

Jan. 29, 1935.

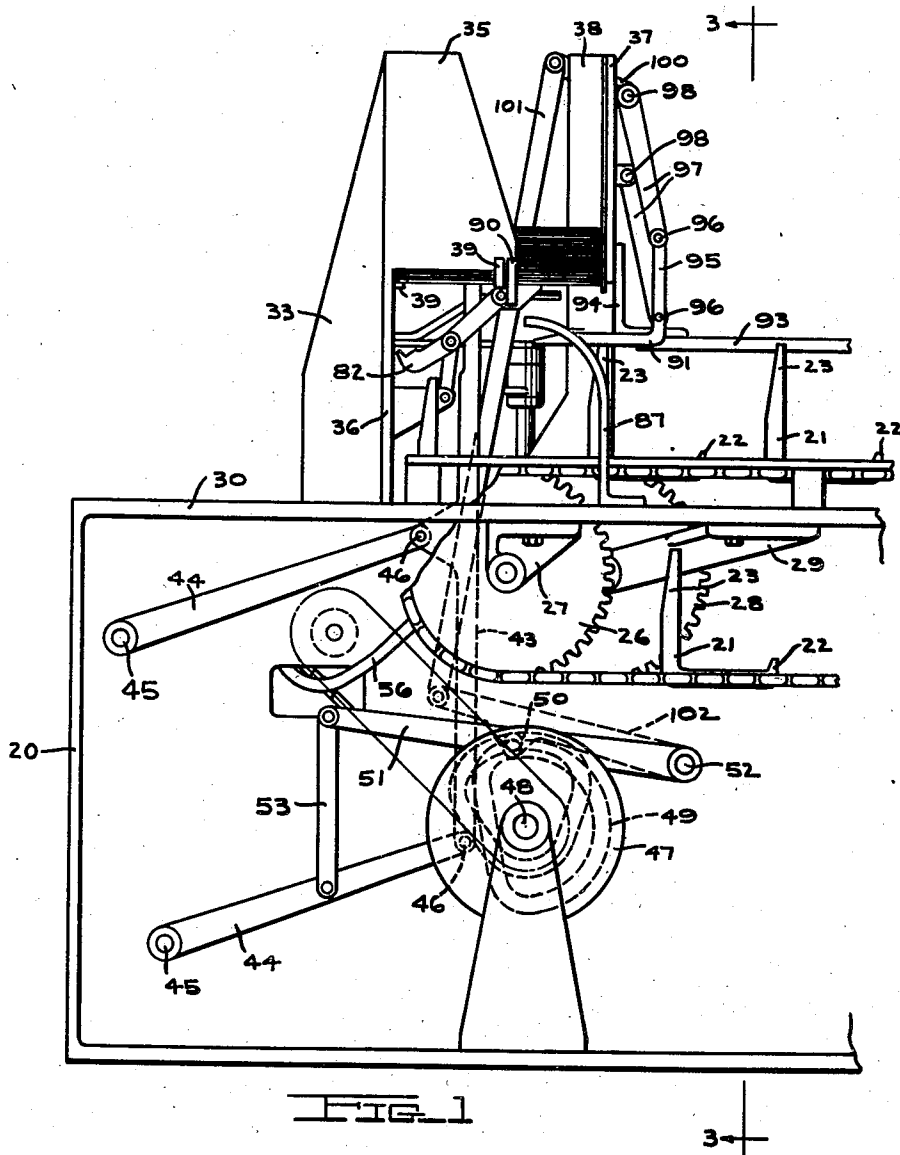
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1,989,286

CARTON STRIPPING AND SQUARING MECHANISM

Filed July 30, 1932

6 Sheets-Sheet 1



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CARTON STRIPPING AND SQUARING MECHANISM

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6 Sheets-Sheet 2

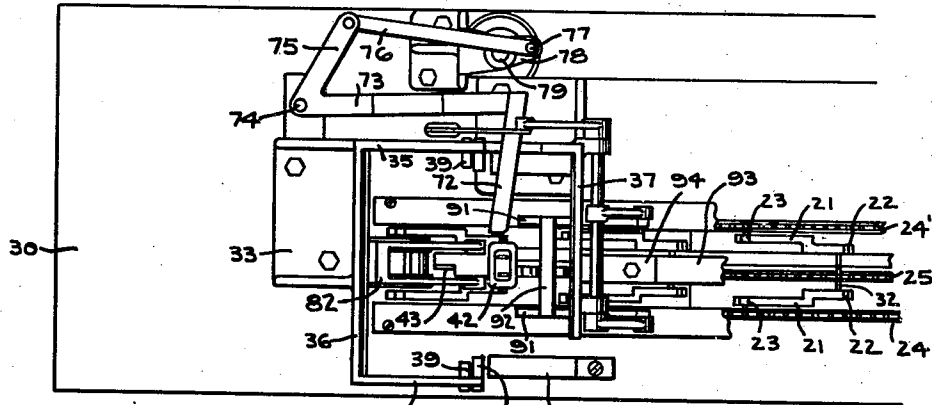


FIG. 2

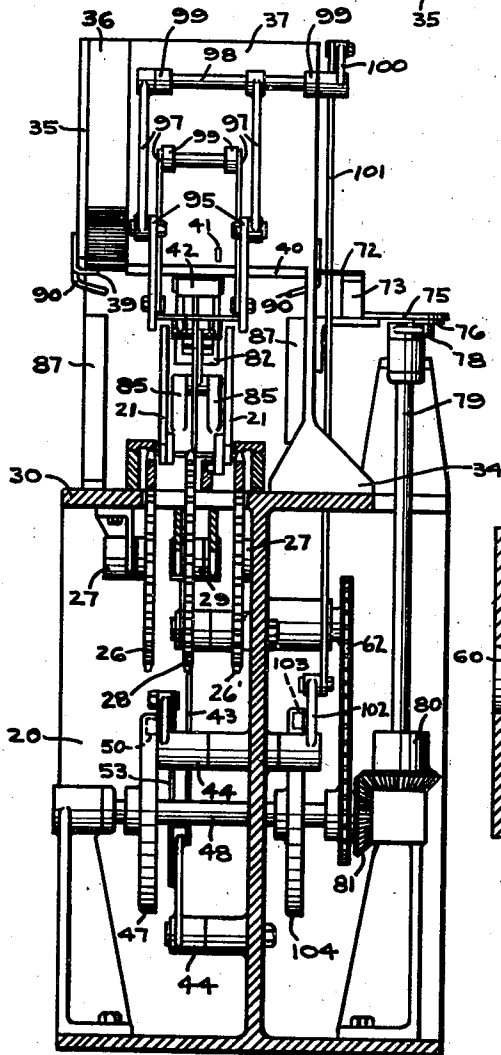


FIG. 3

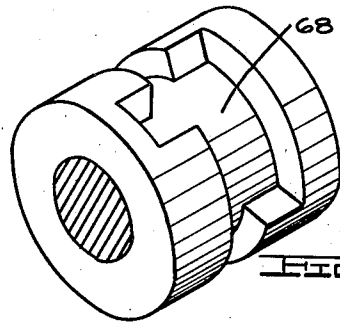
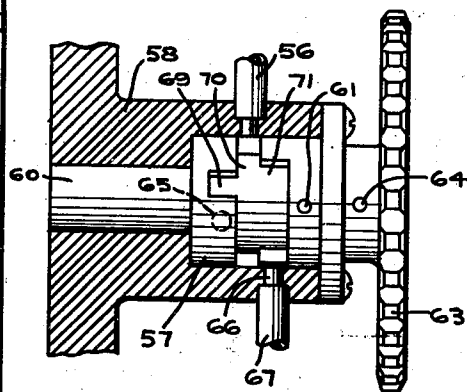


FIG. 7



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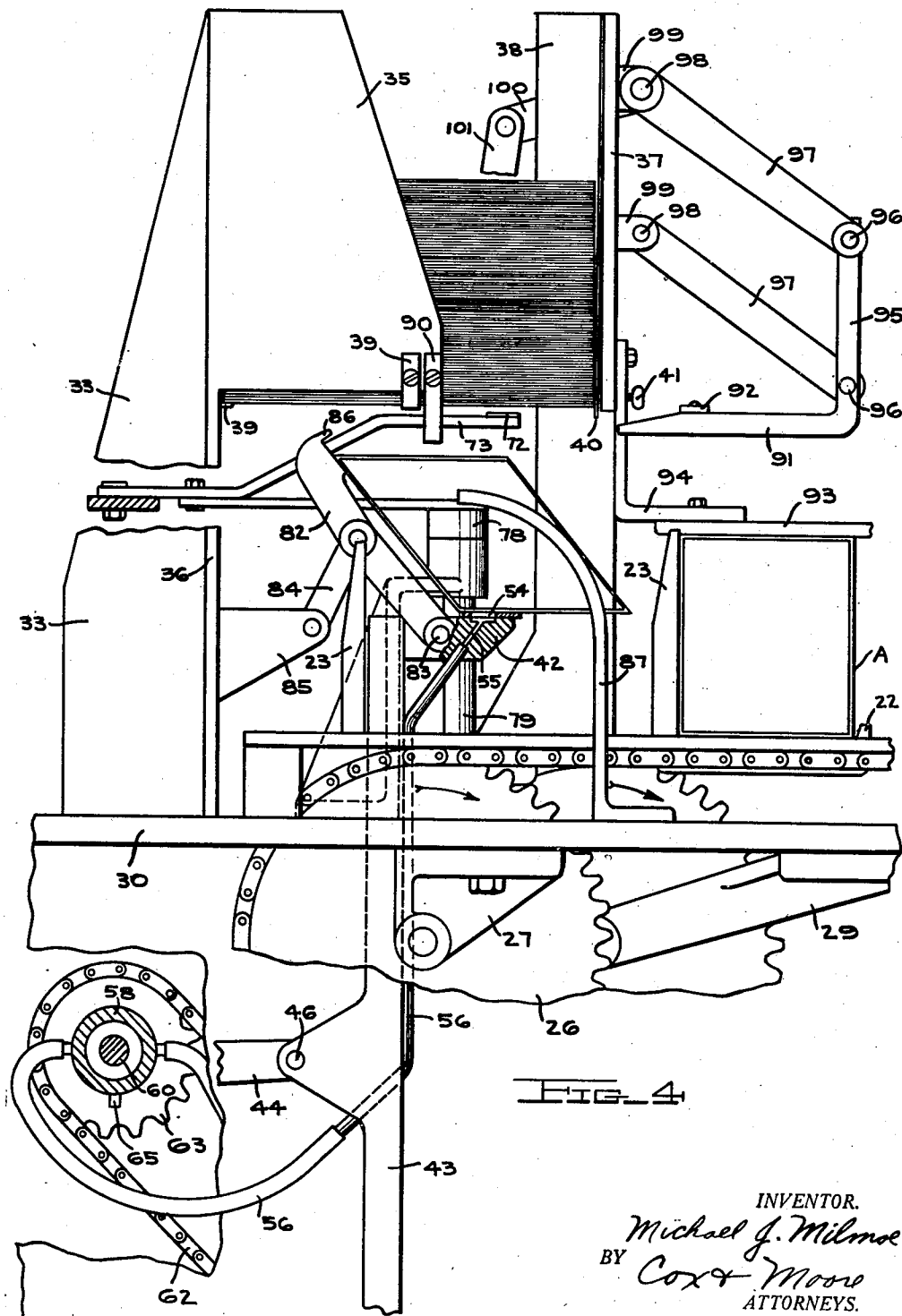
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CARTON STRIPPING AND SQUARING MECHANISM

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6 Sheets-Sheet 4

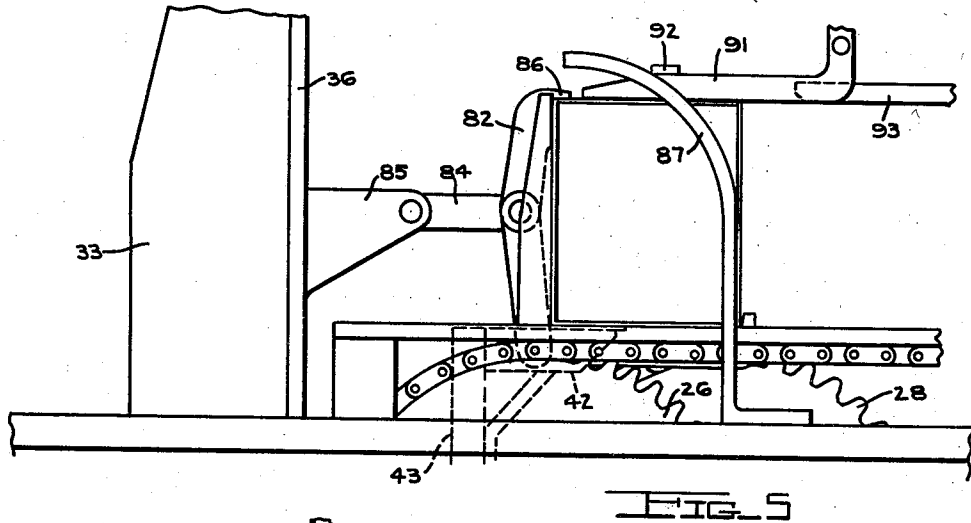


FIG. 5

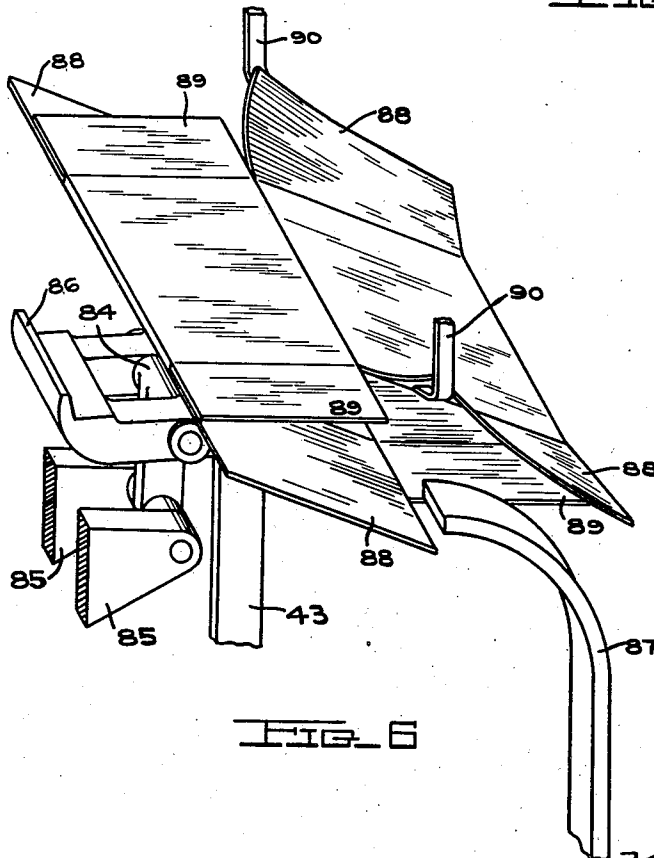


FIG. 6

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CARTON STRIPPING AND SQUARING MECHANISM

Filed July 30, 1932

6 Sheets-Sheet 5

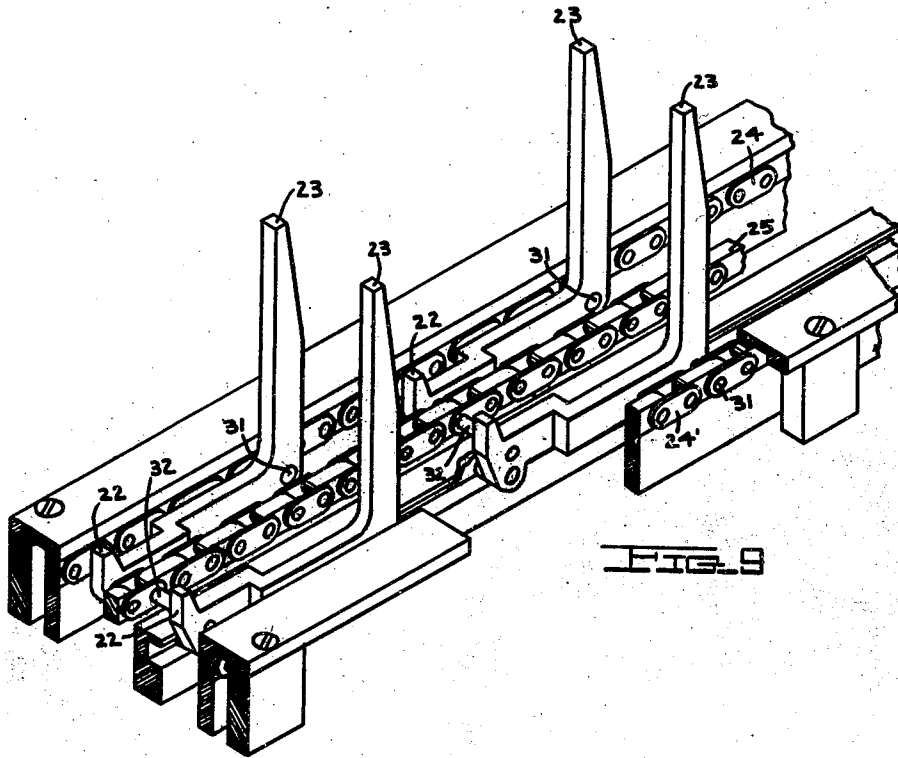


FIG. 9

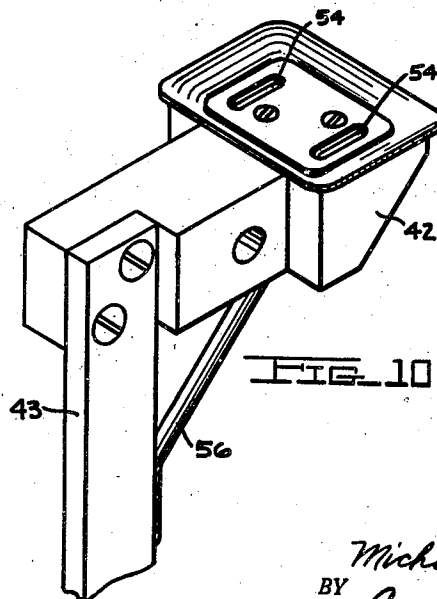


FIG. 10

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CARTON STRIPPING AND SQUARING MECHANISM

Filed July 30, 1932

6 Sheets-Sheet 6

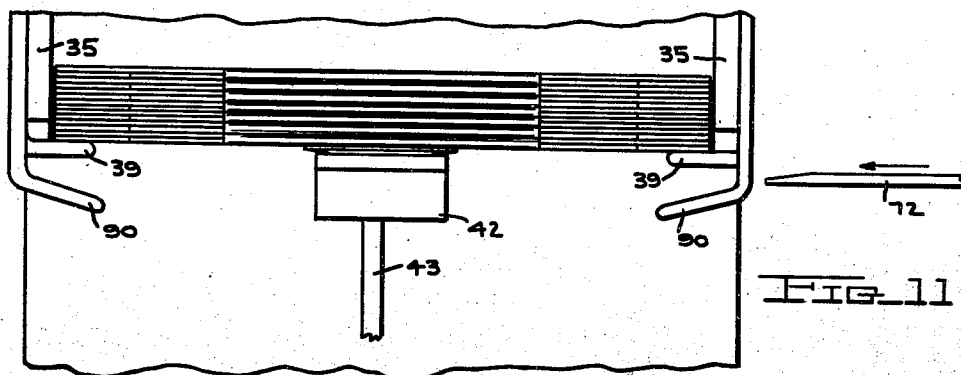


FIG. 11

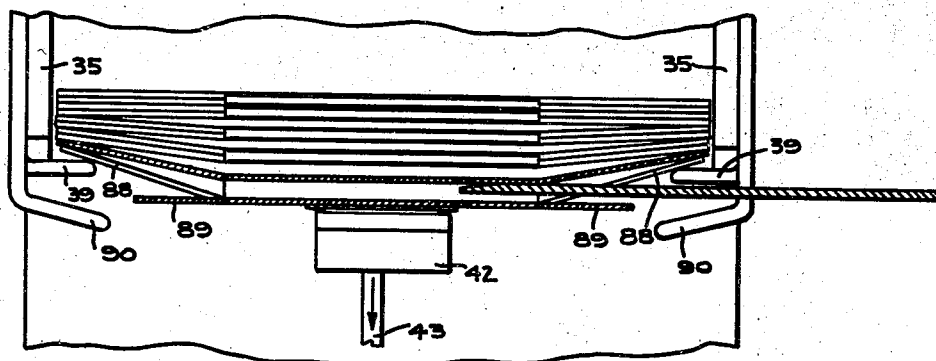


FIG. 12

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UNITED STATES PATENT OFFICE

1,989,286

CARTON STRIPPING AND SQUARING
MECHANISMMichael J. Milmo, Glen Ellyn, Ill., assignor to
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tion of Illinois

Application July 30, 1932, Serial No. 626,511

22 Claims. (Cl. 93—53)

The present invention relates to mechanism for opening and squaring cartons which are to be filled with material. In the present instance, the material consists of Matzos and this material is moved into the cartons after the cartons have been squared.

The present invention relates only to the manner of feeding and opening the cartons so that they may receive the Matzos.

One object of this invention is to provide a means whereby there is a positive opening of the cartons and in which there is means for preventing jamming of the cartons as they are being opened and squared.

Various other objects of this invention will appear hereinafter as the description of this invention proceeds, the novel features, arrangements, and combinations being clearly set forth in the appended claims.

In the drawings:

Fig. 1 represents a front elevational view of a device embodying my invention;

Fig. 2 is a plan view of the mechanism shown in Fig. 1;

Fig. 3 is a cross-section taken substantially along the line 3—3 of Fig. 1;

Fig. 4 is an enlarged front elevational view of the mechanism for opening and squaring the carton;

Figs. 5 and 6 are fragmentary views showing the manner in which parts of the mechanism operate;

Fig. 7 is an isometric view of the valve for controlling the suction in the suction head;

Fig. 8 is a view showing the manner in which the valve is mounted in a valve casing on the frame of the machine, parts thereof being shown in section for the sake of clearness;

Fig. 9 is a perspective view of the conveying mechanism for the cartons;

Fig. 10 is a perspective view of the suction head;

Fig. 11 shows the suction head in engagement with the lowermost one of the cartons in the hopper; and

Fig. 12 is a view similar to Fig. 11 showing the lowermost carton being withdrawn, the lowermost carton being shown in section for the sake of clearness.

In the drawings, 20 represents the frame of the machine upon which the various parts of the mechanism are mounted. The frame carries a conveying mechanism for the cartons which conveying mechanism comprises three chains which support L-shaped members 21. These L-shaped

members 21 each have a small upwardly extending projection 22 at the forward end thereof, or at the right as shown in Figs. 1 and 4, and the squared carton is adapted to be received between this projection 22 and the upwardly extending portion 23 of the L-shaped member 21 as is clearly illustrated in Fig. 4 in which the reference character A designates the carton at the extreme right in Fig. 4. The L-shaped members 21 are supported on the chains in the manner best illustrated in Figs. 1, 2, 3, and 9. The three chains which support the L-shaped members are designated by the reference numerals 24, 24', and 25, the chains 24 and 24' being trained over sprockets 26 and 26' respectively journaled for rotation in suitable bearings on the frame 20. The sprocket 26 is rotatably mounted in the bearing 27 and the sprocket 26' is suitably journaled for rotation in the bearing 27'. The chain 25 is carried by a sprocket 28 journaled for rotation in a bracket 29 mounted on the under side of the table portion 30 of the frame 20. It will be noted from an inspection of Fig. 1 that the axes of rotation of sprockets 26 and 26' are concentric with each other whereas the axis of rotation of the sprocket 28 is not concentric with either of the axes of rotation of the sprockets 26 and 26' but is parallel thereto and in substantially the same horizontal plane. As will be noted from an inspection of Fig. 9, the L-shaped members are connected by pins 31 to opposed links of the chains 24 and 24', and substantially directly below the upwardly extending leg 23 of the L-shaped member 21. The forward ends of the L-shaped members are connected by a pin 32 which extends through and is connected to the chain 25 so as to be carried along by that chain. As the chains 24, 24' and 25 are driven in unison with each other, the L-shaped members are carried along first to the right and above the chains and then downwardly and to the left between the respective runs of the chains so that at all times, the L-shaped members are maintained in successive positions which are parallel to each other. This feature is in and of itself an important item since the L-shaped members 21 do not at any time pass beneath the lower runs of the chains, and therefore all of the space beneath the lower runs may be used for driving mechanisms, etc., and the over-all height of the unit may be reduced as a consequence. This machine is particularly designed for handling large cartons, and therefore the legs 23 are necessarily quite long and if they were carried around with the chains so that they projected downwardly from the lower runs there-

of when traveling to the left, considerably more room would be required for clearance than with the present arrangement.

The chains are driven in any suitable manner from the main drive shaft of the mechanism.

The table 30 also carries an upwardly extending bracket 33 carrying one side of a hopper in which the cartons are arranged. Another bracket 34 carries the opposite side of the hopper and is also mounted on the table 30. The bracket 33 as will be apparent from an inspection of Figs. 1 to 4 inclusive, carries the side walls 35 of the hopper and one end wall 36. The bracket 34 carries the other end wall 37 and a single side wall 38 on the side of the machine away from the operator.

The cartons are placed in the hopper with the end flaps thereof extending toward the operator and the same are supported by the small L-shaped brackets 39 secured to the side and end walls 35 and 36. On the end wall 37, there is provided a small resilient plate 40 secured thereto at the upper end thereof and the lower end of the plate 40 is free to move laterally and is adjusted in its lateral position by means of a thumb screw 41 extending through the side wall 37 and engaging the side of the plate 40. This insures that the lower carton in the stack of cartons will always be properly situated on the projections 39.

The lowermost carton is moved out of its relation with the other cartons by means of a suction head designated by the reference character 42 and this is carried by a carrier member 43 which extends vertically and is carried by the arms 44 pivoted at 45 to the frame 20. The arms 44 are connected at 46 to the carrier member 43. The arms 44 are rocked about their pivots by means of a cam 47 on the shaft 48. The cam 47 has a suitable cam groove 49 therein arranged on one face and a roller 50 travels in this groove. The roller 50 is carried by a swinging arm 51 pivoted at 52 and connected by a link 53 to one of the arms 44. As the arm 51 is rocked about its pivot by the action of the cam 47, the arms 44 move in a parallel relation with each other and impart a substantially vertical movement to the carrier 43. This movement, however, is not entirely in a vertical direction as it has a slight movement from right to left due to the arcuate movement of the arms 44.

The suction head is shown particularly in Figs. 4 to 10 inclusive and has a recess 54 in the upper surface thereof communicating with a passage 55 with the lower side of the head 42 where it is connected by means of a flexible conduit 56 with the valve 57 which controls the suction to the suction head. The valve 57 is a rotary valve and is arranged within the bearing 58 formed as part of the frame 20, and a cap 59 retains the valve in place. The valve is carried by a shaft 60 and is secured thereto by a pin 61 passing through the valve and through the shaft 60. The shaft 60 is driven by means of a chain 62 trained over the sprocket 63 secured to the shaft 61 by a pin 64. The bearing 58 is provided with a port 65 which communicates with the atmosphere and a port 66 which communicates by means of the conduit 67 with the vacuum pump (not shown, but of any suitable construction).

The valve has recesses therein which communicate with each other and with the conduits 56 and 67 at periodic intervals for connecting the suction head with the vacuum pump to create a suction in the suction head and also to relieve the suction in the suction head when it is desired to release the carton gripped thereby. The recess

is designated generally by the reference character 68 and as viewed in Fig. 8, there is illustrated three sections designated by the reference character 69, 70, and 71, which communicate respectively with the port 65 and conduits 56 and 67 during the rotative movement of the valve.

The suction head moves into engagement with the lowermost carton A of the stack of cartons in the hopper and the valve 57 is at this time in such a position that the suction head is in direct communication with the vacuum pump whereby the vacuum created in the suction head holds the lowermost carton against the suction head and as the suction head moves downwardly, the lowermost carton moves therewith as illustrated in Figs. 11 and 12 respectively. In Fig. 11, the suction head has just engaged the carton and is gripping the same. In Fig. 12, the carton has begun its downward movement and as will be noted, the end flaps of the carton are bent back to permit the carton to move off the projections 39. Simultaneously with this movement, a blade 72 moves laterally into the carton to assist in opening the carton as it is moved downwardly by the suction head. This blade travels in a horizontal path from the position shown in Fig. 11 to that shown in Fig. 12 and is carried on the end of one arm 73 of a bell crank pivoted at 74. The other arm 75 of the bell crank is pivotally connected to a link 76 which in turn is pivoted at 77 to the crank 78 carried by a rotating shaft 79 (see particularly Figs. 2 and 3). The shaft 79 is driven by means of bevel gears 80 and 81 from the shaft 48 which shaft also carries a sprocket for driving the chain 62. The bevel gears 80 and 81 are carried respectively by the shafts 79 and 48.

The large cartons which are used in this machine are generally made of rather light weight material which is quite flexible and therefore it is especially necessary that as the carton is being opened, the same should have the walls thereof more or less positively held or at least prevented from buckling, as otherwise a jam would occur and it would be necessary to stop the machine. In order to accomplish this result, I have provided a lever 82 pivoted at 83 to the suction head 42 and connected by means of a link 84 to lugs 85 on the bracket 33 and to the lever 82 respectively. The lever 82 has an outwardly extending lug 86 at the free end thereof for a purpose which will appear later. The table 30 also supports upwardly extending guides 87 which are arcuate at their upper ends as is clearly illustrated in Figs. 1 and 4. The purpose of these guides is to engage the end flaps of the carton as the carton is moved downwardly by the suction head and move the adjacent side of the carton into a vertical plane while the lever 82 which engages the opposite side of the carton moves into a vertical relation so that by the time the suction head moves to its lowermost position, the opposite sides of the cartons are in spaced parallel relation with each other. The lever 82 moves from a position which is substantially horizontal to a position which is vertical during the time the suction head moves from its first engagement with the carton as shown in Fig. 11 to its lowermost position shown in Fig. 5. The parts are so timed with relation to each other that when the suction head is at its lowermost position as shown in Fig. 5, the carton is squared and the L-shaped members are in the position desired for receiving the squared carton. Since the sides of the carton have been more or less positively guided during this opera-

tion, the carton is not damaged to any extent and when the material is moved into the carton, there will be nothing to obstruct its movement.

are withdrawn from operative engagement with the carton, the carton is under the presser bar 93 and the fingers are no longer necessary. It will be noted that in this arrangement, the cartons are fed from a position directly above the conveyer onto the conveyer and are full squared by the time they are arranged on the conveyer directly beneath the hopper. This greatly minimizes the space necessary for opening the cartons which is quite an important factor especially when relatively large cartons are to be used.

The operation of the device is as follows: The suction head 42 moves to the position shown in Figs. 1 and 11, and in this position, the valve 57 establishes communication between the vacuum pump and the suction head whereby the suction head grips the lowermost carton and moves the carton along with the suction head as it begins its downward movement. During the first part of the downward movement of the suction head, the projections 39 tend to resist the downward movement of the carton and as a consequence, the carton opens slightly and the blade 72 moves into the open carton and tends to hold the upper side of the carton from downward movement with the suction head. This operation continues for just a short interval whereafter the blade 72 is withdrawn and the lever 82 moves into engagement with a side of the carton adjacent to that which is engaged by the suction head and tends to force that side into a position at right angles to the side held by the suction head. The flaps on the opposite side of the carton engage the guides 87 and together with the lever 82 cause a squaring of the carton as the carton moves downwardly. The projection 86 on the lever 82 prevents the movement of the carton to an unsquared position after it is squared as will be readily seen from an inspection of Fig. 5, and holds the carton until the fingers 91 are in operative position, whereafter the L-shaped members 21 carry the carton along its path of movement, and since the carton has cleared the suction head, the suction head moves upwardly into engagement with the next carton to be withdrawn from the hopper.

As will be seen from an inspection of Fig. 6, the flaps 89 are shorter than the flaps 88 and therefore are not engaged by the guides 87 as the carton is moved along by the conveyer. The flap 88 at the left of the carton after the carton is squared does engage the guide 87 but this flap does not prevent the carton from being moved along by the conveyer, as it merely yields when it engages the conveyer and is pushed to one side until the same passes the guide, and thereafter it resumes substantially its former position, at least sufficiently so as to permit the flaps to be folded into position over the ends of the cartons.

It is obvious that those skilled in the art to which this invention pertains may make other changes in the particular combination and arrangement of parts without departing from the scope of this invention, and I do not wish to be limited except as hereinafter set forth in the appended claims.

Having thus fully described my invention, what I claim as new and desire to obtain by Letters Patent is:

1. In a cartoning machine, the combination with a conveyer, of a hopper mounted adjacent said conveyer in close proximity thereto, and means for feeding cartons from said hopper directly onto said conveyer and for squaring the cartons independently of said conveyer as they are placed on the same directly below said hopper.

The carton is provided with long and short flaps at the opposite ends and on opposite walls of the carton. The long ends are designated by the reference numerals 88 and the short ends by the reference numerals 89. As will be apparent from an inspection of Figs. 6 and 12, there are a plurality of fingers 90 which extend laterally into a position in the path of movement of the cartons as they are moved downwardly by the suction head. These fingers do not extend inwardly toward each other sufficient to engage the short flaps of the carton, but do engage the longer flaps 88 thereof. This helps to open the carton and also arrange the flap in such a position that it will more readily slide over the guides 87. It is to be understood that the blade 72 is also assisting in the opening of the carton but is retracted before the carton is moved downwardly to the full extent of its movement.

As the carton moves into its fully opened position shown in Fig. 5, parallel fingers 91, connected by a tie bar 92 (see particularly Fig. 2) move over the upper surface of the carton and assist in the squaring operation and also act as pressing fingers for holding the carton firmly against the supporting surfaces of the L-shaped members 21. The L-shaped members then move the cartons to the right until they are engaged beneath the presser bar 93 which extends longitudinally of the path of movement of the cartons, and is supported at one end thereof by a bracket 94 secured to the wall 37 of the hopper as is clearly illustrated in Figs. 1 and 2. Since these fingers straddle the suction head, they can remain in position after the suction head begins its upward movement, it being understood, of course, that the suction head does not begin its upward movement until the squared carton has cleared the suction head. Before the suction head begins its next downward movement, the fingers 91 must be moved out of their operative position shown in Fig. 5. This is accomplished in the following manner.

The fingers 91 are lateral extensions of the vertically extending members 95 which are pivoted at 96 to arms 97, which in turn are pivoted at 98 to the side wall 37 of the hopper. The member 95 and the fingers 91 are therefore caused to move in a substantially arcuate path but through successive positions which are all parallel to each other. The upper pivot 98 for the upper arms 97 is secured rigidly to the arms and rotatable in suitable bearings 99 on the end wall 37 of the hopper, and there is an arm 100 secured to the end thereof which arm in turn is connected by means of a link 101 to a rocking arm 102 (see particularly Figs. 1, 2, 3, and 4). The rocking arm 102 rotates on the pivot 52 and carries a roller 103 which operates in a cam groove in the side of the cam 104 secured to the shaft 48. The cam 104 causes the arm 102 to oscillate and this in turn rocks the arm 100 and moves the fingers 91 back and forth between the inoperative position shown in Fig. 4 and the operative position shown in Figs. 1, 2, and 5. It will be noted from an inspection of Fig. 4 that when a carton is moved downwardly, the fingers 91 are in inoperative position and do not interfere with the movement of the carton, but soon after the carton moves into the position shown in Fig. 4, the fingers 91 begin their movement toward the position shown in Fig. 1 or Fig. 5. By the time the fingers 91

2. In a cartoning machine, the combination with a conveyer having carton receiving members, a hopper mounted directly above said conveyer, and means for withdrawing cartons from said hopper and squaring them independently of means on said conveyer as they are moved toward said conveyer, said squaring means depositing said cartons in squared relation on said members as said members arrive at a position substantially beneath said hopper.

3. In a cartoning machine, the combination with a conveyer having carton receiving members thereon, a hopper arranged above said conveyer in close proximity thereto, and a carton stripping and squaring mechanism entirely separate from said conveyer for withdrawing cartons from said hopper in flat relation and squaring the same as the cartons are moved toward said conveyer and onto said members, and means for retaining said cartons in squared relation on said conveyer as said conveyer moves toward carton loading position.

4. In a cartoning machine, the combination with a hopper, of a conveyer mounted beneath said hopper and having members thereon for receiving cartons to be filled, a suction head for withdrawing cartons from said hopper, and means cooperating with said suction head as it moves toward said conveyer for completely squaring said carton whereby said carton is squared as it is being conveyed by said suction head toward said conveyer.

5. In a cartoning machine, the combination with means for holding a stack of cartons, a gripping means for gripping a carton at the end of said stack and for moving said carton toward a carton receiving member, means for positioning said member adjacent said stack of cartons, and means for squaring said cartons as they are moved toward said member comprising means moving with said suction head for engaging a side of said carton adjacent that which is gripped by said gripping means and angularly movable during movement of said carton toward said receiving member to move that side into proper angular relation with said side gripped by said gripping means as said gripping means moves said carton toward said member.

6. A device as claimed in claim 5 which includes guiding members for guiding an additional side of said carton into proper angular relation with the other sides as said carton is squared whereby buckling is prevented.

7. In a cartoning machine, the combination with a hopper for receiving a plurality of cartons, a suction head for gripping one side of a carton as the carton lies in folded position, means for moving said suction head toward a carton receiving position, and means angularly movable as said carton is moved by said suction head toward said carton receiving position for engaging another side of said carton to move that side of said carton angularly into proper angular relation with the side gripped by said gripping means whereby said carton moves at said carton receiving position in an opened condition ready to receive the articles to be inserted therein.

8. A device as claimed in claim 7 in which guiding means is provided for guiding a third side of said carton into proper angular relation with the other sides thereof whereby buckling of said carton is prevented and the carton is moved into proper opened relation as it arrives at said carton receiving position.

9. A device as claimed in claim 7 in which there

is means intermittently movable into a position over an open carton after it arrives at said carton receiving position for holding said carton in squared relation and in which there is a means for conveying the carton away from said carton receiving position to a carton loading position, said means which is intermittently operable being movable out of operative position as the carton is moved to carton loading position and the means for moving the cartons to carton receiving position is moved into a position to withdraw a succeeding carton from the stack of cartons in said hopper.

10. In a cartoning machine the combination with a conveyer, of a carton hopper for collapsed cartons, arranged closely adjacent said conveyer and directly over the same, and a withdrawing and squaring means for withdrawing collapsed cartons from said hopper and for squaring the same comprising means for gripping one of the sides of the endmost carton facing the conveyer, and means moving with said carton gripping means for engaging an adjacent side of said carton to that gripped by said gripping means, said means for engaging said adjacent side being angularly movable during the withdrawal of said carton to move the said adjacent sides to the proper angular positions with respect to each other as the carton is moved toward the conveyer.

11. In a cartoning machine the combination with a conveyer, of a carton hopper for collapsed cartons, arranged closely adjacent said conveyer and directly over the same, and a withdrawing and squaring means for withdrawing collapsed cartons from said hopper and for squaring the same comprising a pair of means moving with a carton for engaging adjacent faces of said carton, one of said means having means associated therewith for gripping the side which it engages, and means for moving said pair of means angularly with respect to each other to move said faces into the proper angular relation with respect to each other as the carton is withdrawn from the hopper.

12. In a cartoning machine the combination with a conveyer, of a carton hopper for collapsed cartons, arranged closely adjacent said conveyer and directly over the same, and a withdrawing and squaring means for withdrawing collapsed cartons from said hopper and for squaring the same comprising a pair of means moving with said carton for engaging adjacent faces of said carton, one of said means having means associated therewith for gripping the side which it engages, and means for moving said pair of means angularly with respect to each other to move said faces into the proper angular relation with respect to each other as the carton is withdrawn from the hopper, comprising a link pivotally connected to one of said pair of means and to a fixed support.

13. In a cartoning machine the combination with a conveyer, of a carton hopper for collapsed cartons arranged closely adjacent said conveyer and directly over the same, and a withdrawing and squaring means for withdrawing collapsed cartons from said hopper and for squaring the same comprising a support for one side of a carton having gripping means for gripping said side and means pivoted to said first means for engaging an adjacent side of said carton, means for moving the latter means angularly with respect to said first means as the withdrawing and squaring means moves toward said conveyer to bring the said sides into proper angular positions with

respect to each other at a predetermined position of said withdrawing and squaring means.

14. In a cartoning machine the combination with a conveyer, of a carton hopper for collapsed
5 cartons arranged closely adjacent said conveyer and directly over the same, and a withdrawing and squaring means for withdrawing collapsed cartons from said hopper and for squaring the same comprising a support for one side of a carton
10 having gripping means for gripping said side, means pivoted to said first means for engaging an adjacent side of said carton, and means for simultaneously engaging the inside surface of the side of said carton opposite to said second side
15 for guiding the same in a path substantially parallel to that of said second side as the carton moves toward said conveyer.

15. In a cartoning machine the combination with a hopper for receiving collapsed cartons
20 which when open, have pairs of opposed walls and flaps extending in opposite directions from said walls, and a conveyer for receiving the cartons from the hopper of means for gripping one of said walls for moving the carton toward said conveyer and means moving in timed relation with
25 said gripping means for engaging and moving an adjacent wall of said carton to the desired angular position with respect to said first wall.

16. In a cartoning machine the combination
30 with a hopper for receiving collapsed cartons which when open, have pairs of opposed walls and flaps extending in opposite directions from said walls, and a conveyer for receiving the cartons from the hopper of means for gripping one
35 of said walls for moving a carton toward said conveyer and means moving in timed relation with said gripping means for engaging and moving an adjacent wall of said carton to the desired angular position with respect to said first wall,
40 said last mentioned means having means thereon for preventing movement of said carton in a direction perpendicularly away from said gripping means after the said walls have been moved to proper angular position with respect to each other.

17. In a cartoning machine the combination
45 with a hopper for receiving collapsed cartons which when open, have pairs of opposed walls and flaps extending in opposite directions from said walls, and a conveyer for receiving the cartons from the hopper of means for gripping one
50 of said walls for moving a carton toward said conveyer and means moving in timed relation with said gripping means for engaging and moving an adjacent wall of said carton to the desired angular position with respect to said first wall, said
55 last mentioned means having means thereon for preventing movement of said carton in a direction perpendicularly away from said gripping means after the said walls have been moved to proper
60 angular position with respect to each other, comprising a projection extending substantially parallel to said first wall when said walls are in said last mentioned position and overlying the opposite wall of said carton.

18. In a carton feeding mechanism the combination with a hopper for receiving collapsed
65 cartons having extending flaps which are to be folded over the open ends of the carton after the same has been opened, means for supporting said cartons in said hopper in stacked relation, means
70 for gripping one of said cartons at the end of said stack and for moving the same in a direction away from said stack, means for moving opposite flaps away from each other as the carton
75 begins its movement away from the stack, and a

blade movable into said carton between said flaps, engaging a side of said carton opposed to that which is engaged by said gripping means, whereby said carton is opened as it is moved away from said stack by said gripping means and means
5 positively engaging a side of said carton adjacent to the side which is gripped by said gripping means for moving that side of said carton into proper angular position with respect to said first side as the carton moves away from said stack. 10

19. In a carton feeding mechanism the combination with a hopper for receiving a plurality of
cartons having long and short flaps extending from the ends of each of said cartons, a short
15 flap and a long flap being opposed to each other when said carton is collapsed, means for engaging the longer of the flaps to separate the same from the shorter flap as a carton is withdrawn from said hopper, means for withdrawing a carton from
20 said hopper and means movable between said separated flaps into said carton for assisting in opening the carton as the same is moved in a direction away from said hopper.

20. In a carton feeding mechanism the combination with a hopper for receiving a plurality
25 of cartons having long and short flaps extending from the ends of each of said cartons, a short flap and a long flap being opposed to each other when said carton is collapsed, means for engaging the longer of the flaps to separate the same from the
30 shorter flap as a carton is withdrawn from said hopper, means for withdrawing a carton from said hopper and means movable between said separated flaps into said carton for assisting in opening the carton as the same is moved in a direction
35 away from said hopper, comprising a reciprocable blade movable in timed relation with the means for withdrawing cartons from said hopper, the same being adapted to engage the inner side of the carton opposed to that side of the carton
40 which is engaged by the means for withdrawing the carton from said hopper.

21. In a cartoning machine the combination with a conveyer of a hopper arranged above said
conveyer adapted to receive collapsed cartons, 45 means on said conveyer for advancing the cartons after they have been deposited therein after being squared, a guide extending substantially parallel to and over said conveyer for assisting in maintaining said cartons in their open state as the
50 same are moved by said conveyer and an extension for said guide movable into and out of a position in the path of movement of said cartons in timed relation to the withdrawal of said cartons and to the depositing of the same on said conveyer, whereby said extension will not interfere
55 with the movement of the cartons toward the conveyer but will be in a position over said cartons after the same have been deposited on said conveyer whereby to prevent the same from moving
60 away from said conveyer.

22. In a cartoning machine the combination with a conveyer of a hopper arranged above said
conveyer adapted to receive collapsed cartons, means on said conveyer for advancing the cartons 65 after they have been deposited thereon after being squared, a guide extending substantially parallel to and over said conveyer for assisting in maintaining said cartons in their open state as the same are moved by said conveyer and an
70 extension for said guide movable into and out of a position in the path of movement of said cartons in timed relation to the withdrawal of said cartons and to the depositing of the same on said conveyer, whereby said extension will not 75

interfere with the movement of the cartons toward the conveyer but will be in a position over said cartons after the same have been deposited on said conveyer whereby to prevent the same from
5 moving away from said conveyer, said extension for said guide comprising an arm mounted for movement through successive parallel positions into and out of alignment with said guide and into and out of a position in the path of movement of said cartons as the latter are advanced toward said conveyer.

MICHAEL J. MILMOE.