Sept. 29, 1959 P. J. GOODMAN 2,906,434

CARTON DISPENSER

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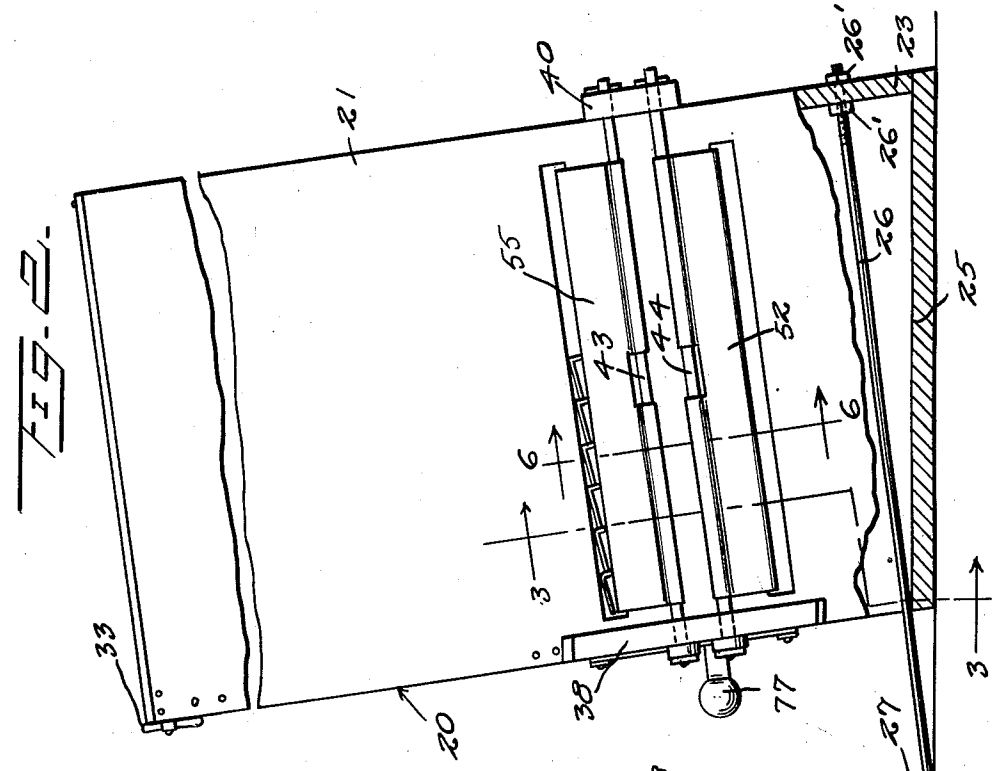


FIG. 2.

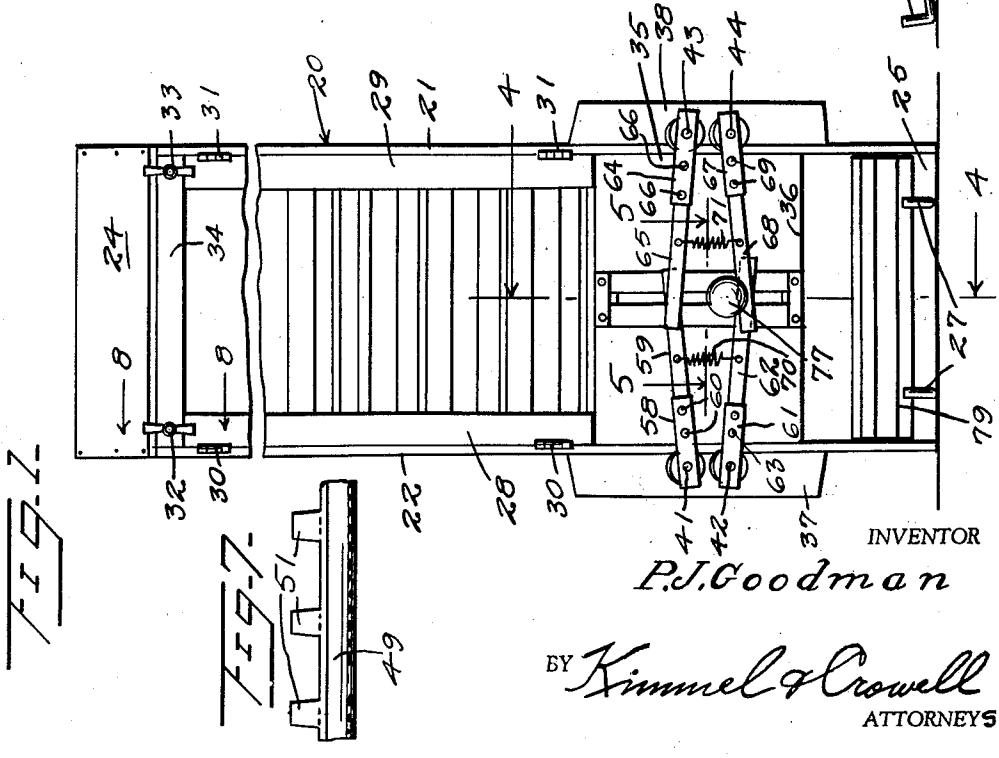


FIG. 1.



FIG. 7.

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FIG. 3.

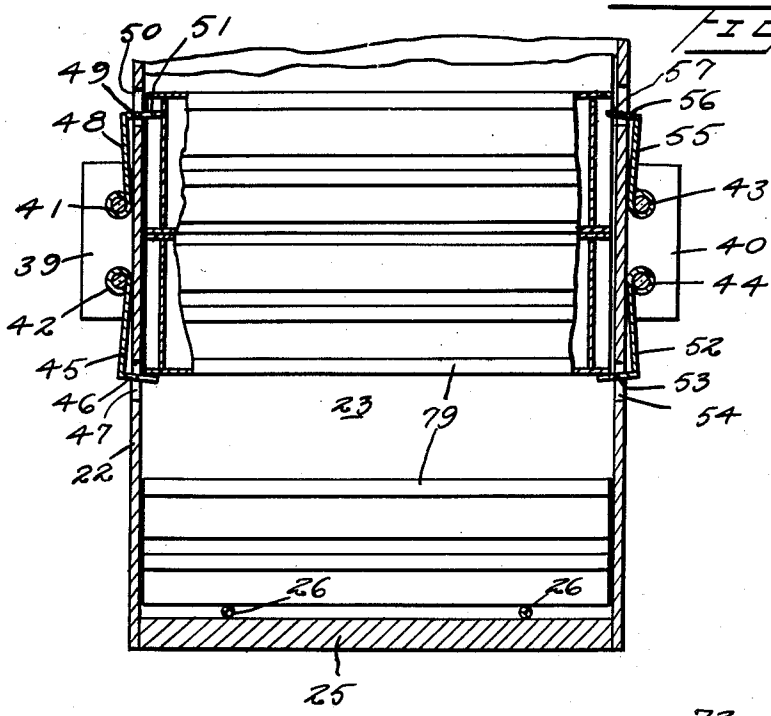
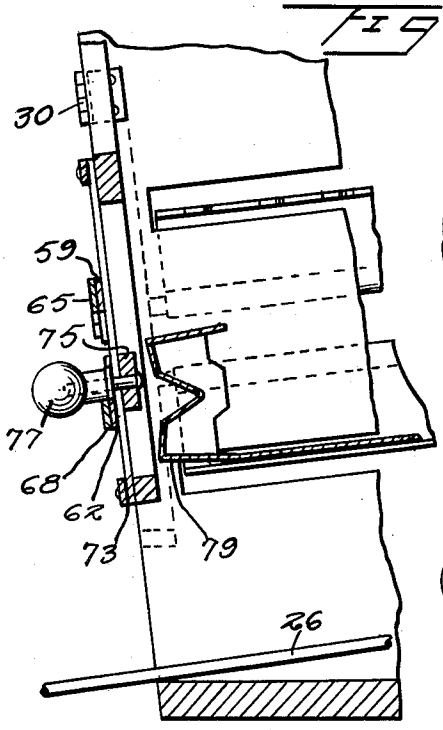



FIG. 4.



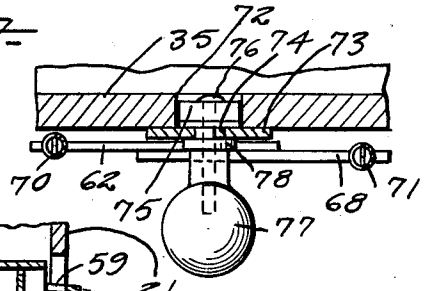




FIG. 5.

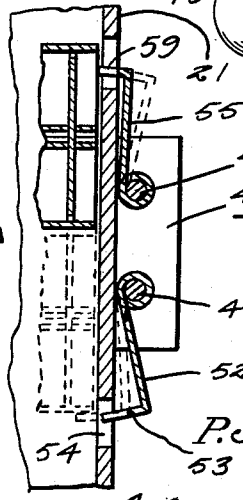



FIG. 6.

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Fig. 9.

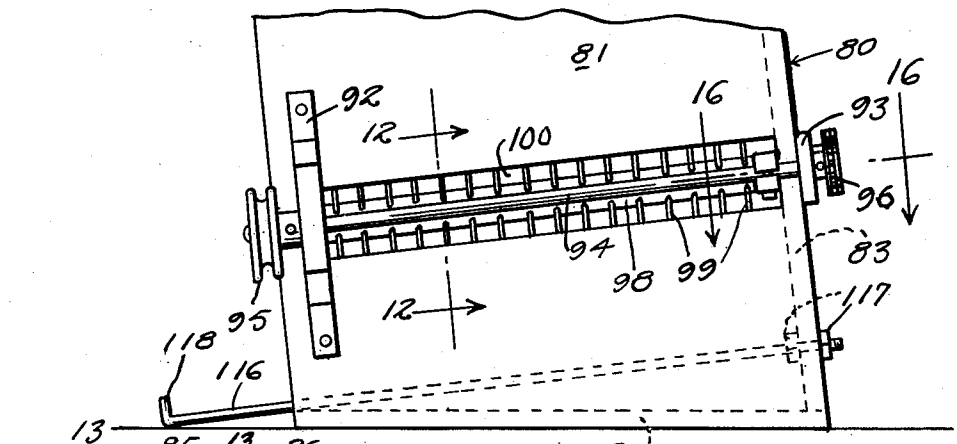
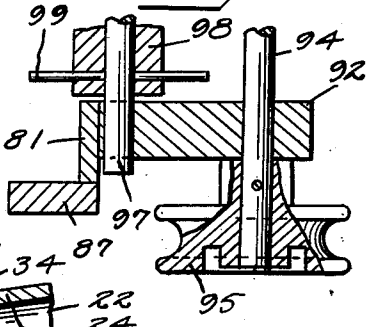
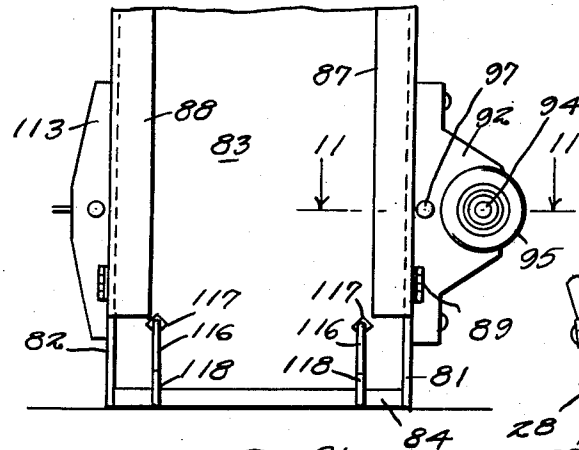



Fig. 10.
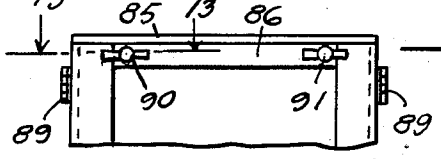



Fig. 11.



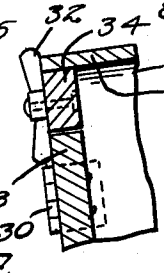




Fig. 8.

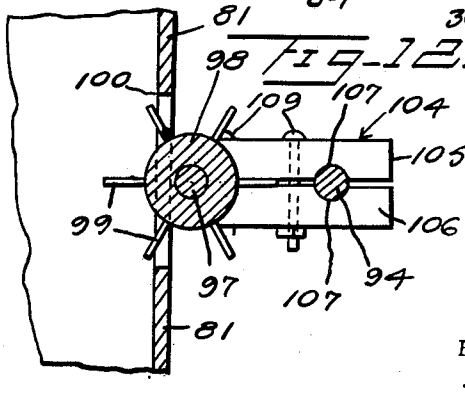
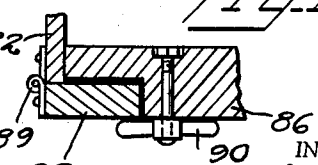



Fig. 12.

Fig. 13.




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Fig. 14.

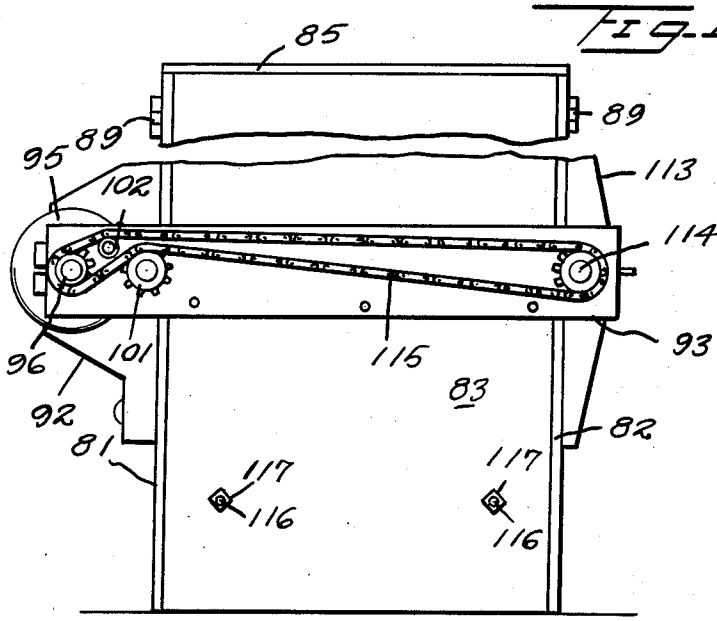



Fig. 15.

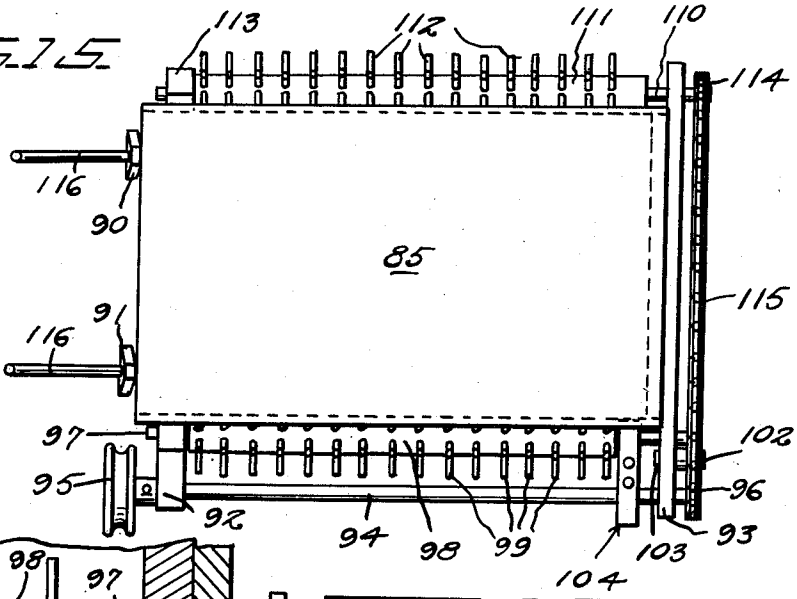
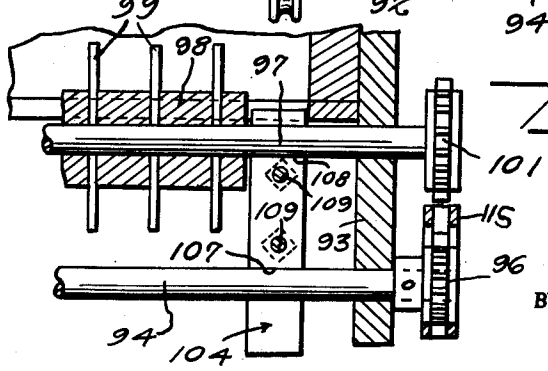



Fig. 16.




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United States Patent Office 2,906,434 Patented Sept. 29, 1959



2,906,434

# CARTON DISPENSER

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Application December 19, 1955, Serial No. 553,756

1 Claim. (Cl. 221—297)

The present invention relates to carton dispensers and, more particularly, for dispensers for empty cartons to loading stations.

The primary object of the invention is to dispense a group of cartons from a column of cartons to a point where the cartons can be loaded, closed and packed in a shipping box.

Another object of the invention is to provide a carton dispensing mechanism which will support the empty cartons in a hopper positioned above the dispensing mechanism.

A further object of the invention is to provide a dispensing mechanism of the class described above which will dispense relatively fragile cartons without damage thereto.

A still further object of the invention is to provide a carton dispensing mechanism of the class described above which will be inexpensive to manufacture, simple to maintain, easy to use and positive in its operation.

Other objects and advantages will become apparent in the following specification when considered in the light of the attached drawings, in which:

Figure 1 is a fragmentary front elevation of the invention;

Figure 2 is a side elevation of the invention shown partly broken away;

Figure 3 is a vertical cross section taken along the line 3—3 of Figure 2, looking in the direction of the arrows;

Figure 4 is an enlarged fragmentary transverse cross section taken along the line 4—4 of Figure 1, looking in the direction of the arrows;

Figure 5 is a fragmentary detailed horizontal cross section of the operating handle taken along the line 5—5 of Figure 1, looking in the direction of the arrows;

Figure 6 is an enlarged fragmentary vertical cross section taken along the line 6—6 of Figure 2, looking in the direction of the arrows;

Figure 7 is a fragmentary plan view of the upper support bar illustrating the dispensing teeth;

Figure 8 is a fragmentary tranverse cross section taken along line 8—8 of Figure 1, looking in the direction of the arrows;

Figure 9 is a fragmentary side elevation of a modified form of the invention;

Figure 10 is a fragmentary front elevation of the invention illustrated in Figure 9;

Figure 11 is an enlarged fragmentary horizontal cross section taken along the line 11—11 of Figure 10, looking in the direction of the arrows;

Figure 12 is an enlarged fragmentary vertical cross section taken along the line 12—12 of Figure 9, looking in the direction of the arrows; and,

Figure 13 is a fragmentary horizontal cross section taken along the line 13—13 of Figure 10, looking in the direction of the arrows.

Figure 14 is a fragmentary rear elevation of the invention.

Figure 15 is a top plan view of the invention.



Figure 16 is a fragmentary enlarged detailed horizontal cross-section taken along the line 16—16 of Figure 9, looking in the direction of the arrows.

Referring now to the drawings in detail and, more particularly, to the modification illustrated in Figures 1 through 8 wherein the reference numeral 20 indicates generally the dispenser having a pair of side walls 21 and 22 which extend parallel to each other in substantially spaced apart relation, a rear wall 23 extends between the side walls 21 and 22 and the upper end of the dispenser 20 is closed by a top wall 24. The side walls 21 and 22 are longer at their rear edge than they are at their front edge and are provided with a bottom wall 25 extending therebetween.

A pair of support rods 26 are secured to the rear wall 23 by means of clamping nuts 26'. The forward ends of the rods 26 are turned upwardly to form stops 27. The rods 26 slope downwardly from the back wall 23 at an angle of about 10 degrees to the horizontal.

A pair of front retainer strips 28 and 29 are secured by paired hinges 30 and 31 to the opposite front edges, respectively, of the side walls 21 and 22. Locking cleats 32 and 33 are mounted on an upper connector plate 34 extending between the side walls 21 and 22 and are adapted to pivotally engage over the front faces of the strips 28 and 29 to retain them in closed position. A front wall 35 is positioned between the side walls 21 and 22 below the strips 28 and 29 and has the lower edge 36 thereof spaced above the bottom wall 25.

A mounting plate 37 is secured to the outer face of the side wall 22 and extends outwardly therefrom as illustrated in Figure 1. A second mounting plate 38 is secured to the side wall 21 and extends outwardly therefrom oppositely to the mounting plate 37.

A bearing block 39 is secured to the rear edge of the side wall 22 in alignment with the support plate 37 and a bearing plate 40 is secured to the rear edge of the side wall 21 in alignment with the support plate 38. An upper shaft 41 is journaled at one end in the support plate 37 and the opposite end in the bearing plate 39. A second shaft 42 extends in spaced apart parallel relation to the shaft 41 and is journaled at its opposite ends in the support plate 37 and the bearing plate 39.

An upper shaft 43 has its opposite ends journaled in the support plate 38 and the bearing plate 40 and the lower shaft 44 spaced therefrom and parallel thereto and is likewise journaled in the support plate 38 and the bearing plate 40. A plate 45 is secured to the shaft 42 and depends therefrom. A flange 46 extends perpendicularly from the lower end of the plate 45 through an elongated slot 47 in the side wall 22.

A plate 48 is secured to the shaft 41 and has a perpendicularly extending flange 49 projecting inwardly through an elongated slot 50 in the side wall 22. The flange 49 is provided with a plurality of inwardly extending teeth 51 for purposes to be described. A plate 52 is secured to the shaft 44 and is provided at its lower end with a right angularly extending flange 53 projecting through an elongated slot 54 in the side wall 21. A plate 55 is secured to the shaft 43 and has a right angularly extending flange 56 at its upper end which is provided with a plurality of teeth 57 similar to the teeth 51.

The shaft 41 has secured to one end thereof a bracket 58. An arm 59 is mounted in the bracket 58 by securing elements 60 and the arm 59 extends at substantially right angles to the shaft 41 generally toward the side wall 21 of the dispenser 20. A shaft 42 is likewise provided with a bracket 61 secured to one end thereof and an arm 62 is secured to the bracket 61 by securing elements 63. The arm 62 extends generally toward the side wall 21 of the dispenser 20.

A shaft 43 has a bracket 64 secured to one end thereof and an arm 65 is secured to the bracket 64 by fastening means 66. The arm 65 extends perpendicularly to the shaft 43 generally toward the side wall 22 of the dispenser 20. A shaft 44 is provided with a bracket 67 secured to one end thereof and has an arm 68 mounted to the bracket 67 by securing elements 69. The arm 68 extends perpendicularly to the shaft 44 and generally toward the side wall 22 of the dispenser 20.

A spring 70 is secured at one end to the arm 59 and its other end to the arm 62 biasing the arms 59 and 62 together. A spring 71 is secured at one end to the arm 65 and its opposite end to the arm 68 and biases the arms 65 and 68 together. The arm 65 substantially overlaps the arm 59 and the arm 68 substantially overlaps the arm 62. The front wall 35 is provided with a vertical slot 72 mid-way between the side walls 21 and 22 and extending parallel thereto.

A metallic cover 73 having a slot 74 formed therein is positioned over the slot 72 to act as a retainer, the slot 74 being somewhat narrower than the slot 72. A slide block 75 is mounted in the slot 72 and has a pin 76 extending therethrough and forwardly through the slot 74 of the plate 73. A knob 77 is secured to the pin 76 at its outer end and a washer 78 is positioned between the knob and the plate 72 to assist the sliding action.

In the use and operation of the invention disclosed in Figures 1 through 8, the strips 28 and 29 are opened and empty egg cartons 79 are stacked therein as illustrated in Figure 1. The cartons 79 are positioned with their rear edge lowermost and the cover thereof lying in opened position. The flange 53 on the plate 52 and the flange 46 on the plate 45 supports the lower edges of the carton 79 at the opposite ends thereof.

When it is desirable to dispense a bottom layer of cartons 79, the knob 77 is moved downwardly rotating the arms 62 and 68 downwardly and outwardly thus rotating the shafts 42 and 44 in opposite directions moving the flanges 46 and 53 out from under the edges of the carton 79 thus permitting the bottom layer of cartons 79 to be dropped to the sloped support rods 26 from which they may be removed by hand during the loading operation.

The springs 70 and 71 will resiliently move the arms 59 and 65 rotating their attached shafts 41 and 43 oppositely to cause the teeth 51 and 57 on the plates 48 and 55, respectively, to engage over the forward edge of the cartons 79 as illustrated in Figure 6 to support the layer of cartons 79 lying above the bottom layer support on the flanges 46 and 53.

When the bottom layer of cartons 79 has dropped due to retraction of the flanges 46 and 53 then the knob 77 is moved upwardly engaging the arms 59 and 65 to rotate them oppositely to disengage the teeth 51 and 57 and permit the layer of cartons 79 supported thereby to be dropped simultaneously with the movement of the arms 59 and 65.

The springs 70 and 71 will resiliently move the arms 62 and 68 to bring the flanges 46 and 53 into carton engaging position so that the layer of cartons 79 previously supported on the teeth 51 and 57 will be caught by and supported by the flanges 46 and 53. The use of springs 70 and 71 provides the teeth 51 and 57 and the flanges 46 and 53 with an upward action which will prevent the cartons 79 from being damaged thereby.

Referring now to Figures 9 through 13, a modified form of the invention is disclosed in which a dispenser 80 is provided with side walls 81 and 82, a rear wall 83, and a bottom wall 84 extending between the side walls 81 and 82. The side walls 81 and 82 are longer at their rear edges than at their front edges.

A top wall 85 is positioned between the end walls 81 and 82 and carries a face plate 86 along the forward edge thereof. A pair of retainer strips 87 and 88 are pivotally secured to the front edges of the side walls 81 and 82, respectively, by hinges 89. The retaining strips 87 and 88



are maintained in their retaining position by means of rotary locks 90 and 91 pivotally secured to the face plate 86.

A bearing block 92 is secured to the side wall 81 and a second bearing block 93 in alignment with the bearing block 92 is secured to the rear wall 83. A shaft 94 is mounted in the bearing blocks 92 and 93 and carries an operating wheel 95 on its outer end. The shaft 94 is rotatable in the bearing blocks 92 and 93 and the operating wheel 95 is securely mounted on the shaft 94 so that the shaft 94 may be turned thereby.

A sprocket 96 is mounted on the shaft 94 opposite the hand wheel 95. A shaft 97 is mounted parallel to the shaft 94 and supported at opposite ends by the bearing blocks 92 and 93. A roller 98 is secured to the shaft 97 and is adapted to rotate therewith. A plurality of radially extending pins 99 project from the roller 98 in a plurality of circumferentially spaced rows for purposes to be described.

The side wall 81 is provided with a longitudinally extending opening 100 which is of an extent sufficient to permit the roller 98 and pins 99 to partially project into the interior of the dispenser 80. A sprocket 101 is secured to the end of the shaft 97 projecting through the bearing plate 93 with the sprocket 101 aligned with the sprocket 96.

An idler roller 102 is mounted for rotation on a stub shaft 103 extending through the bearing plate 93 and is positioned above and between the sprockets 96 and 101. A drag brake, generally indicated at 104, consists of a pair of blocks 105 and 106 which are recessed at 107 and 108 to receive the shafts 94 and 97, respectively, therebetween.

A pair of clamping bolts 109 extend through the blocks 105 and 106 so that the blocks 105 and 106 can be drawn toward each other to bind the shafts 94 and 97 limiting their free rotation.

A shaft 110 is constructed identically to the shaft 97 and carries a roller 111 identical to the roller 98. Pins 112 identical to the pins 99 project from the roller 111, and the shaft 110 is mounted at one end in the bearing block 93 and at the other end in a bearing block 113 secured to the side wall 82 of the dispenser 80 adjacent the front edge thereof. A sprocket 114 is secured to the rear end of the shaft 110 in alignment with the sprockets 96 and 101.

The pins 112 project through the side 82 of the dispenser 80 in the same manner as the pins 99 project through the side 81. A chain 115 is trained around the sprockets 96 and 114 with the bottom flight thereof trained over the sprocket 101 and the top flight thereof trained over the idler roller 102. The sprocket chain 115 is associated with the sprockets 96, 101 and 114 in such a way that rotation of the hand wheel 95 will cause equal and opposite rotation of the rollers 98 and 111.

A pair of rods 116 are secured to the back wall 83 by means of nuts 117 clamped on opposite sides of the wall 83. The rods 116 extend forwardly sloping downwardly at an angle of approximately 10 degrees to the horizontal and are provided with right angularly extending end portions 118 which project upwardly from the rods 116 to provide stops at the outer end thereof.

In the use and operation of the invention disclosed in Figures 9 through 16, cartons are placed within the dispenser 80 so that the lowermost point of the cartons will be in engagement with the dispensing pins 99 and 112. Rotation of the hand wheel 95 in a clockwise direction, as viewed in Figure 10, will rotate the roller 98 in a counter clockwise direction and the roller 111 in a clockwise direction so that the pins 99 and 112 projecting into the dispenser 80 will move downwardly.

As one row of pins 99 and 112 move downwardly to a point where they will no longer support the cartons, another row of pins 99 and 112 will engage the cartons

lying thereabove so that the lowermost row of cartons will be dropped onto the rods **116**, while the row of cartons next above will be held by the pins **99** and **112**. The cartons dropped onto the rods **116** will slide forwardly thereon until they are stopped by the upstanding portions **118** thereon. Continued rotation of the hand wheel **95** in a clockwise direction will dispense succeeding layers of cartons from the dispenser **80** as they are needed.

Having thus described the preferred embodiments of the invention, it should be understood that numerous other modifications and structural adaptations may be resorted to without departing from the scope of the appended claim.

What is claimed is:

A carton dispenser comprising a generally rectangular upright carton hopper, said hopper having a pair of vertically spaced elongated parallel slots extending through each side thereof in parallel relation to the contents of said hopper, a pair of elongated upper and lower plates on each side of said hopper, a shaft fixed to each of said plates, means journalling each of said shafts to said hopper for oscillatory movement adjacent a respective one of said slots, a substantially perpendicular flange integrally formed on the free edge of each of said plates and extending through the respective adjacent slot for engagement with the opposite sides of a carton positioned in said hopper, a plurality of teeth integrally formed on the flanges of said upper plates, a lever secured to one end of each of said shafts with said levers extending toward the opposite sides of said hopper, a guideway secured to said hopper parallel to and intermediate the sides thereof, a hand operated slide block mounted for



generally vertical sliding movement in said guideway, means on said slide block for selectively engaging both of the levers secured to said upper plates with said slide block in an upper position in said guideway and both of said levers secured to said lower plates with said slide block in a lower position in said guideway for selectively moving said upper plate levers upwardly and said lower plate levers downwardly, and resilient means connected to and biasing together the upper plate lever and the lower plate lever on each side of said hopper whereby each opposed pair of said flanges are positively moved out of contact with the carton in said hopper when their respective levers are positively engaged and moved by sliding movement of said slide block and simultaneously the other opposed pair of said flanges are resiliently biased into contact with the carton in said hopper by action of the resilient biasing means connected between the upper plate and lower plate levers on each side of said hopper.

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