitting rotation thereof to allow replacement of the removed can by another can.

Preferably the star wheels are used in combination with means for marking the cans for identification purposes; and, as illustrated in Figure 4, each of the star wheels is journaled adjacent the top of a can marker housing 64 which forms a continuation of the chute 8. The bottom of the housing is provided with an opening 66 thru which cans may be removed, a movably mounted arm 67 being positioned adjacent said opening for holding cans at the opening.

Means are provided for yieldingly holding the arm 67 toward the opening so as to retain the cans at the opening and to latch the star wheel, the arm being movable upon removal of a can thru the opening; and means, actuated by movement of the arm away from the opening are provided to release the star wheel thereby permitting another can to pass to the opening.

Arm 67 is fixed to a shaft 68 journaled in the flange 69 at the bottom of the housing; and the shaft 68 carries a second arm 71 mounted outside the housing. Arm 71 is pivotally connected to a rod 72 slidably mounted in lower and upper bearing lugs 73 and 73' respectively, mounted on the side of the housing. A lower arm 74 and an upper arm 74' fastened to the rod 72, project thru elongated slots 76 and 76' in the side wall of the housing. Spring 75, surrounding the rod 72 and interposed between the lower bearing lug

73 and lower arm 74, urges the rod 72 upwardly, thereby yieldingly holding arm 67 toward opening 66. Upward movement of the rod 72 is limited by the upper arm 74' abutting against the upper bearing lug 73'.

In this position of the rod 72, the lower arm 74 carried thereby engages the downwardly projecting spoke of the star wheel, preventing rotation thereof, and thus causing the star wheel to retain the column of cans in the chute. Upon movement of a can thru opening 66, arm 67 is moved outwardly, thus effecting downward movement of rod 72. This causes disengagement of the lower arm 74 and star wheel 63. Consequently the star wheel will rotate to allow passage of a can thereby. Only one can is allowed to pass, because when the rod 72 is lowered, the upper arm 74' will engage the oncoming spoke of the star wheel to prevent further rotation thereof. Upon complete removal of the can, arm 67 will snap back toward the opening 66 to hold the succeeding can, and rod 72 will move upwardly, thereby effecting reengagement of lower arm 74 with the star wheel.

A can marker is provided to mark the cans as they pass from the star wheel 63 to opening 66. Housing 64 is provided with rearwardly projecting flanges 77 which form an opening for the insertion of a marker into the housing. Journaled in the flanges 77 is a shaft 78 having a pair of diametrically opposite recesses 81. The marker comprises a substantially circular roller 82 having a peripheral notch to permit mounting on the shaft, the roller being provided with spring pressed pins 83 adapted to engage in recesses 81 to hold the roller on shaft 78.

Roller 82 is also provided with a marking ring 84 which is inked by means of inking roller 86, journaled in flanges 77 and contacting with marking ring 84. Driving means for the roller comprises pulley 87 mounted for rotation with shaft 78, and driven by means of belt 88 from a drive shaft 89 for operating the markers in each of the chutes 8.

Means are provided for guiding the cans by the marker so that they may be held thereagainst while being marked. Spaced from the marker is an arcuate shaped guide 91 having spaced pins 92 which project thru elongated apertures 93 in the wall of the housing. The pins are connected outside of the housing with springs 94 fixed to the wall of the housing. It is thus seen that the movably mounted guide effects travel of cans by the marker in the proper path, and at the same time causes them to bear against the marker to be clearly marked.

By the provision of a notched marking roller, the roller may be readily and quickly removed for cleaning purposes, or for replacement by another roller carrying a different marking ring. With this arrangement, the movement of cans by the marker should be

timed properly so that the open portion of the roller is not exposed as the cans pass thereby. For this purpose, a cam having a flattened portion 96 and an arcuate portion 97, is fixed for rotation with shaft 78; and a pivotally mounted arm 98, formed with a downwardly projecting lug 99 adapted to rest on the cam, is provided for holding the cans ahead of the marker, until the proper position of the marker is reached.

The position of the cam with respect to the marker is such that the lug 99 rests on the circular portion of the cam to cause arm 98 to hold a can until the marker is in proper position. When in proper position, the lug 99 engages the flat portion of the cam, thereby permitting arm 98 to fall and allow the can to pass by the marker.

In Figure 5 is illustrated two can markers spaced from each other and used in combination with a housing 100 forming a continuation of the chute. The purpose of this is to provide means for optionally marking the cans either once or twice for identification purposes, as may be desired. The construction of each of the markers is the same as that previously described with respect to Figure 4, the upper marker being driven from the lower marker by means of belt 101 passing around pulleys 102 mounted for rotation with the markers. The housing is provided with an upper opening 103 and a lower opening 104 thru which cans may be removed, the first marker being positioned adjacent and ahead of the upper opening 103, and the second marker being positioned ahead of the lower opening 104.

Means are provided for holding the cans at both openings until removed, the means adjacent the first opening 103 including the pivotally mounted arm 106 held toward the opening by spring 107 connected to a rod 108 having an elongated slot 109. The rod 108 is connected for movement with arm 106; and a lug 111 mounted on cross pin 112 fixed to the slidable rod 113 which coacts with star wheel 114 in a manner and by the same construction described with reference to Figure 4, is positioned to bear against the upper edge of slot 109. Upon movement of a can thru opening 103, the star wheel is released to permit one can to pass by the first marker, in a manner previously described.

Coacting with arm 106 and the lower marker guide 116 is a pivotally mounted arm 117, to provide a three point can supporting means adjacent the first opening 103. Arm 117 is fixed on shaft 118 journaled in the housing, and carrying a second arm 119 outside of the housing. Pivotaly connected to arm 119 is a rod 121 which is pivotally connected to movable arm 122 for holding cans adjacent the lower opening 104, a spring 123 being fastened to the rod 121 and housing,

for urging arm 122 toward opening 104 to hold the cans, and also urging arm 117 into engagement with cans at opening 103.

Means are provided for releasing the star wheel 114 upon movement of arm 122 away from the lower opening 104. For this purpose, a rod 124 is pivotally connected for movement with arm 122; and the rod is provided with an elongated aperture 126 adjacent the top thereof and is connected with cross pin 112 in a manner similar to the connection of rod 108.

By the described arrangement, cans that are marked only once are held at opening 103, and upon removal thru the opening 103, a fresh can will pass thereto, in a manner previously described. If it is desired to mark a can twice, removal of a can thru the lower opening 104 will effect movement of arm 122, which will pull rod 121 downwardly against the action of spring 123. This causes a raising of arm 117, and thereby allows a can held at the first opening to pass by the lower marker, and then to the lower opening 104 where it is held until removed. Removal of a can thru either of the openings will release the star wheel to permit passage of another can; and since spring 107 always urges arm 106 toward opening 103, cans will not fall therethru upon removal of a can thru the lower opening 104.

What is claimed is:—

1. A distributing system for objects comprising a trackway, a chute opening from said trackway, a feed chute for passing cans onto the trackway, means for moving the objects along said trackway, a movably mounted gate comprising a section of the feed chute for closing the chute to stop the passage of objects, and means for yieldingly holding the gate open to allow the objects to pass thereby, said gate being movable to close the chute after a predetermined number of objects contact therewith.

2. A distributing system for objects comprising a trackway, a chute opening from said trackway, a feed chute for passing cans onto the trackway, means for moving the objects along said trackway, a movably mounted gate comprising a section of the feed chute for closing the chute to stop the passage of objects, means for yieldingly holding the gate open to allow the objects to pass thereby, said gate being movable to close the chute after a predetermined number of objects contact therewith, and means for holding the gate closed until all the objects contacting therewith pass therefrom.

3. A distributing system for objects comprising a trackway, a chute opening from said trackway, a feed chute for passing cans onto the trackway, means for moving the objects along said trackway, a movably mounted gate comprising a section of the feed chute for closing the chute to stop the

passage of objects, means for yieldingly holding the gate open to allow the objects to pass thereby, said gate being movable to close the chute after a predetermined number of objects contact therewith, and means for moving objects in contact with the gate and for holding the gate closed until the objects pass therefrom.

4. A distributing system for objects comprising a trackway, a chute opening from said trackway, a feed chute for passing cans onto the trackway, means for moving the objects along said trackway, a movably mounted gate comprising a section of the feed chute for closing the chute to stop the passage of objects, means for yieldingly holding the gate open to allow the objects to pass thereby, said gate being movable to close the chute after a predetermined number of objects contact therewith, a roller spaced from and journaled opposite said gate and adapted to contact with the objects, and means for driving said roller.

In testimony whereof, I have hereunto set my hand.

JOHN E. ALBERTOLI.