Nov. 4, 1952 H. W. GRADY 2,616,573

PACKAGE DISPENSER

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Fig. 1

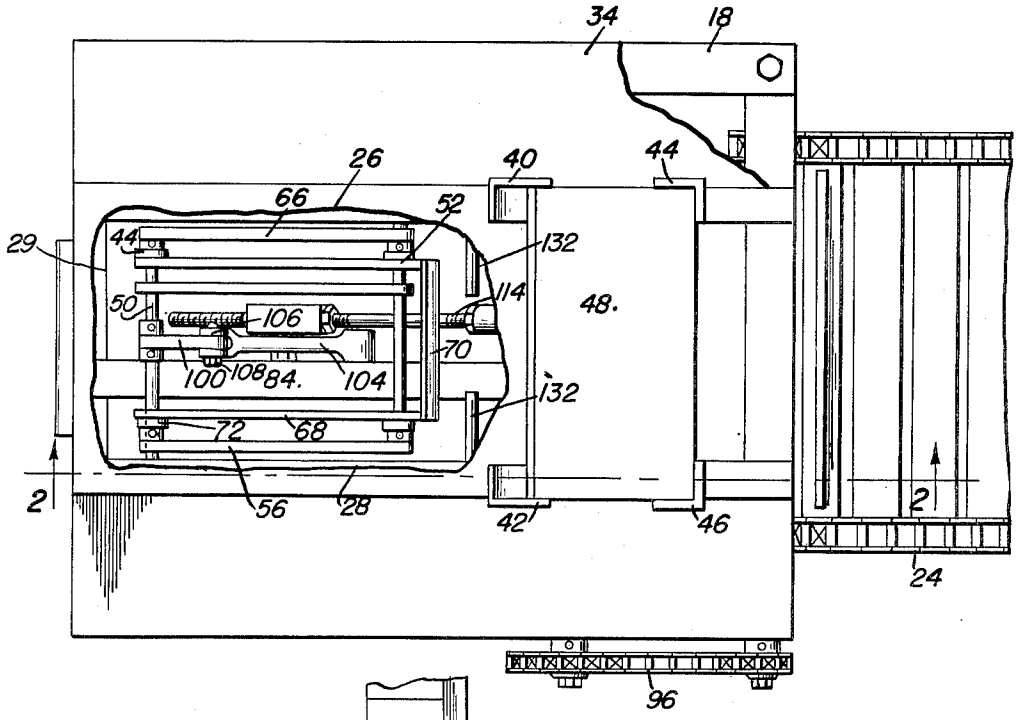
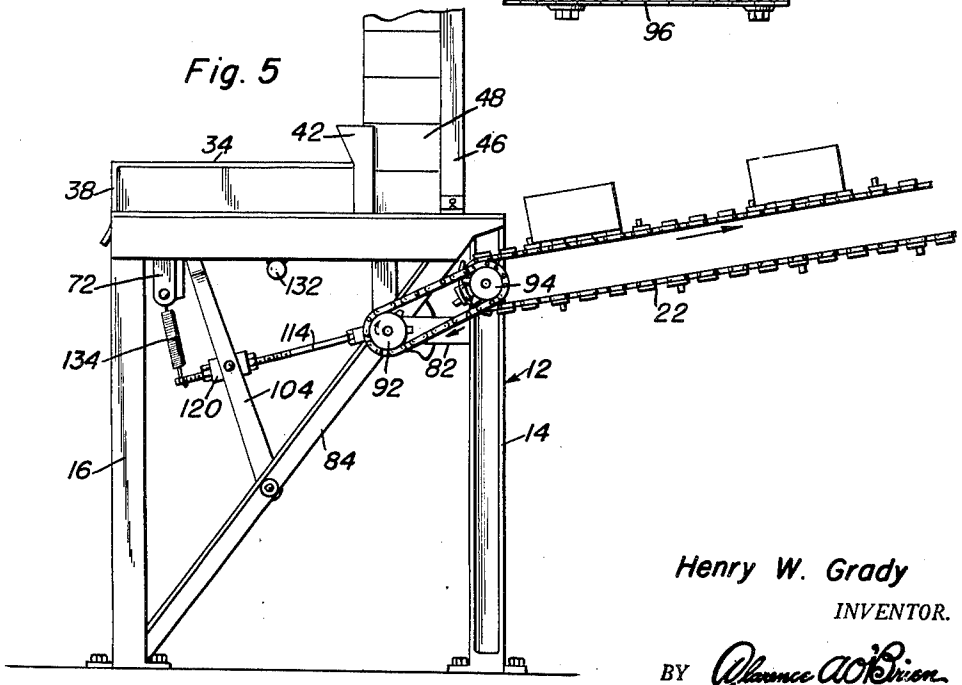


Fig. 5



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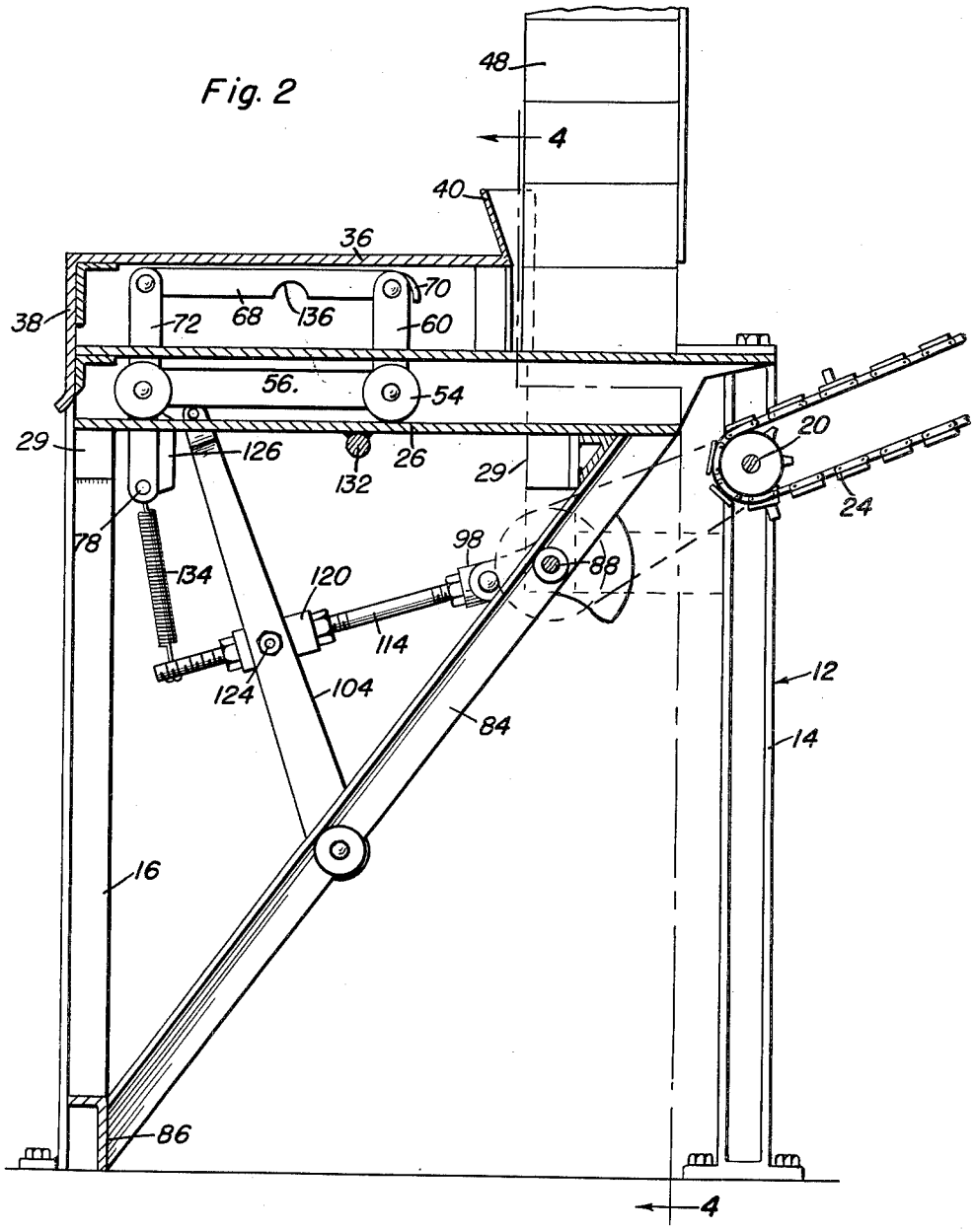
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PACKAGE DISPENSER

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Fig. 2



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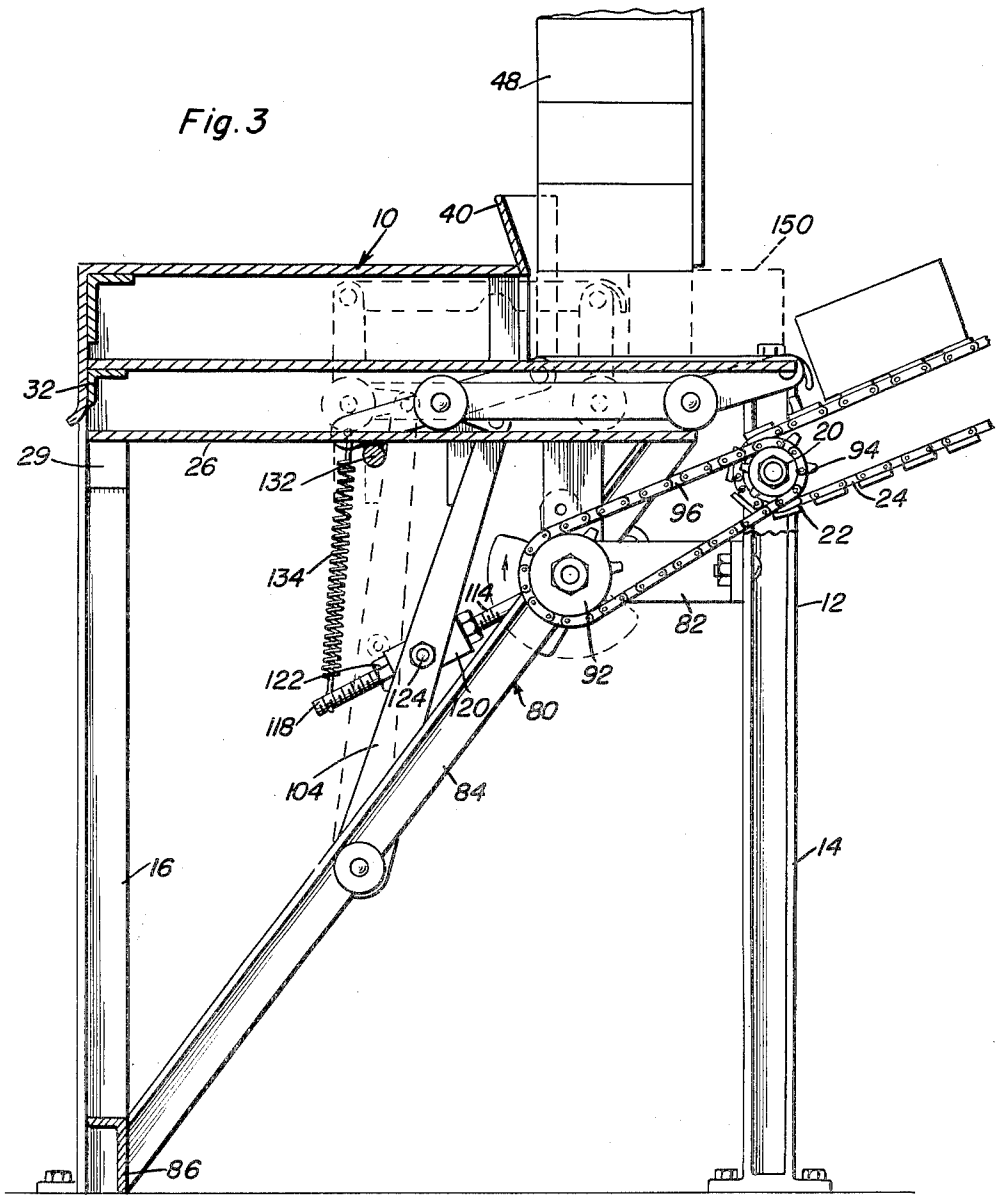
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PACKAGE DISPENSER

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Fig. 3



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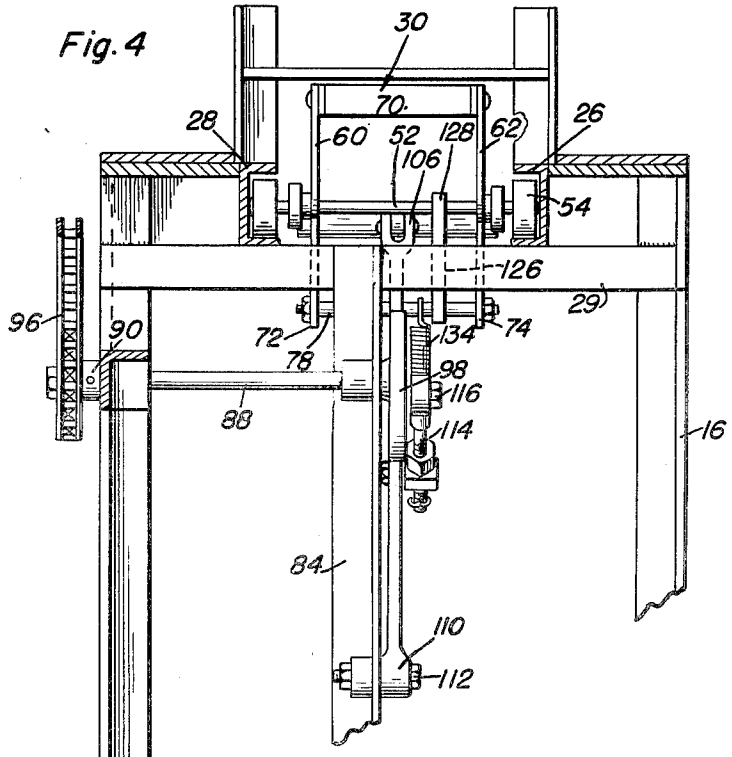
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PACKAGE DISPENSER

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Fig. 4



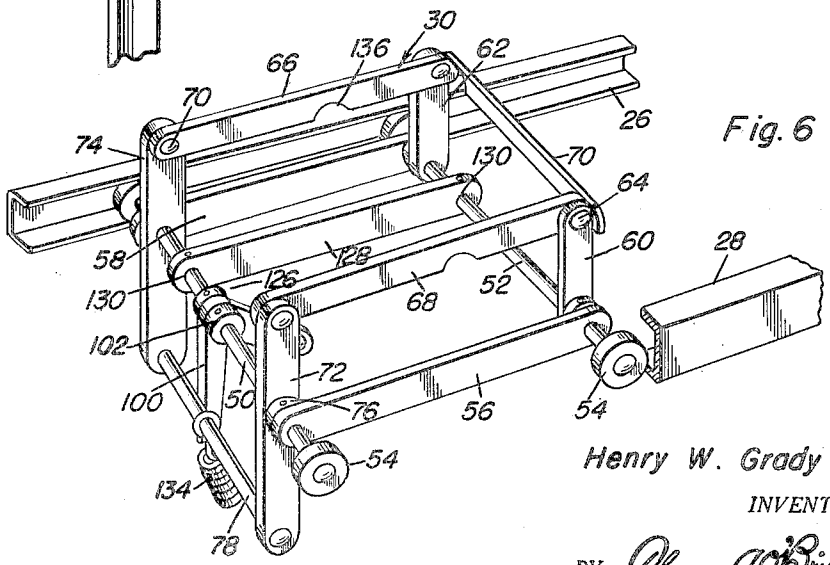


Fig. 6

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UNITED STATES PATENT OFFICE

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PACKAGE DISPENSER

Henry W. Grady, Quincy, Fla.

Application January 26, 1950, Serial No. 140,651

6 Claims. (Cl. 214—8.5)

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This invention appertains to a dispensing apparatus and is particularly constructed for use in conjunction with automatic carton packing machines.

The primary object of this invention is to supply or feed at regular intervals a number of packages, the packages or articles being supplied to the packing machine.

Another important object of this invention is to construct a completely automatic article or package dispensing machine, which requires no attendants whatsoever during normal operation, and which may be made an adjunct to the conventional conveyor of a packaging machine and which may be driven by the conveyor.

Another important object of this invention is to move at timed intervals a plurality of vertically stacked articles onto a rotary conveyor, the apparatus provided functioning to push the bottom or lowermost article in the stack out from the stack onto the conveyor, without disturbing the stack.

These and ancillary objects and structural features of merit are attained by this invention, a preferred embodiment of which is set forth in the following description and illustrated in the accompanying drawings, wherein:

Figure 1 is a top plan view of the dispensing apparatus, constructed in accordance with the principles of this invention, and illustrating the same, with a portion of the table top removed to illustrate in plan the collapsible carriage or means provided for pushing the articles from the stack onto the conveyor;

Figure 2 is a longitudinal vertical sectional view taken on line 2—2 of Figure 1;

Figure 3 is a similar view, as Figure 2, but illustrating the device in its penultimate position;

Figure 4 is a transverse sectional view taken on line 4—4 of Figure 2;

Figure 5 is a side elevational view, and

Figure 6 is a view in perspective of the collapsible carriage.

Referring now more particularly to the accompanying drawings, the article or package dispensing apparatus 10 includes a supporting frame 12. The supporting frame 12 consists of a front pair of standards or legs 14 and a rear pair of standards 16, the aligned standards of each pair being joined at their upper ends by longitudinal bars 18, as shown in Figure 1.

A shaft 20 is rotatably journaled between the front pair of standards 14 and supports the driven end or reach 22 of a conveyor 24. The shaft also functions as the drive means for the dispensing

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mechanism, carried by the frame, as will be explained.

With respect to the dispensing mechanisms, a pair of longitudinally extending inturned channel bars 26 and 28 are provided and function as trackways for a reciprocable collapsing carriage or pushing means 30. The trackways 26 and 28 are mounted on transversely positioned supporting bars 29 and extend parallel with the bars 18. An angle iron 32 is mounted transversely between the rear ends of tracks and forms a fixed stop to limit the rearward movement of the carriage.

A cover or top 34 is provided and includes a top section 36 having depending sides or flanges 38 which enclose the tracks and the carriage. The top 36 extends centrally at its raised portion between a pair of vertical angle irons 40 and 42 which are disposed complementary to a pair of vertical angle irons 44 and 46. The angle irons 40 and 42 are tapered or flared upwardly and rearwardly, as seen in Figure 2 and the angle irons 44 and 46 function to form a vertical guideway for retaining a plurality of articles 48 in the form of a stack, with the lowermost or bottom article mounted on the top of the channel bars 26 and 28, as seen in Figure 2. It can be seen that the articles may be easily held within the angle irons, which serve as guide means to retain the articles in proper vertical alignment.

Attention is now directed to Figure 6, wherein the carriage 30 is illustrated in detail. The carriage 30 includes a pair of longitudinally spaced shafts or axles 50 and 52, which have wheels 54 disposed on their opposing terminals and positioned in the tracks 26 and 28. Bars 56 and 58 connect the shafts and maintain the same in fixed relationship. A pair of links 60 and 62 extend vertically from the axle 52 and are pivotally joined at their upper ends by pivot pins 64 to the forward terminals of connecting bars 66 and 68. A pusher bar 70, which is transversely curved, is mounted on the forward end of the connecting bars 66 and 68 and is provided to contact the packages or articles 48, in a manner to be described. The rearward ends of the connecting bars 66 and 68 are pivotally joined by pins 71 to the upper terminals of vertical links 72 and 74. The links 72 and 74 are transversely apertured intermediate their ends and are thereby mounted for rotation on the axle 50, the links being spaced from the bars 56 by bearings 76. A transverse rod 78 is secured between the lower ends of the links 72 and 74 and functions as part of a raising mechanism, as will be seen.

Means is provided and is preferably responsive

to the rotary movement of the conveyor for effecting a reciprocatory movement of the carriage and thereby moving the same relative to and away from the stack 48. Thus, a supporting structure 80 is carried by the frame and includes an angular framework 82 and a diagonally extending angle iron 84 which is mounted at its upper end to the brace bar 29 and secured at its lower end to a transverse brace bar 86 disposed between the rear pair of standards 16. A shaft 88 is rotatably journaled in the framework 82 and has one end projecting outwardly therefrom, the end being spaced therefrom by a bearing collar 90. A sprocket wheel 92 is secured on the extending end of the shaft and connected to a sprocket wheel 94 mounted on the shaft 20 by a connecting chain 96. Of course, it is apparent that any suitable type of drive transmitting means may be utilized and thus, a gear train may be mounted between the shafts 20 and 28 for effecting rotation of the shaft 88, responsive to rotation of the shaft 20.

The inner end of the shaft 88 is rotatably journaled in the bar 84 and a crank 98 is secured on the terminal of the shaft. A crank 100 is rotatably journaled on the axle 50 and is held thereon by bearings 102. An actuating arm 104 is formed with an upper clevised end 106 which is pivotally secured by a transverse pivot pin 108 to the forward end of the crank 100. The opposing end of the actuating arm 104 is provided with a collar 110 to receive a journal pin 112, which is disposed through the bar 84. A connecting rod 114 is pivotally secured by a pin 116 to the crank 98 and is provided with an opposing exteriorly threaded end 118 on which a collar 120 is concentrically disposed and adjustably secured thereon for longitudinal adjustment by complementary nuts 122 disposed at the opposing ends thereof. The collar or sleeve 120 is pivotally secured as at 124 to the actuating arm 104 and, thus, rotation of the shaft 88 is translated into reciprocal movement of the carriage in a rectilinear path on the tracks by means of the connecting rod 114 and the actuating arm 104 which is pivotally secured to the rod and connected to the crank 100 journaled on the carriage axle 50.

As the carriage is moved forwardly on the tracks, relative to the stack of packages, means is provided for collapsing the carriage, responsive solely to the forward movement thereof on the tracks. In this respect, it is to be noted that the carriage is normally maintained in a raised position, with the rear links 72 and 74 and the front links 60 and 62 in vertical parallel relationship by means of a depending stop 126, which is welded at its upper end to a bar 128, the bar being formed with transverse openings 130 at its opposing ends to mount it on the axles 50 and 52. A rod or stop member 132 is fixed between the tracks and may be welded or otherwise secured to the bottoms of the tracks disposed transversely therebetween, the stop being fixed in advance of the stack of packages. Thus, as the carriage is moved forwardly, relatively to the stack, the depending ends of the links 72 and 74 will contact the stop and ride up over the stop, causing the connecting bars 66 and 68 to move forwardly, with the links 60 and 62 pivoting forwardly and downwardly, so that the entire carriage is swung to a collapsed position, as seen in Figure 3. In this respect, it is to be noted that the carriage, when collapsed is of a height less than the height of the tracks 26 and 28, so that the carriage can move under the stack, as seen in Figure 3, without disturbing the lowermost package therein, after the original bottom package is moved out onto the conveyor. As the carriage is moved rearwardly, it is maintained in a collapsed position, passing under the stack, until it clears the stack. Means is then provided for raising the carriage and includes a spring 134, which is connected between the end of the connecting rod 114 and the axle 76. It is to be noted that the connecting bars 66 and 68 are formed on their underside with notches or recesses 136, which are provided to seat on the front axle 52, thus permitting the carriage to collapse to its full extent. Also, the bars seating on the axle 52, plus the weight of the stack, aid in retaining the carriage in a collapsed position, during its rearward travel until it clears the stack, thus overcoming the force of the spring. In the event that the spring 134 should, after extensive use, fail to snap the carriage into an upright position, the stop formed by the angle iron 32 at the rear of the tracks will contact the lower end of the links 72 and 74 and cause the carriage to raise.

In operation, it can be seen that packages can be stacked within the guiding and stacking means provided and that, as a result of the relatively short guides 40 and 42, the packages can be easily and conveniently stacked to a reasonable height without much effort.

As the conveyor is driven by a suitable means, the shaft 20 will rotate and impart rotation to the shaft 88, which through the crank 98, the connecting rod 114, the actuating arm 104 and the crank 100 journaled on the rear axle 50 of the carriage, will impart a reciprocable movement to the carriage. As the carriage advances toward the stack, the bottom package 150 in the stack will be pushed forwardly and outwardly from the stack by the pusher bar 70. At that time, the carriage will be collapsed through the contact of the stop 132 by the rear links 72 and 74. This will give the package a further push and advance it onto the conveyor 24, at the same time, collapsing the carriage, so that the stack is dropped down onto the track and the carriage will move forwardly and then rearwardly, without disturbing the stack.

Having described the invention, what is claimed as new is:

1. A dispensing apparatus comprising a frame, tracks mounted horizontally on the frame, a collapsible carriage mounted for guided movement on the tracks, means for reciprocating the carriage forward and backward on the tracks, an arm on said carriage engageable with a stop member in response to a forward movement of the carriage for collapsing the same concurrently as said carriage is moved forwardly, and means disposed adjacent said last means for supporting a stack of articles whereby the lowermost article in the stack is pushed outwardly by the carriage as it moves forwardly under the stack and the same is allowed to move downwardly as said lowermost article is moved and advancing the next article to a dispensing position.

2. A dispensing apparatus comprising a pair of complementary tracks, means for mounting a stack of articles on one end of the tracks, a collapsible carriage mounted for guided reciprocatory movement on the tracks, means for reciprocating the carriage, and an arm on said carriage engageable with a stop member on one of said tracks in response to movement of the

carriage in one direction to collapse the same concurrently during pushing movement of the carriage against the lowermost article in the stack whereby the stack is allowed to move downwardly onto the tracks simultaneously as the carriage moves thereunder.

3. A dispensing apparatus comprising a pair of complementary tracks, means for mounting a stack of articles on one end of the tracks, a collapsible carriage mounted for guided reciprocatory movement on the tracks, means for reciprocating the carriage, stop means engageable with an actuating arm on said carriage in response to movement of the carriage in one direction to collapse the same during pushing movement of the carriage against the lowermost article in the stack whereby the stack is allowed to move downwardly onto the tracks concurrently as the carriage moves thereunder, and means for raising the carriage upon movement in the opposite direction and beyond said carriage engageable member.

4. A dispensing apparatus comprising a pair of complementary tracks, means for mounting a stack of articles on one end of the tracks, a collapsible carriage mounted for guided reciprocatory movement on the tracks, means for reciprocating the carriage, stop means engageable with an arm on said carriage in response to movement of the carriage in one direction to collapse the same concurrently during pushing movement of the carriage while in contact with the lowermost article in the stack whereby the stack is allowed to move downwardly onto the tracks simultaneously as the carriage moves thereunder, means attached to said carriage for raising the carriage upon movement in the opposite direction and away from said carriage engageable member, and means for limiting the movement of the carriage in said opposite direction.

5. In a dispensing apparatus, a collapsible carriage comprising a pair of parallel axles having wheels disposed on their opposing ends mounted on tracks, connecting bars between the axles for maintaining them in fixed relation, a first pair of links rotatably journaled on one of the axles and a second pair of links rotatably journaled on the other axle and each of the second links being disposed in longitudinal alignment with one of the ends of the first pair of links, means pivotally connecting the upper ends of the aligned links for normally retaining the links in upright positions and for effecting a simultaneous movement of the links on their respective axles relative to a horizontal plane when said carriage is moved forwardly or backwardly a predetermined distance.

6. A dispensing apparatus comprising a pair of complementary tracks, means for mounting a stack of articles on one end of the tracks, a collapsible carriage mounted for guided reciprocating movement relative to the stack for pushing the bottom article therefrom, said carriage including a pair of parallel axles having wheels mounted thereon and engaging said tracks, first and second links rotatably journaled on said axles, the links of one axle being disposed in longitudinal alignment with the links of the other axle, means pivotally connecting the upper ends of aligned links, arms carried by certain of said links engageable with stop members for pivoting said links to collapse said carriage upon forward movement thereof to permit said stack to drop downwardly on said tracks as said carriage is moved forwardly under the stack.

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