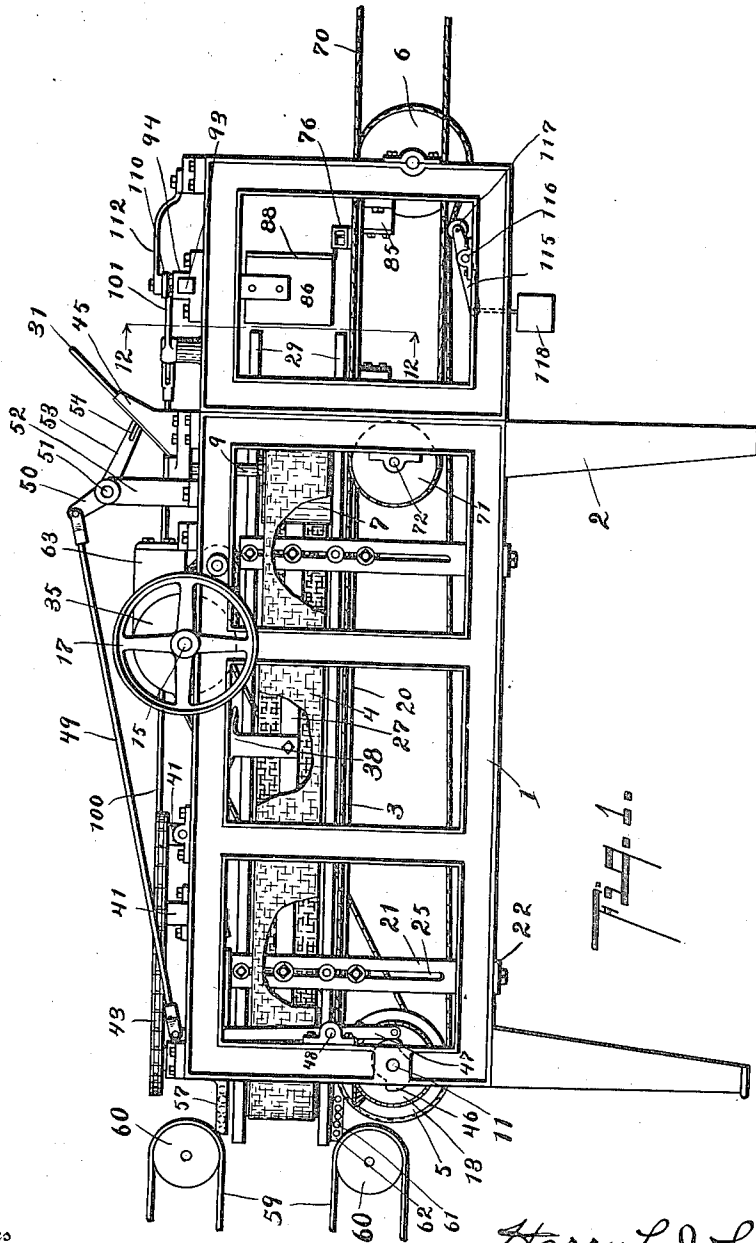


H. L. JOHNSON.
CONVEYER FOR CARTON SEALING MACHINES.
APPLICATION FILED APR. 14, 1908.

976,264.

Patented Nov. 22, 1910.

5 SHEETS—SHEET 1.



Witnesses

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334

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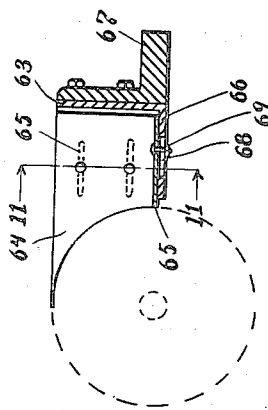
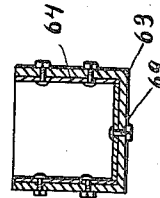
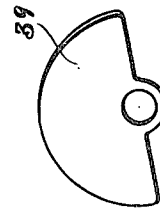
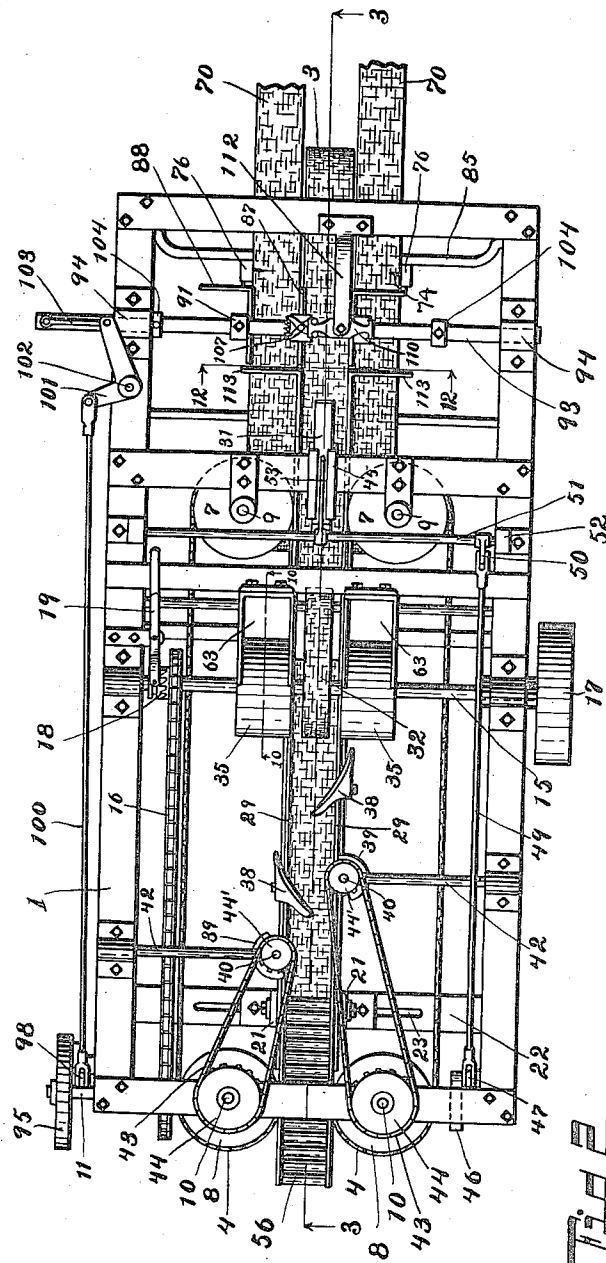
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5 SHEETS-SHEET 2.



Witnesses

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Fig. 2.

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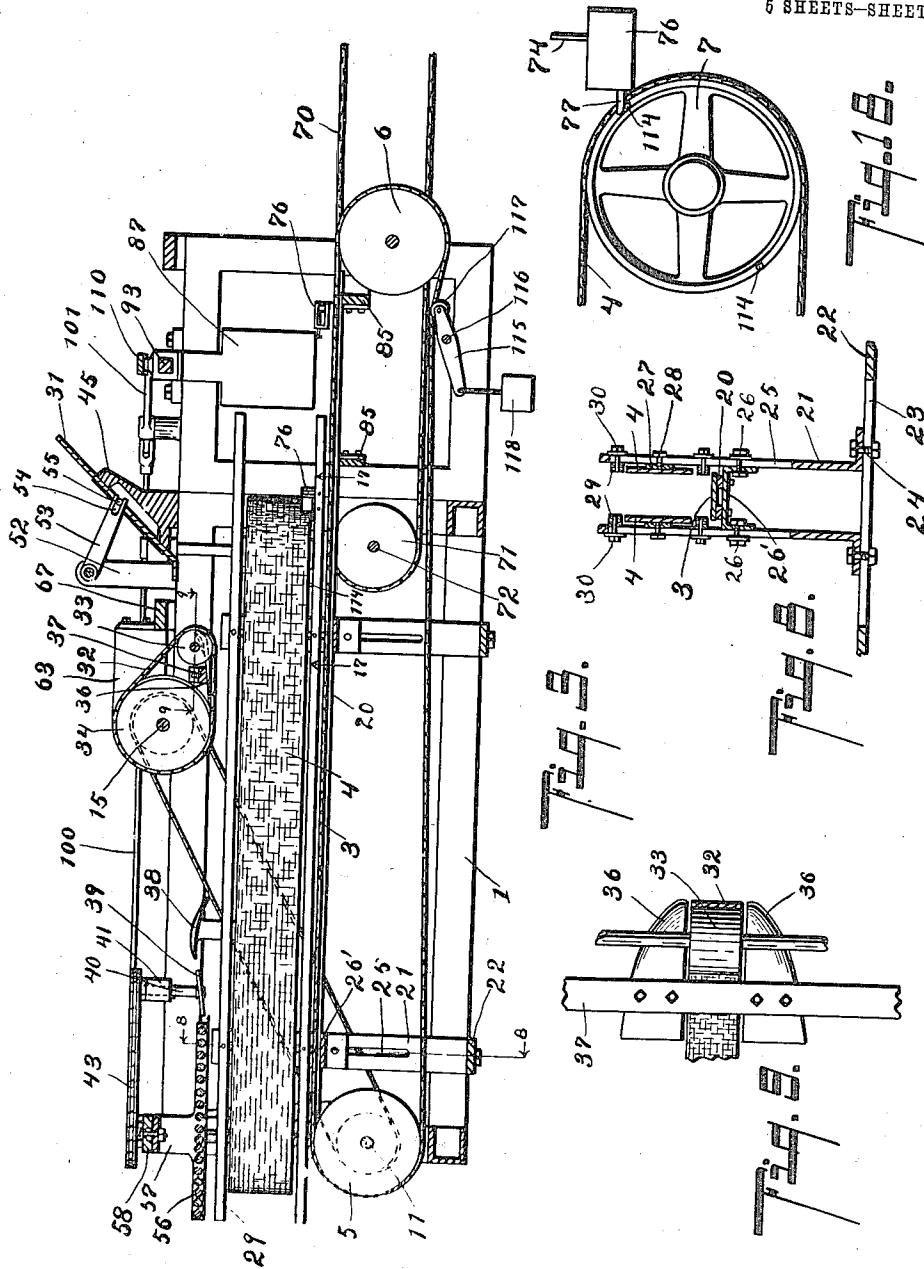
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5 SHEETS-SHEET 3.



Witnesses

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By

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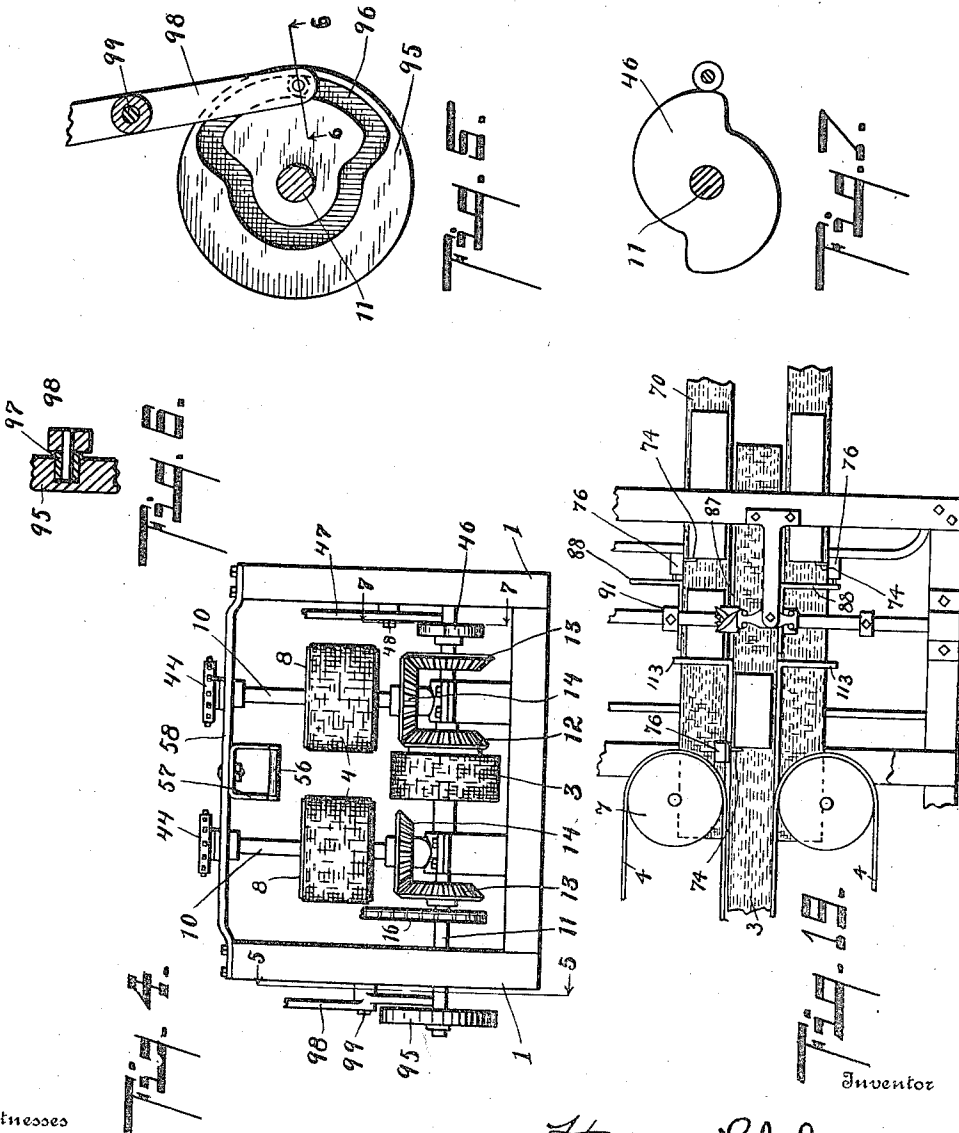
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5 SHEETS-SHEET 4.



Witnesses

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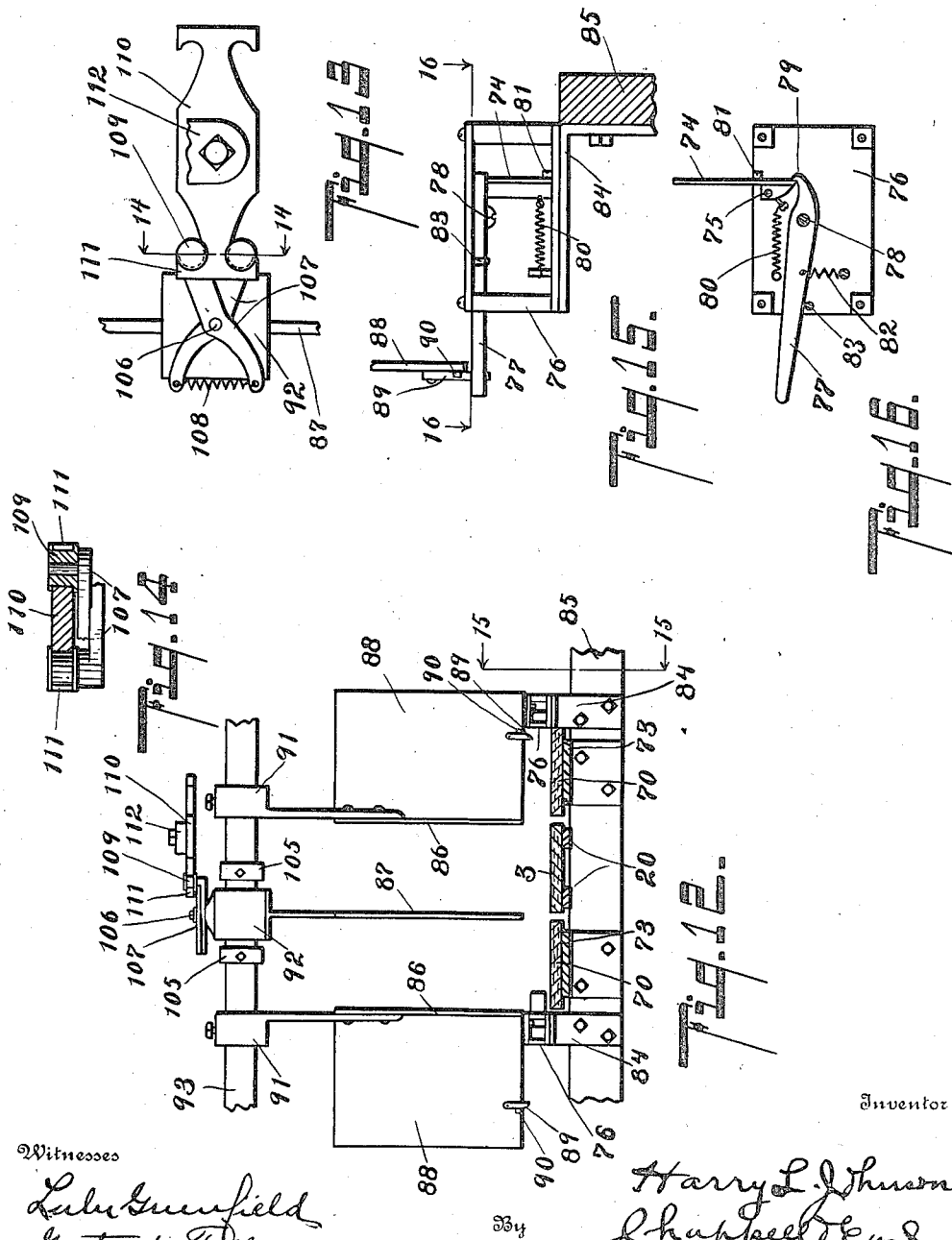
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APPLICATION FILED APR. 14, 1908.

976,264.

Patented Nov. 22, 1910.

5 SHEETS—SHEET 5.



Witnesses

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UNITED STATES PATENT OFFICE.

HARRY L. JOHNSON, OF BATTLE CREEK, MICHIGAN, ASSIGNOR OF ONE-HALF TO WILL K. KELLOGG, OF BATTLE CREEK, MICHIGAN.

CONVEYER FOR CARTON-SEALING MACHINES.

976,264.

Specification of Letters Patent.

Patented Nov. 22, 1910.

Application filed April 14, 1908. Serial No. 426,994.

To all whom it may concern:

Be it known that I, HARRY L. JOHNSON, a citizen of the United States, residing at the city of Battle Creek, county of Calhoun, State of Michigan, have invented certain new and useful Improvements in Conveyers for Carton-Sealing Machines, of which the following is a specification.

This invention relates to improvements in conveyers for carton sealing machines.

My invention is particularly adapted for the closing and sealing of the tops of filled cartons, and I have illustrated it herein embodied in a machine especially designed and adapted for that purpose, although certain features and parts of my improvements are adapted for use in machines for setting up or closing the bottom flaps of cartons.

The main objects of this invention are: first, to provide an improved carton sealing machine of large capacity,—that is, one capable of performing a large amount of work in a given time; second, to provide an improved carton sealing machine in which the cartons are effectively handled without injury thereto; third, to provide in a structure of the class described an improved automatic feed mechanism; fourth, to provide in a structure of the class described an improved carton conveyer; fifth, to provide in a structure of the class described an improved flap folding, sealing and holding means; and sixth, to provide in a structure of the class described improved driving connections for the parts whereby they are operated in proper sequence.

Further objects, and objects relating to structural details, will definitely appear from the detailed description to follow.

I accomplish the objects of my invention by the devices and means described in the following specification.

The invention is clearly defined and pointed out in the claims.

A structure embodying the features of my invention is clearly illustrated in the accompanying drawing, forming a part of this specification, in which,

Figure 1 is a side elevation of a carton sealing machine embodying the features of my invention, portions of the feed and delivery belts being broken away; Fig. 2 is a plan view thereof, the delivery belts not being shown; Fig. 3 is a vertical section, taken on a line corresponding to line 3—3 of Fig.

2; Fig. 4 is a rear end elevation looking from the right of Fig. 2; Fig. 5 is an enlarged detail vertical section, taken on a line corresponding to line 5—5 of Fig. 4, showing details of the driving mechanism for the automatic carton feed mechanism; Fig. 6 is an enlarged detail section, taken on a line corresponding to line 6—6 of Fig. 5; Fig. 7 is an enlarged vertical section, taken on a line corresponding to line 7—7 of Fig. 4, showing the cam for operating one of the carton flap folders; Fig. 8 is a vertical transverse section, taken on a line corresponding to line 8—8 of Fig. 3, showing details of the conveyer and of the supporting and adjusting means therefor; Fig. 9 is an enlarged detail section, taken on a line corresponding to line 9—9 of Fig. 3, showing details of the flap spreaders or openers, which open the flaps preparatory to their receiving the glue; Fig. 10 is an enlarged detail vertical section, taken on a line corresponding to line 10—10 of Fig. 2, showing one of the glue receptacles, the glue wheel being indicated by dotted lines; Fig. 11 is a vertical section, taken on a line corresponding to line 11—11 of Fig. 10, through the glue receptacle; Fig. 12 is an enlarged detail vertical section, taken on a line corresponding to line 12—12 of Fig. 1, showing the details of the carton feed mechanism; Fig. 13 is an enlarged detail plan of parts of the feed mechanism; Fig. 14 is a detail section, taken on a line corresponding to line 14—14 of Fig. 13; Fig. 15 is a detail vertical section, taken on a line corresponding to line 15—15 of Fig. 12, showing details of one of the carton stops; Fig. 16 is a horizontal section, taken on a line corresponding to line 16—16 of Fig. 15; Fig. 17 is a plan view of one of the rotary flap folding plates; and Fig. 18 is a detail horizontal section, taken on a line corresponding to line 17—17 of Fig. 3, showing the arrangement of the timing stop. Fig. 19 is a detail plan view of the forward end of the machine, showing details of the carton feeding mechanism, a plurality of cartons being indicated in conventional form in the machine.

In the drawing, the sectional views are taken looking in the direction of the little arrows at the ends of the section lines, and similar numerals of reference refer to similar parts throughout the several views.

Referring to the drawing, the frame 1 of

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my improved carton sealing machine is preferably rectangular in form, made up of suitable longitudinal pieces or rails connected by suitable vertical and horizontal cross pieces, as will appear from the drawing. This I preferably support on suitable legs, as 2. The mechanism is largely arranged and supported within this frame, and preferably consists of a carton conveyer, comprising a plurality of belts, the belt 3 being the bottom belt of the conveyer, and the belts 4 being the side belts, the said side belts being adapted to coact with the belt 3 in supporting and carrying along the cartons. The bottom belt 3 is supported and carried by a pair of pulleys 5 and 6 arranged at the rear and front of the frame, respectively. The belts 4 are carried by pulleys 7 and 8 on the vertically-arranged shafts 9 and 10.

The pulley 5 is loosely mounted on the horizontally-arranged shaft 11 by which it is carried and is provided with a beveled gear 12 on one of its faces. This gear is connected to the shaft 11 by means of the beveled gears 13 and 14, the gear 13 being secured to the shaft 11, and the gear 14 being secured to one of the shafts 10 whereby, as these gears are all of the same diameter, the conveyer belts are driven at the same speed. The other shaft 10 is connected to the shaft 11 by a like pair of gears 13 and 14, so that all three conveyer belts move at the same rate of speed. This shaft is connected to the driving shaft 15 of the machine by means of suitable sprockets and sprocket chain 16. The driving shaft 15 is provided with a suitable power belt wheel, as 17. A clutch 18 is provided for securing the sprocket wheel to the driven shaft, so that the conveyer belts may be disconnected or stopped and started at will, a suitable hand lever 19 being provided for operating the clutch.

The belt 3 is supported between the pulleys by the support 20, which is arranged longitudinally below the same,—that is, below the top reach thereof. This support is carried by the standards 21 arranged on suitable cross pieces 22 of the frame, and by the cross pieces 85 and 85 at the forward end of the frame. The horizontal cross pieces 22 are provided with longitudinal slots 23, so that the standards 21 may be adjusted laterally of the frame, the standards being secured by suitable bolts, as 24, Fig. 8 arranged through these slots. The standards 21 are provided with vertical slots 25 to receive the securing bolts 26 for the rests 26' for the supports 20, so that they may be adjusted vertically to properly support the belt. The side belts are supported by the supports 27, which are adjustably secured to the standards by the bolts 28 arranged in the slots thereof. Above and below the side belts 4, I preferably provide bars 29, the

plane of their inner faces being slightly within the plane of the faces of the belts so that, although the belts engage the package 3 or cartons with sufficient friction to carry them along, any undue strain thereon will be received by these side bars, and should a package become slightly wedged it is readily straightened up. The side bars are also adjustably supported by means of the bolts 30 arranged in the slots of the uprights.

I preferably provide a belt tightener for the belt 3 of the conveyer consisting of a lever 115 mounted on a pivot 116 having a roller 117 at one end to engage the belt, and a weight 118 at the other end, so that the desired tension is applied to the belt.

By thus arranging the conveyer, the cartons are effectively carried forward to the flap-opening, gluing and sealing mechanism, which is located along the conveyer so that the proper steps are performed as the cartons are carried forward. I will now proceed to describe this mechanism in the order of its operation and will then describe my improved automatic feed mechanism by which the cartons are effectively delivered to the carton closing and sealing mechanism.

As the cartons are carried along by the conveyer described in an upright position, the rear flap of the carton is engaged and folded forwardly by the reciprocating folder 31. The front flap is then engaged and folded down by the belt 32, the forward pulley 33 for the belt 32 being located in the path of the flap,—that is, so that the belt is supported above the path of the carton. It is obvious that this pulley or roller 33 would fold down the flap, if the belt were omitted, but the belt serves to hold the inner flaps in their folded position while the glue is being applied to the outer or side flaps, and also serves to assist in carrying the carton along while the glue is being applied to the flaps, and retains the cartons in an upright position at this time.

The rear pulley 34 for the belt is preferably located on the driving shaft 15 between the glue wheels 35, which are also mounted on this shaft. As the inner or the front and rear flaps are engaged by the belt 32, the outer or side flaps are engaged by the shoe-like flap turners or deflectors 36 arranged at each side of the belt 32 Fig. 9 and in front of the glue wheels 35 and folded or turned outwardly to receive the glue on their inner faces, as they pass under the glue wheels. These flap turners or deflectors are mounted on the cross bar, arranged across the frame in front of the pulley 34 and the glue wheels 35. As the carton is carried forward by the conveyer described, after passing the glue wheels, the one of the side flaps which I designate as the inner for convenience is engaged by the flap turner or folder 38

which is preferably mold-board-like in form and arranged with its forward end projecting downwardly to engage under the flap and turn it inwardly as the carton is carried along. The flap is then engaged by the revolving flap presser or closer 39, by which it is pressed down firmly against the inner or front and rear flaps, its glued face being against the same. The outer or outer side flap is then engaged by a flap turner or folder 38 and turned inwardly upon the other side flap; and, as the carton is carried along, the flap is engaged by the other revolving flap folder or flap presser 39 and pressed down upon the other flaps. The devices 39 are, in effect, pressing devices, as they firmly press the flaps together. These flap folders or pressers 39 preferably consist of blades arranged on an angle on the vertical shafts 40, so that, as they are revolved, they engage and press down upon the flaps. The bearings 41 for these shafts are carried by arms 42 projecting inwardly from the top side rails of the frame to properly support them in position. These shafts 40 are connected to be driven at proper speed relative to the conveyer by means of the sprocket chains 43, which connect the sprocket wheels 44 on the upper ends of the shafts 10 with suitable sprocket wheels 44' on the shafts 40.

The reciprocating or striking folder 31 is slidably supported in a slotted bearing 45 and is arranged to move downwardly and rearwardly so that it engages and folds the rear inner flap of the carton as it is carried forward by the conveyer. This reciprocating folder is connected to operate in proper order with the other mechanism described, the operating means and connection preferably consisting of the cam wheel 46, which is preferably mounted on the shaft 11. This cam acts upon the lower end of the lever 47, which is pivoted at 48 on the frame, the upper end of the lever being connected by the connecting rod or link 49 to the arm 50 on the rock shaft 51, the rock shaft being mounted in suitable bearings 52 on the top side rails of the frame to extend across the same above the conveyer. On this rock shaft is an arm 53 having a slot 54 therein, which engages over the pin 55 on the folder 31, so that the folder is reciprocated and its movements properly timed with the rest of the folding mechanism.

To retain the flaps in their folded position, after passing from the presser folders 39, I preferably provide a series of rollers 56 located above the conveyer and which hold the flaps together until the glue has had sufficient time to set and to adhere firmly to the flaps. These rollers are preferably journaled in hangers 57 suspended from the rear top crosspiece 58 of the frame.

The conveyer described is preferably adapted to deliver to a delivery conveyer consisting of a pair of belts 59, which receive the sealed cartons and carry them to a place of delivery, and also hold the flaps in their closed position until they have opportunity for further drying. The forward pulleys 60 of these belts are located close to the rear end of the sealing conveyer described, but, as this arrangement will be well understood by those skilled in the art to which this invention relates, I show the same herein only in conventional form.

To effectively support the cartons as they pass from the sealing conveyer to the delivery conveyer, I preferably locate a series of rollers 61 between the end of the belt 3 and the bottom of the belt 59, the rollers being illustrated in conventional form in Fig. 1, and being carried by arms 62 on the frame.

The glue is supplied to the glue wheels 35 by means of the glue receptacles 63, a receptacle being provided for each wheel. These receptacles are open ended, the glue wheels fitting into one end and forming, in effect, the end thereof. The side walls of the glue receptacles are curved at 64 to fit the peripheries of the glue wheels and their bottoms 65 serve as scrapers to regulate the delivery of the glue to the glue wheels.

The side and bottom walls are made adjustable,—that is, they are made up of telescoping sections, the receptacle section 66 being secured to the support 67, and the other section being adjustable therein. This is accomplished by means of the slots 68 in the side and bottom walls of the fixed section and bolts 69 arranged in these slots, so that the adjustable section of the receptacle can be adjusted to and from the glue wheels, and thus nicely regulate the amount of glue delivered or applied to the flaps.

Having described my improved carton sealing mechanism, I will now describe the automatic feed thereto. This preferably consists of the pair of feed belts 70, which are arranged at each side of the forward end of the conveyer belt 3, as clearly appears from Fig. 1. The rear ends of these belts are supported by suitable pulleys 71 mounted on the shaft 72. As they may extend any desired distance from the machine and be arranged so as to receive the filled cartons from a carton filling machine, or the filled cartons may be placed thereon by hand, I do not illustrate the supporting or delivering mechanism therefor herein. I will state, however, that they are preferably driven at a speed which exceeds somewhat the speed of the sealing conveyer, the object being to insure a full supply of filled cartons. These feed belts are supported in a plane parallel with the surface of the belt of the sealing conveyer 3 by means of the supports 73 Fig.

12, so that the cartons may be shifted from the feed belts 70 to the conveyer belt.

As the filled cartons are carried forward by the feed belts, they are engaged by the stops 74, and held thereby until these stops are tripped, as will hereinafter be described. These stops are mounted on vertical pivots 75 carried by the stop frames 76, and are arranged so that they project over the feed belts when in their extended position. The stops 74 are held in their extended or engaged position by the pivoted latches 77, the latches being pivoted at 78, and having hooks 79 at their inner ends adapted to engage the inner ends of the stops. The stops are returned to their outer or extended position, when released by the passing carton, by the coiled springs 80. The stops 81 are provided for limiting the outward movement of the pivoted stops. The latches 77 are held yieldingly in their engaging position by the coiled springs 82, suitable stops, as 83, being provided therefor. These stop frames are mounted on suitable brackets 84 carried by the cross pieces 85 on the frame. These stop frames are preferably in the form of top and bottom plates separated by suitable spacing members, the latches and the stops being pivoted on the top and bottom plates. To the rear of these stops, I locate the laterally movable shifters, preferably comprising the shifter plates 86 and 87, the plate 87 being centrally located and coacting with both of the plates 86 forming, in effect, a pair of shifters. I provide shifting stops or guard plates 88 which are moved alternately into and out of their operative position above the feed belts. These stop or guard plates are preferably carried by and project outwardly from the forward edges of the shifter plates 86.

The shifters, as they are reciprocated, are moved first over the one and then over the other of the feed belts to receive the cartons and carry them on to the conveyer belt 3. As the shifters move inwardly, or, on their delivery stroke, the latches 77 of the stops 74 are engaged by the trips 89 carried by the plates 88 which releases the carton which is held by the stops 74, allowing it to feed up against the shifter guard plate 88, so that, on the reverse movement when the shifter guard plate 88 is moved out of the path of the carton, the carton is carried forward by the feed belt into the shifter, between the shifter plates against the fixed end plate 113 of the shifter.

The trip 89 is pivoted so that, on the return movement of the shifter, it slips over the latch 77, a suitable stop 90 being provided for the trip so that it is held rigid on the forward movement. The shifter plates 86, 86 and 87 are secured by suitable hangers 91, 91 and 92, respectively, to the shifter shaft or rod, which is mounted to

reciprocate in suitable bearings 94 in the main frame. The hanger 92 is preferably slidably mounted on the shifter shaft 93, so that, while the carton may move freely into the shifter, it is effectively grasped during the shifting operation, and also the shifter plates, closing up on the same, take out any bulge in their side walls and deliver them properly between the side belts and the sealing conveyer,—that is, they are compressed sufficiently so that they pass into the conveyer readily between the side belts thereof; and, when released by the shifter, are effectively engaged by the conveyer and carried forward thereby.

The shifter is connected to be operated in proper sequence with the sealing mechanism described, the operating connection being preferably a cam wheel 95 arranged on the shaft 11, the wheel having a cam groove 96 therein to receive the roller 97 on the lower end of the lever 98. This lever is pivoted at 99 and its upper end is connected by the connecting rod or link 100 to the bell crank lever 101, which is mounted on the vertical pivot 102, on the frame. The other arm of this lever 101 is connected by the link 103 to the shifter shaft 93. The shifter shaft or rod is preferably provided with stop collars 104 to prevent any overthrow which might result from a looseness or play in the operating connections.

The hanger 92 for the shifting plate 87, is, as stated, yieldingly and slidably mounted upon the shifting rod 93. Suitable collars as 105 are provided on the rod for limiting the movement of this hanger thereon,—see Fig. 12.

To retard the movement of the shifter plate 87, or to yieldingly hold it against the carton to grip and compress the same, I preferably provide the following means. On the top of the hanger, I mount on the pivot 106 a pair of crossed arms 107, which are connected by the spring 108 at one end which tends to clamp the rollers 109, carried by the other ends thereof, upon the wedge block 110. This wedge block is provided with stops 111, which engage the rollers 109 on the arms 107 carried by the shifting plate 87, as the movement of the shifting rod is completed, moving it to a central position and thus releasing the carton. The wedge block 110 is double ended, so that the shifting plate 87 is actuated the same on both movements of the shifting rod. The wedge plate 110 is preferably supported on an arm 112 projecting rearwardly from the rear cross piece of the main frame, as clearly appears in Fig. 2.

To insure the delivery of the cartons to the flap folding mechanism in exact time or sequence, I locate in the conveyer a stop plate 74 the same or similar to those described for the feed belts. The latch of this

stop plate is tripped by trip pins 114, which project downwardly from one of the forward pulleys 7 for the side belts 4 of the sealing conveyer. See Figs. 3 and 18. This serves as an additional precaution for insuring the delivery of the cartons in proper position to receive the stroke of the reciprocating flap folder 31, although the machine will operate very satisfactorily without this, as the feed device is timed as stated with the sealing mechanism. It, however, overcomes any slight difference in the time that might result from a slipping of the carton in the conveyer, or as it is being introduced into the conveyer by the feed device.

By forming and arranging the parts as I have illustrated and described, I provide a machine which is capable of very rapid work and requires very little attention, as it is not likely to become clogged in use, the cartons being effectively fed thereto, sealed, and delivered automatically without special attention of an operator. As stated, the cartons may be automatically delivered from a carton filling machine to the feed belts 70, or they may be placed thereon by hand.

By adjustably supporting the conveyer belts, as I have illustrated and described, the conveyer may be adapted to cartons of different sizes, a considerable adjustment being possible in the device as shown; and, by changing the conveyer belts for belts of different widths, cartons varying greatly in size may be satisfactorily handled.

My improved carton sealing machine is comparatively simple in structure, particularly when its capacity is taken into consideration.

While I illustrate and describe a pair of feed belts in this connection, it will be obvious that a single feed belt might be used, but this would, of course, require that the feed mechanism be speeded up higher, which is objectionable.

I have illustrated and described my improvements in detail as applied to a carton sealing machine and in the form preferred by me on account of their structural simplicity and economy. I am aware, however, that they may be considerably varied in structural details without departing from my invention, and I desire to be understood as claiming the same broadly, as well as specifically, as illustrated.

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

1. The combination with a frame, of a conveyer comprising a bottom belt and side belts, said bottom belt extending forwardly beyond said side belts; supports for said bottom and side belts over which they are adapted to travel; side bars arranged parallel with said side belts, said side bars extending forwardly beyond said side belts;

a feed belt arranged at each side of the forward end of said bottom belt and overlapping the forwardly extended end thereof; supports for said feed belts whereby their upper faces are supported in substantially the same plane as the face of the said conveyer; and a shifter adapted to shift the cartons from said feed belts to said bottom conveyer belt.

2. The combination with a frame, of a conveyer comprising a bottom belt and side belts, said bottom belt extending forwardly beyond said side belts; side bars arranged parallel with said belts, said side bars extending forwardly beyond said side belts; a feed belt arranged at each side of the forward end of said bottom belt and overlapping the forwardly extending end thereof; and a shifter adapted to shift the cartons from said feed belts to said bottom conveyer belt.

3. The combination with a frame, of a conveyer comprising a bottom belt and side belts, said bottom belt extending forwardly beyond said side belts; supports for said bottom and side belts over which they are adapted to travel; a feed belt arranged at each side of the forward end of said bottom belt and overlapping the forwardly extended end thereof; supports for said feed belts whereby their upper faces are supported in substantially the same plane as the face of the said conveyer; and a shifter adapted to shift the cartons from said feed belts to said bottom conveyer belt.

4. The combination with a frame, of a conveyer comprising a bottom belt and side belts, said bottom belt extending forwardly beyond said side belts; a feed belt arranged at each side of the forward end of said bottom belt and overlapping the forwardly extended end thereof; and a shifter adapted to shift the cartons from said feed belts to said bottom conveyer belt.

5. The combination with a frame, of a conveyer comprising a bottom belt and side belts, said bottom belt extending forwardly beyond said side belts; supports for said bottom and side belts over which they are adapted to travel; side bars arranged parallel with said side belts and coacting therewith to form the sides of the conveyer, said side bars extending forwardly beyond said side belts; and a feed mechanism adapted to deliver upon said forwardly extending end of said bottom conveyer belt.

6. The combination with a frame, of a conveyer comprising a bottom belt and side belts, said bottom belt extending forwardly beyond said side belts; supports for said bottom and side belts over which they are adapted to travel; side bars arranged parallel with said side belts and coacting therewith to form the sides of the conveyer; and a feed mechanism adapted to deliver

upon said forwardly extending end of said bottom conveyer belt.

7. The combination with a frame, of a conveyer comprising a bottom belt and side belts, said bottom belt extending forwardly beyond said side belts; side bars arranged parallel with said side belts and coacting therewith to form the sides of the conveyer, said side bars extending forwardly beyond said side belts; and a feed mechanism adapted to deliver upon said forwardly extending end of said bottom conveyer belt.

8. The combination with a frame, of a conveyer comprising a bottom belt and side belts, said bottom belts extending forwardly beyond said side belts; side bars arranged parallel with said side belts and coacting therewith to form the sides of the conveyer; and a feed mechanism adapted to deliver upon said forwardly extending end of said bottom conveyer belt.

9. The combination with a frame, of a conveyer comprising a bottom belt and side belts; adjustable supports for said bottom and side belts over which they are adapted to travel; and side bars adjustably arranged above and below said side belts.

10. The combination with a frame, of a conveyer comprising a bottom belt and side belts; supports for said bottom and side belts over which they are adapted to travel; and side bars adjustably arranged above and below said side belts and coacting therewith to form the sides of the conveyer.

11. The combination with a frame, of a conveyer comprising a bottom belt and side belts; adjustable supports for said bottom and side belts over which they are adapted to travel; and side bars arranged parallel with said side belts and coacting therewith to form the sides of the conveyer.

12. The combination with a frame, of a conveyer comprising a bottom belt and side belts; supports for said bottom and side belts over which they are adapted to travel; and side bars arranged parallel with said side belts and coacting therewith to form the sides of the conveyer.

13. The combination with a frame, of a conveyer comprising a bottom and side belts; side bars arranged parallel with and above and below said side belts; supports for said belts; and supports for said side bars and belt supports comprising pairs of uprights having vertical slots therein; securing bolts for said side bars and belt supports engaged in said slots whereby they may be adjusted, and slotted cross pieces on which said uprights are mounted, the securing bolts of said uprights to said cross pieces being arranged in said slots in said cross pieces, whereby they may be adjusted thereon.

14. The combination with a frame, of a conveyer comprising a bottom and side belts; supports for said belts; and supports for

said belt supports comprising pairs of uprights having vertical slots therein; securing bolts for said belt supports engaged in said slots whereby they may be adjusted, and slotted cross pieces on which said uprights are mounted, the securing bolts of said uprights to said cross pieces being arranged in said slots in said cross pieces, whereby they may be adjusted thereon.

15. The combination with a frame, of a conveyer comprising a bottom and side belts; side bars arranged parallel with and above and below said side belts; supports for said belts; and supports for said side bars and belt supports comprising pairs of uprights having vertical slots therein; securing bolts for said side bars and belt supports engaged in said slots whereby they may be adjusted.

16. The combination with a frame, of a conveyer comprising a bottom and side belts; supports for said belts; and supports for said belt supports comprising pairs of uprights having vertical slots therein, securing bolts for said belt supports engaged in said slots whereby they may be adjusted.

17. The combination with a conveyer, of a pair of feed belts arranged at each side of said conveyer; a shifter comprising fixed end plates arranged above said feed belts; a reciprocating shaft; a pair of outer shifter plates fixed to said shaft; a central shifter plate arranged between said outer shifter plates slidably arranged on said reciprocating shaft; stops on said shaft for limiting the movement of said central shifter plate thereon; means for shifting said central plate between its said stops on said shaft; guard plates carried by the outer shifter plates adapted to extend over said feed belts when the shifter plates are in their inner positions; stops located in front of said guard plates; and trips for said stops carried by said guard plates whereby said stops are released when said guard plates are moved into their operative position.

18. The combination with a conveyer, of a pair of feed belts arranged at each side of said conveyer; a shifter comprising fixed end plates arranged above said feed belts; a reciprocating shaft; a pair of outer shifter plates fixed to said shaft; a central shifter plate arranged between said outer shifter plates slidably arranged on said reciprocating shaft; stops on said shaft for limiting the movement of said central shifter plate thereon; means for shifting said central plate between its said stops on said shaft; guard plates carried by the outer shifter plates adapted to extend over said feed belts when the shifter plates are in their inner position.

19. The combination with a conveyer, of a pair of feed belts arranged at each side of said conveyer; a shifter comprising a re-

reciprocating shaft; a pair of outer shifter plates fixed to said shaft; a central shifter plate arranged between said outer shifter plates slidably arranged on said reciprocating shaft; stops on said shaft for limiting the movement of said central shifter plate thereon; and means for shifting said central plate between its said stops on said shaft.

20. The combination with a conveyer, of a pair of feed belts arranged at each side of said conveyer; a shifter comprising fixed end plates arranged above said feed belts; a reciprocating shaft; a pair of outer shifter plates fixed to said shaft; a central shifter plate arranged between said outer shifter plates slidably arranged on said reciprocating shaft; means for shifting said central plate on said shaft as said shaft is shifted whereby the cartons are clamped and released; guard plates carried by the outer shifter plates adapted to extend over said feed belts when the shifter plates are in their inner positions; stops located in front of said guard plates; and trips for said stops carried by said guard plates whereby said stops are released when said guard plates are moved into their operative positions.

21. The combination with a conveyer, of a pair of feed belts arranged at each side of said conveyer; a shifter comprising fixed end plates arranged above said feed belts; a reciprocating shaft; a pair of outer shifter plates fixed to said shaft; a central shifter plate arranged between said outer shifter plates slidably arranged on said reciprocating shaft; means for shifting said central plate on said shaft as said shaft is shifted whereby the cartons are clamped and released; and guard plates carried by the outer shifter plates adapted to extend over said feed belts when the shifter plates are in their inner positions.

22. The combination with a conveyer, of a pair of feed belts arranged at each side of said conveyer; a shifter comprising a reciprocating shaft; a pair of outer shifter plates fixed to said shaft; a central shifter plate arranged between said outer shifter plates slidably arranged on said reciprocating shaft; and means for shifting said central plate on said shaft as said shaft is shifted whereby the cartons are clamped and released.

23. The combination with a conveyer comprising a belt, of a pair of feed belts arranged at each side of said conveyer belt, said feed belts being arranged with their upper faces in substantially the same plane as the face of the said conveyer belt; a shifter comprising fixed end plates arranged above said feed belts; a reciprocating shaft; a pair of outer shifter plates fixed to said shaft; a central shifter plate arranged between said outer shifter plates and adapted to coast therewith; guard plates carried by the outer

shifter plates adapted to extend over said feed belts when the shifter plates are in their inner positions; stops located in front of said guard plates; and trips for said stops carried by said guard plates whereby said stops are released when said guard plates are moved into their operative positions.

24. The combination with a conveyer comprising a belt, of a pair of feed belts arranged at each side of said conveyer belt, said feed belts being arranged with their upper faces in substantially the same plane as the face of the said conveyer belt; a shifter comprising fixed end plates arranged above said feed belts; a reciprocating shaft; a pair of outer shifter plates fixed to said shaft; a central shifter plate arranged between said outer shifter plates and adapted to coast therewith; and guard plates carried by the outer shifter plates adapted to extend over said feed belts when the shifter plates are in their inner positions.

25. The combination with a conveyer comprising a belt, of a pair of feed belts arranged at each side of said conveyer belt, said feed belts being arranged with their upper faces in substantially the same plane as the face of the said conveyer belt; a shifter comprising a reciprocating shaft; a pair of outer shifter plates fixed to said shaft; and a central shifter plate arranged between said outer shifter plates and adapted to coast therewith.

26. The combination with a conveyer, of a pair of feed belts arranged at each side of said conveyer; a shifter comprising a pair of outer shifter plates connected to move together, and a central shifter plate arranged between said outer shifter plates and having a movement independent of said outer plates; means for shifting said central plate whereby its movement relative to said outer plates is retarded; guard plates carried by the outer shifter plates adapted to extend over said feed belts when the shifter plates are in their inner positions; stops located in front of said guard plates; and trips for said stops carried by said guard plates whereby said stops are released when said guard plates are moved into their operative position.

27. The combination with a conveyer, of a pair of feed belts arranged at each side of said conveyer; a shifter comprising a pair of outer shifter plates connected to move together, and a central shifter plate arranged between said outer shifter plates and having a movement independent of said outer plates; means for shifting said central plate whereby its movement relative to said outer plates is retarded; and guard plates carried by the outer shifter plates adapted to extend over said feed belts when the shifter plates are in their inner positions.

28. The combination with a conveyer, of a

- pair of feed belts arranged at each side of said conveyer; a shifter comprising a pair of outer shifter plates connected to move together; and a central shifter plate arranged between said outer shifter plates and having a movement independent of said outer plates; and means for shifting said central plate whereby its movement relative to said outer plates is retarded.
29. The combination with a conveyer, of a pair of feed belts arranged at each side of said conveyer; a shifter comprising a pair of outer shifter plates connected to move together, and a central shifter plate arranged between said outer shifter plates and having a movement independent of said outer plates; means for shifting said central plate whereby its movement relative to said outer plates is retarded; stops located in front of said shifter plates; and trips for said stops carried by said shifter plates.
30. The combination with a conveyer comprising a belt, a pair of feed belts arranged at each side of said conveyer belt; a shifter comprising fixed end plates arranged above said feed belts; reciprocating shifter plates; guard plates carried by the shifter plates adapted to extend over said feed belts when the shifter plates are in their inner positions; stops located in front of said guard plates; and trips for said stops carried by said guard plates whereby said stops are released when said guard plates are moved into their operative positions.
31. The combination with a conveyer comprising a belt, a pair of feed belts arranged at each side of said conveyer belt; a shifter comprising fixed end plates arranged above said feed belts; reciprocating shifter plates; and guard plates carried by the shifter plates adapted to extend over said feed belts when the shifter plates are in their inner positions.
32. The combination with a conveyer comprising a belt, a pair of feed belts arranged at each side of said conveyer belt; a shifter comprising fixed end plates arranged above said feed belts; reciprocating shifter plates; stops located in front of said shifter plates; and trips for said stops carried by said shifter plates.
33. The combination with a conveyer, of a feed belt arranged at the side of said conveyer; a shifter comprising a fixed end plate arranged above said feed belt; a reciprocating shaft; a pair of shifter plates, one of which is fixed to and the other adjustable upon said shaft; means for shifting said adjustable plate on said shaft as said shaft is reciprocated, whereby the cartons are clamped and released; a guard plate carried by the fixed shifter plate adapted to extend over said feed belt when the shifter plates are in their inner position; a stop located in front of said guard plate whereby said stop is released when said guard plate is moved into its operative position.
34. The combination with a conveyer, of a feed belt arranged at the side of said conveyer; a shifter comprising a fixed end plate arranged above said feed belt; a reciprocating shaft; a pair of shifter plates, one of which is fixed to and the other adjustable upon said shaft; means for shifting said adjustable plate on said shaft as said shaft is reciprocated, whereby the cartons are clamped and released.
35. The combination with a conveyer, of a feed belt arranged at the side of said conveyer; a shifter comprising a reciprocating shaft; a pair of shifter plates, one of which is fixed to and the other adjustable upon said shaft; and means for shifting said adjustable plate on said shaft as said shaft is reciprocated, whereby the cartons are clamped and released.
36. The combination with a conveyer, of a feed belt arranged at the side of said conveyer; a reciprocating shifter; a guard plate carried by the shifter adapted to extend over said feed belt when the shifter is in its inner position; a stop located in front of said shifter; and a trip for said stop carried by said shifter whereby said stop is released when said guard plate is moved into its operative position.
37. The combination with a conveyer, of a feed belt arranged at the side of said conveyer; a reciprocating shifter; and a guard plate carried by the shifter adapted to extend over said feed belt when the shifter is in its inner position.
38. The combination with a conveyer, of a feed belt arranged at the side of said conveyer; a reciprocating shifter; a stop located in front of said shifter; and a trip for said stop carried by said shifter whereby said stop is released.
39. The combination with a conveyer, of a pair of feed belts arranged at each side of said conveyer; a shifter comprising a reciprocating shaft; a pair of outer shifter plates fixed to said shaft; a central shifter plate arranged between said outer shifter plates slidably arranged on said reciprocating shaft; stops on said shaft for limiting the movement of said central shifter plate thereon; means for shifting said central plate between its said stops on said shaft, comprising a pair of crossed levers pivotally mounted thereon, a spring connecting one end of said levers; a double wedge piece having stops at each end thereof; and rollers on said levers adapted to engage said wedge piece, coacting as specified.

40. The combination with a conveyer, of a pair of feed belts arranged at each side of said conveyer; a shifter comprising a reciprocating shaft; a pair of outer shifter plates fixed to said shaft; a central shifter plate arranged between said outer shifter plates slidably arranged on said reciprocating shaft; stops on said shaft for limiting the movement of said central shifter plate thereon; means for shifting said central plate between its said stops on said shaft, comprising a pair of crossed levers pivotally mounted thereon; a spring connecting one end of said levers; and a double wedge piece having stops at each end thereof, engaged by said levers, coacting as specified.

41. The combination with a conveyer, of a feed belt arranged at the side of said conveyer; a shifter comprising a reciprocating shaft; a pair of shifter plates, one of which is fixed to and the other adjustable upon said shaft; stops on said shaft for limiting the movement of said adjustable shifter plate thereon; means for shifting said adjustable plate between its said stops on said shaft, comprising a pair of crossed levers pivotally mounted thereon; a spring connecting one end of said levers; and a wedge piece having stops at the end thereof, and rollers on said levers adapted to engage said wedge piece, coacting as specified.

42. The combination with a conveyer, of a feed belt arranged at the side of said conveyer; a shifter comprising a reciprocating shaft; a pair of shifter plates, one of which is fixed to and the other adjustable upon said shaft; stops on said shaft for limiting the movement of said adjustable shifter plate thereon; means for shifting said adjustable plate between its said stops on said shaft, comprising a pair of crossed levers pivotally mounted thereon; a spring connecting one end of said levers; and a wedge piece having stops at the end thereof arranged to act on said levers, coacting as specified.

43. The combination with a conveyer, of a feed belt arranged at the side of said conveyer; a shifter comprising a reciprocating shaft; a pair of shifter plates, one of which is fixed to and the other adjustable upon said shaft; stops on said shaft for limiting the movement of said adjustable shifter plate thereon; means for shifting said adjustable plate between its said stops on said shaft as said shaft is reciprocated, whereby a carton is clamped and released, as specified.

44. The combination with a conveyer, of a feed belt arranged at the side of said conveyer; a shifter comprising a reciprocating shifter plate; a guard plate carried by the said shifter plate adapted to extend over said feed belt when the shifter plate is in its inner position; a pivoted stop located in front of said guard plate; a spring for returning said stop to its engaging or extended position; a catch for said stop whereby said stop is held in its extended or operative position; and a trip for said catch carried by said guard plate whereby said stop is released when said guard plate is moved into its operative position.

45. The combination with a conveyer, of a feed belt arranged at the side of said conveyer; a reciprocating shifter; a pivoted stop located in front of said shifter; a spring for returning said stop to its engaging or extended position; a catch for said stop whereby said stop is held in its extended or operative position; and a trip for said catch carried by said shifter.

In witness whereof, I have hereunto set my hand and seal in the presence of two witnesses.

HARRY L. JOHNSON. [L. S.]

Witnesses:

BERNARD PLUM,
THERESA FLETCHER.