H. L. JOHNSON.

PACKING CASE OR CARTON SEALING MACHINE.

APPLICATION FILED SEPT. 22, 1916.

1,242,945.

Patented Oct. 16, 1917.

5 SHEETS—SHEET 1.

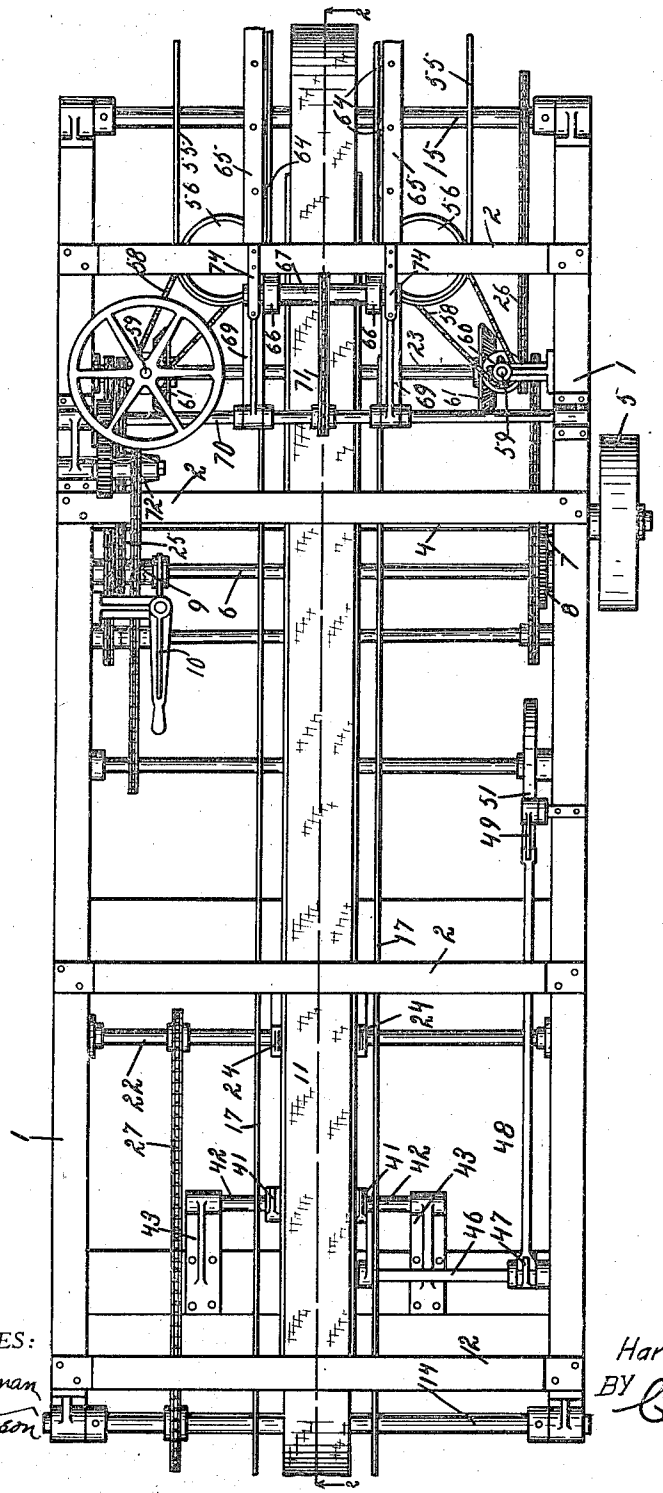


FIG. I.

WITNESSES:

Lenn Gilman

Morris Atkinson

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Harry L. Johnson

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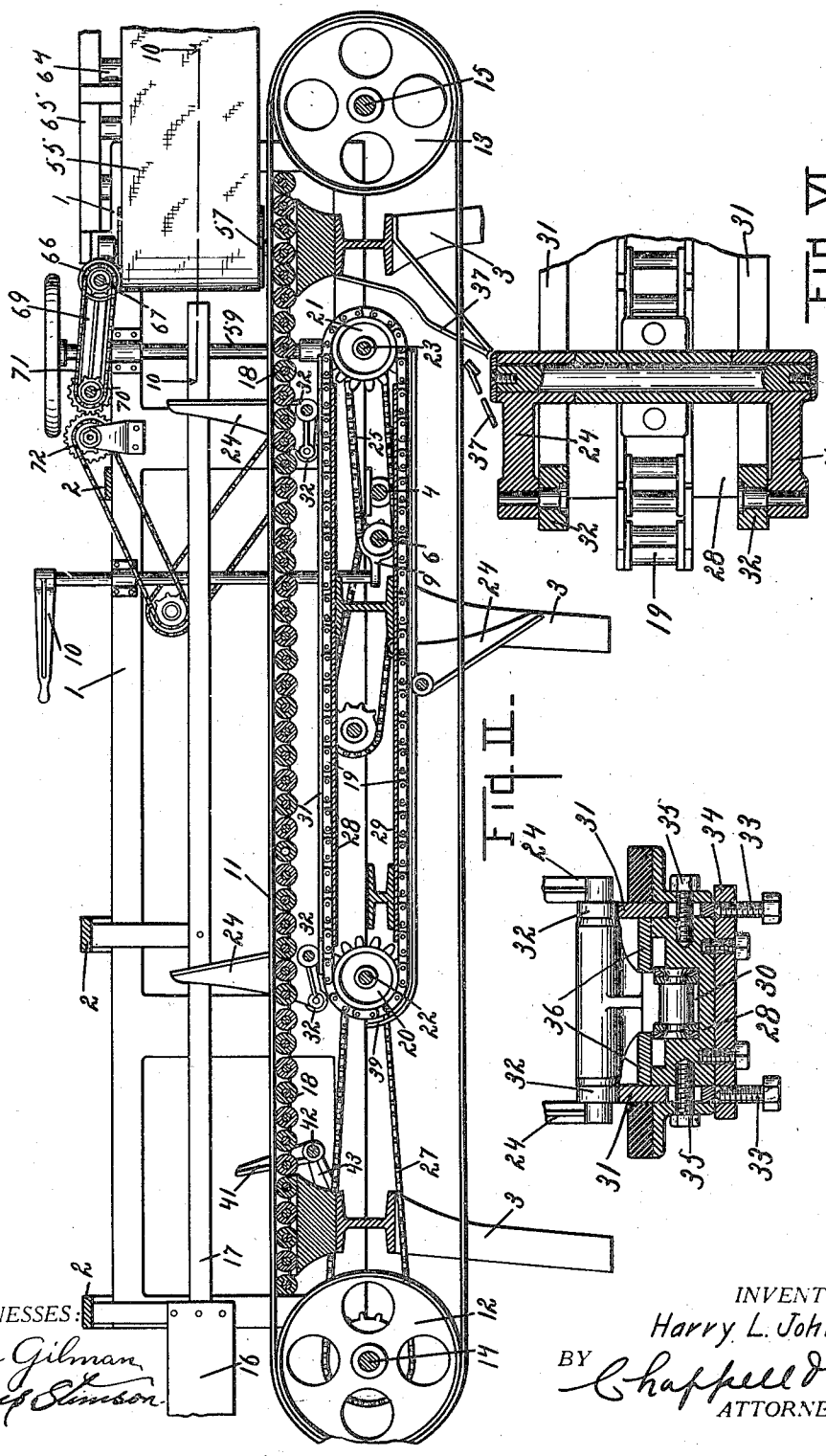


FIG. II.

FIG. VI.

FIG. VII.

WITNESSES:

Lenn Gilman

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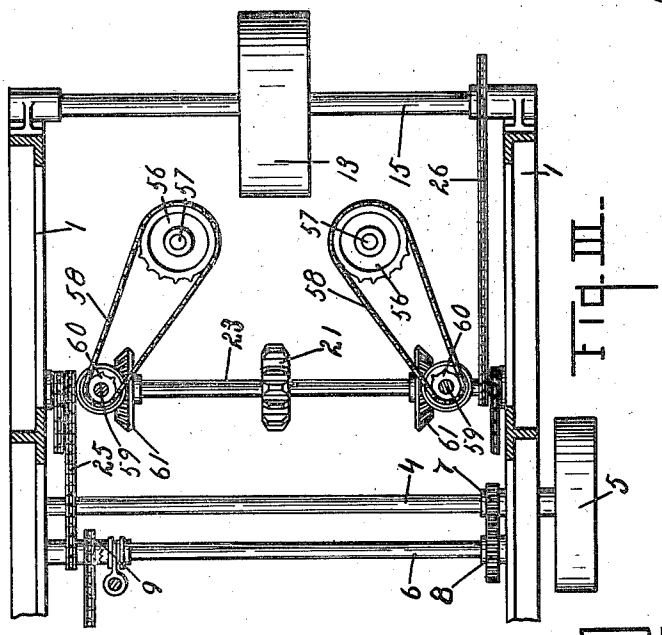


FIG. III.

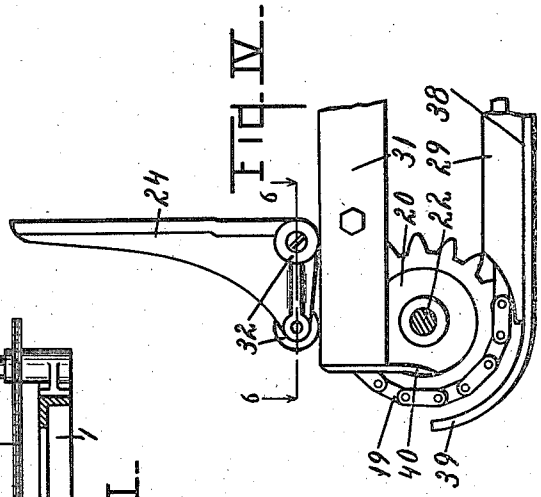


FIG. IV.

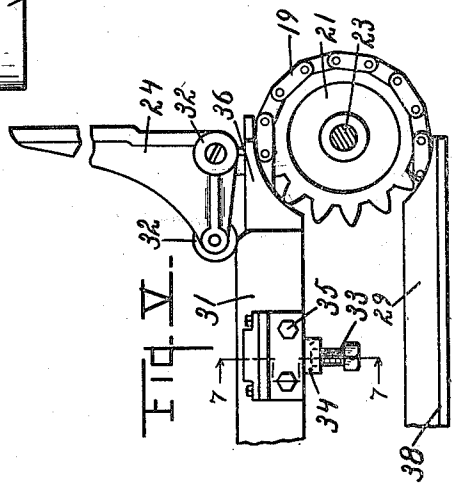


FIG. V.

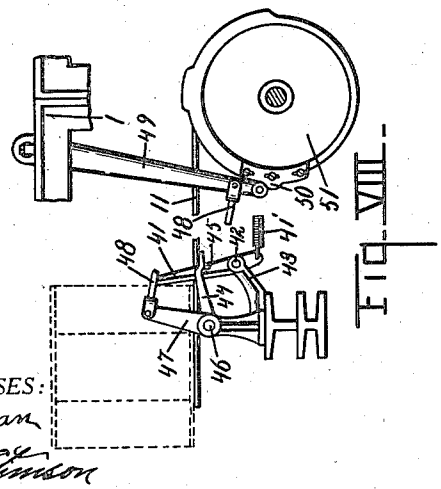


FIG. VIII.

WITNESSES:

Lenn Gilman

Morris Stinson

INVENTOR.

Harry L. Johnson

BY Chappell & Earl

ATTORNEYS.

H. L. JOHNSON.

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5 SHEETS—SHEET 4.

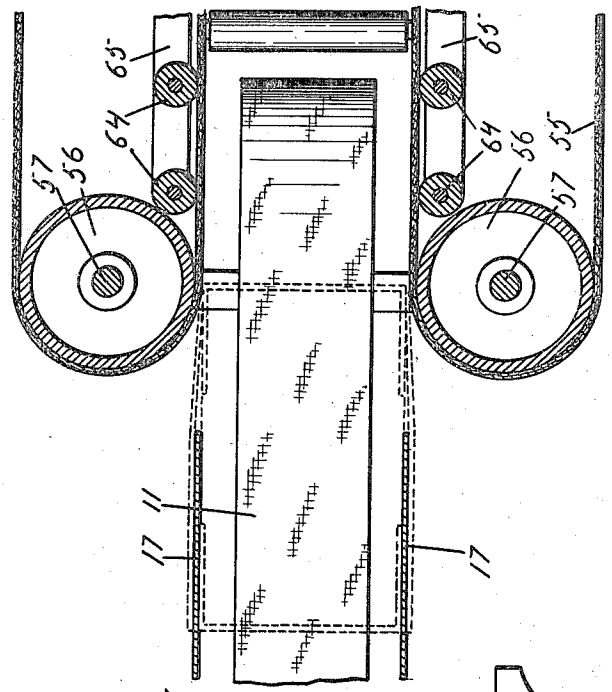


FIG. X.

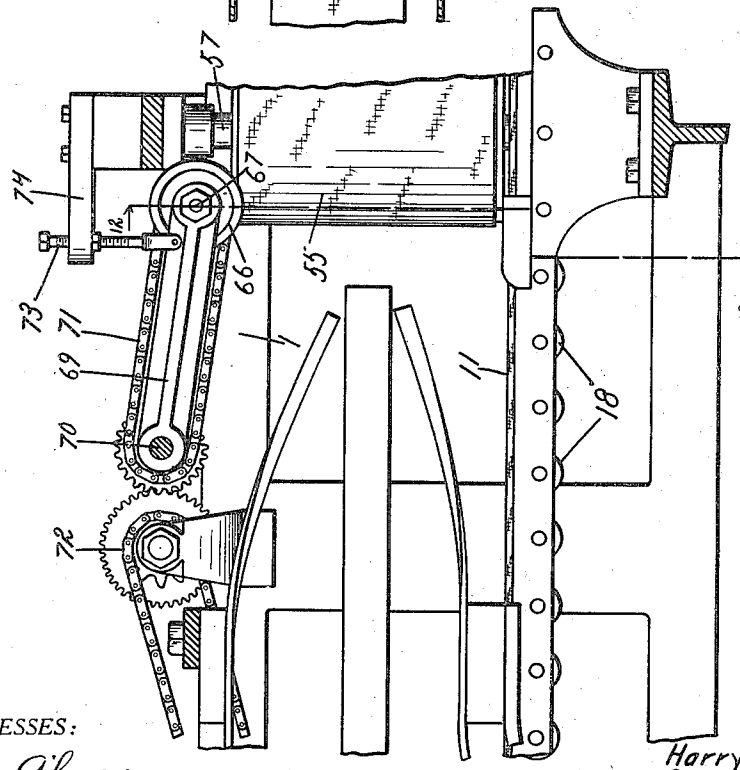


FIG. IX.

WITNESSES:

Lenn Gilman

Monroe Stinson

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Harry L. Johnson

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H. L. JOHNSON.

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5 SHEETS—SHEET 5.

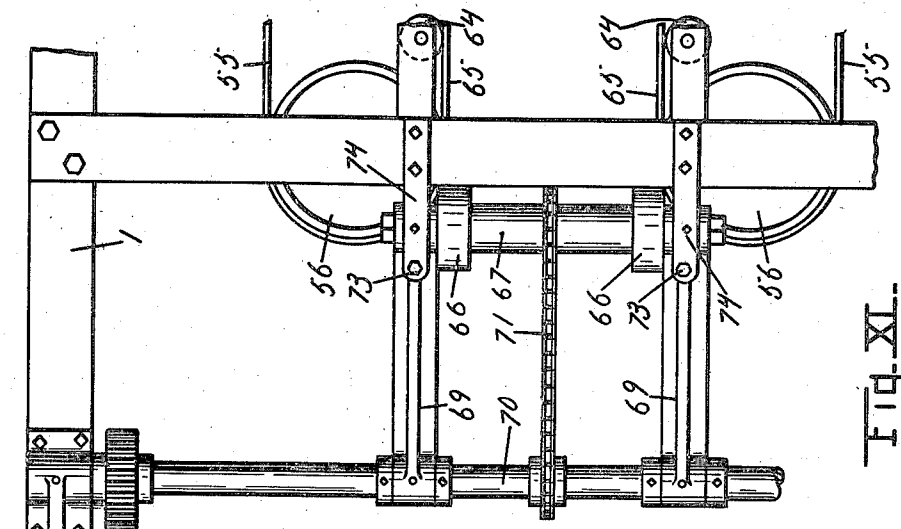


FIG. XI.

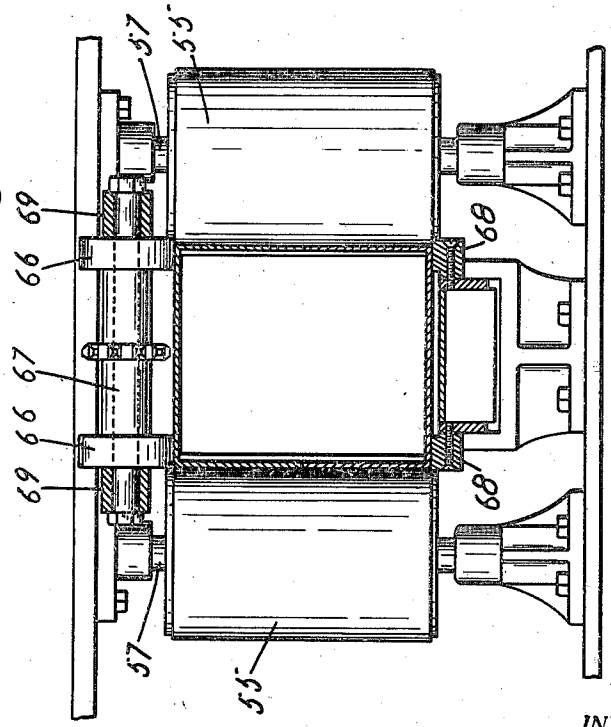


FIG. XII.

WITNESSES:

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ATTORNEYS.

UNITED STATES PATENT OFFICE.

HARRY L. JOHNSON, OF BATTLE CREEK, MICHIGAN, ASSIGNOR TO JOHNSON AUTOMATIC SEALER CO., LTD., OF BATTLE CREEK, MICHIGAN.

PACKING CASE OR CARTON SEALING MACHINE.

1,242,945. Specification of Letters Patent. Patented Oct. 16, 1917.

Original application filed February 28, 1916, Serial No. 80,921. Divided and this application filed September 22, 1916. Serial No. 121,579.

To all whom it may concern:

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

This invention relates to improvements in packing case or carton sealing machines.

The invention of this application relates particularly to the conveyer features of such machines, it being a division of my application for Letters Patent, filed February 28, 1916, Ser. No. 80,921.

The main objects of this invention are:

First, to provide in a packing case or carton sealing machine an improved conveyer mechanism.

Second, to provide in a packing case or carton sealing machine an improved conveyer mechanism especially designed for the handling of large cartons or cases.

Third, to provide a structure of the class described which is of large capacity and at the same time simple and compact in structure.

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 which is a preferred embodiment of my invention is clearly illustrated in the accompanying drawing, forming a part of this specification, in which:

Figure I is a plan view of portions of a packing case or carton sealing machine embodying the features of my invention, the flap folding or gluing mechanism being omitted.

Fig. II is a central longitudinal section of the structure illustrated in Fig. I, taken on a line corresponding to line 2—2 thereof.

Fig. III is a detail plan view of portions of the conveyer driving connections.

Fig. IV is an enlarged detail view, showing the front end of the auxiliary or supplementary conveyer and one of the flights thereof.

Fig. V is an enlarged detail view of the rear end of the auxiliary or supplementary conveyer and one of its flights.

Fig. VI is an enlarged detail section on a line corresponding to line 6—6 of Fig. IV.

Fig. VII is an enlarged detail vertical section on a line corresponding to line 7—7 of Fig. V.

Fig. VIII is a detail view showing details of the feed control mechanism.

Fig. IX is an enlarged detail section showing details of the delivery portions of the conveyer mechanism.

Fig. X is a detail horizontal section on line corresponding to line 10—10 of Fig. II, showing further details of the conveyer delivery mechanism.

Fig. XI is a detail plan view of the driving connections for the delivery mechanism.

Fig. XII is a detail transverse section taken on line corresponding to line 12—12 of Fig. IX.

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

Referring to the drawing, the frame of my improved machine is preferably formed of side members 1 connected by suitable cross pieces 2 to provide a rigid support for the operating parts. The frame is preferably provided with legs 3.

The machine is largely arranged and supported within this frame and is driven from the power shaft 4 having a pulley 5 thereon. The counter or jack shaft 6 is connected with the power shaft 4 by the pinions 7 and 8 respectively. The shaft 6 is provided with a clutch 9 controlled by the lever 10. The driving connections for the several parts will be described in connection with the description of such parts.

The mechanism for gluing, folding and sealing the flaps as they are carried along by the conveyer are not illustrated as they form no part of my present invention, but they are preferably such as are illustrated and described in detail in my aforesaid application.

The cartons or cases to be sealed are fed to the main conveyer belt 11 by hand or by

suitable feed means, not illustrated. The main conveyer belt 11 is carried by pulleys 12 and 13 on the shafts 14 and 15 arranged at the front and rear ends, respectively, of the machine.

The guide bars 16 are arranged at the front end of the belt 11 to assist in guiding the packages thereto. Side bars 17 are mounted upon the frame above and at the sides of the conveyer belt 11 so that the articles are carried along on the belt between these side bars.

The upper reach of the belt is supported by a series of rollers 18. It will be understood that the packing cases to be sealed with their contents are frequently of considerable weight and these rollers are provided to relieve the conveyer belt and to prevent its sagging under the load of the cartons.

To insure the carrying of the cases through the gluing and sealing mechanisms in synchronism with its operation I provide an auxiliary or propelling conveyer consisting of the sprocket chain 19 carried by the sprocket wheels 20 and 21, mounted on the shafts 22 and 23, respectively. These shafts are arranged so that the auxiliary conveyer is supported within and in the vertical plane of the main conveyer belt 11 and so that the flights 24 travel along on their upper reach at the side of the main belt. The driving connections for the main conveyer shaft are through the auxiliary conveyer, the auxiliary conveyer shaft 23 being connected to the counter or driving shaft 6 by means of the sprocket chain 25 and suitable sprockets.

The shaft 15 is connected to the shaft 23 by the sprocket chain 26 and suitable sprockets, (see Fig. III).

The shaft 14 is connected to the shaft 22 by means of the chain 27 and suitable sprockets on the shafts. The details of the sprockets are not further illustrated or described as they will be readily understood.

The flights 24 are mounted on the conveyer chain 19 in spaced pairs to swing up and travel at the sides of the conveyer belt 11 when they are on the upper reaches of the chain. The reaches of the sprocket chain 19 are supported between the sprockets 20 and 21 thereof by means of the upper and lower ways 28 and 29, respectively, the upper way 28 being grooved at 30 to receive the chains (see Fig. VII). The way 28 is provided with tracks 31 for the flights which are provided with rollers 32 which travel on the tracks, thus supporting the flights in an upright position (see Figs. II, VI and VII).

The front ends of the tracks 31 are positioned so as to engage the rollers 32 as flights travel over the sprocket 20 and swing them to upright position with a quick movement engaging the cartons with a blow-like action which straightens or squares them on the conveyer belt. The driving connections are such that the auxiliary conveyer travels slightly faster than the main belt 11 so that while flights are engaged with the cartons their speed exceeds slightly that of the conveyer belt, thereby insuring their being positively carried along by the flights and timing their movement with that of the gluing mechanism.

The tracks 31 are arranged for adjustment so that the vertical position of the flights as they travel along in carton engaging position may be determined. This adjustment is effected by the set screws 33 carried by the cross piece 34. The tracks are held in their adjusted positions by the screws 35. The rear end of the tracks 31 are spaced from the rear sprocket 21 so that the rollers 32 drop off or pass from the tracks allowing the flights to drop rearwardly away from the cartons as the flights position over the rear sprockets. The delivery means (not shown) is arranged to receive the cartons at this point, as is fully illustrated and described in my said application.

Buffers 36 are provided to receive the flights as the rollers drop from the tracks (see Figs. V and VII, where these parts are shown in detail). As the flights are carried over the rear sprocket wheel 21 they are engaged by the guide 37 which swings them to forwardly facing position so that they are carried forward on the under reach of the sprocket chain in such forwardly facing position and with their rollers traveling on the flange-like tracks 38 of the bottom way 29. The forward ends of these tracks 38 are curved upwardly at 39 (see Fig. IV) so that the flights are swung out as they are carried over the front sprocket 20. As the rollers leave the tracks 38 they are engaged by the guides 40 on the front ends of the tracks 31, the flights being swung abruptly to position to engage the cartons, the engaging movement, as stated, serving to straighten them should they be twisted or out of square.

With the parts thus arranged the cartons are positively fed through the machine and in the manner which prevents their becoming clogged or wedged and so that they are properly carried through the gluing and sealing members and in synchronism with these members.

To insure delivery of the cartons in time to be engaged by the flights 30 as they swing over the front sprocket 20 I provide an automatic feed mechanism consisting of the stops 41 (see Figs. I and VIII.) The stop members 41 are mounted on the rock shaft 42 carried by the bracket 43 on one of the cross members of the frame. The stop members 41 are held in their operative position by the catch 44 adapted to coact with the pin 45 on one of the stop members. This catch 44 is

carried by the rock shaft 46 having an arm 47 thereon connected by the link 48 to the rocker arm 49. This rocker arm is actuated by the cam 50 on the cam wheel 51. This cam wheel is provided with suitable driving connections to the conveyer. This cam in the complete machine serves to operate other parts not illustrated therein.

The stops 41 are returned to their engaging position by means of the coiled spring 41'.

By this arrangement of parts the cartons are delivered so that they are properly engaged by the flights as they pass over the front sprocket wheels, as described.

I will now describe the conveyer delivery mechanism. After the cartons leave the flap folding mechanism, details of which are illustrated in my said application, they pass to the delivery mechanism which also serves to press the flaps and comprises a pair of belts 55 disposed at the sides of the rear end of the conveyer belt 11. The front ends of these belts 55 are supported by the vertically disposed pulleys 56, the pulleys for the outer ends of the belts not being illustrated. The pulleys 56 are mounted on vertical shafts 57 connected by the sprocket chains 58 and suitable sprockets 60 on the vertical shafts 59 which are driven by beveled gears 61 on the shaft 23, see Fig. III.

The inner reaches of these pressing and delivery belts are supported by a series of rollers 64 carried by the bars 65. To insure the pressing of the slotted flaps edge to edge as they are delivered I provide a pair of rollers 66 mounted on the shaft 67 to engage the upper corners of the carton, its lower corners being supported by the slide-ways 68, see Figs. XI and XII. These edging or truing rollers press down and bring the edges of the carton together as they pass between the delivery belts 55.

The shaft 67 of the truing rollers is carried by a pair of arms 69 mounted on the shaft 70. The shaft 67 is connected to shaft 70 through the sprocket chain 71 and suitable sprockets on the shafts. The shaft 70 is driven through suitable driving connections designated generally by the numeral 72, see Fig. XI. As the details of these driving connections are unimportant they are not further described herein. The pressure of the truing rollers is regulated by means of the screw 73 carried by arm 74 on the frame, see Fig. IX. The belts 55 may extend to deliver the cartons into a chute or to tables or the like as desired.

The improvements of this application are, as stated, especially designed by me for use in a machine having carton gluing and sealing means such as are shown in my original application, but is readily adapted for use in other relations.

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

1. In a structure of the class described, the combination of a conveyer belt, a propelling chain and sprockets therefor disposed within said belt, flights pivotally mounted on said chain in pairs and adapted when erected to travel at the sides of said belt, rollers mounted on said flights for supporting them in erected position, upper and lower ways for the upper and lower reaches of said chain provided with tracks for said rollers, the front ends of the upper tracks being provided with roller guides and positioned so that the flights are swung quickly to erected position as they pass over the front sprocket, the rear ends of said upper tracks being spaced from the rear sprocket so that the rollers pass therefrom and the flights drop rearwardly from erected position as they pass over the rear sprocket, buffers mounted to receive said flights as they drop from erected position, and guides mounted to coact with said flights as they pass over the rear sprocket and guide said rollers onto the lower tracks, the front end of said lower tracks being curved upwardly to swing the flights into position to engage said guides at the front ends of the upper tracks.

2. In a structure of the class described, the combination of a conveyer belt, a propelling chain and sprockets therefor disposed within said belt, flights pivotally mounted on said chain in pairs and adapted when erected to travel at the sides of said belt, rollers mounted on said flights for supporting them in erected position, upper and lower ways for the upper and lower reaches of said chain provided with tracks for said rollers, the front ends of the upper tracks being provided with roller guides and positioned so that the flights are swung quickly to erected position as they pass over the front sprocket, the rear ends of said upper tracks being spaced from the rear sprocket so that the rollers pass therefrom and the flights drop rearwardly from erected position as they pass over the rear sprocket, and guides mounted to coact with said flights as they pass over the rear sprocket and guide said rollers onto the lower tracks, the front end of said lower tracks being curved upwardly to swing the flights into position to engage said guides at the front ends of the upper tracks.

3. In a structure of the class described, the combination of a conveyer belt, a propelling chain and sprockets therefor disposed within said belt, flights pivotally mounted on said chain to travel when erected at the sides of said belt, rollers mounted on said flights for supporting them in erected position, a way for the upper reach of said chain provided with tracks for said rollers,

the front ends of the tracks being positioned so that the flights are swung to erected position as they pass over the front sprocket, the rear ends of said upper tracks being spaced from the rear sprocket so that the rollers pass therefrom and the flights drop rearwardly from erected position as they pass over the rear sprocket, and buffers mounted to receive said flights as they drop from erected position.

4. In a structure of the class described, the combination of a conveyer belt, a propelling chain and sprockets therefor disposed within said belt, flights pivotally mounted on said chain to travel when erected at the sides of said belt, rollers mounted on said flights for supporting them in erected position, a way for the upper reach of said chain provided with tracks for said rollers, the front ends of the tracks being positioned so that the flights are swung to erected position as they pass over the front sprocket, the rear ends of said upper tracks being spaced from the rear sprocket so that the rollers pass therefrom and the flights drop rearwardly from erected position as they pass over the rear sprocket.

5. In a structure of the class described, the combination of a conveyer belt, a propelling chain and sprockets therefor disposed within said belt, flights pivotally mounted on said chain to travel when erected at the sides of said belt, rollers mounted on said flights for supporting them in erected position, a way for the upper reach of said chain provided with tracks for said rollers, the front ends of the tracks being positioned so that the flights are swung to erected position as they pass over the front sprocket, the rear ends of said upper tracks being spaced from the rear sprocket so that the rollers pass therefrom and the flights drop rearwardly from erected position as they pass over the rear sprocket, said tracks being adjustable.

6. In the structure of the class described, the combination of a conveyer belt, a propelling chain and sprockets therefor disposed within said belt, flights pivotally mounted on said chain to travel when erected at the sides of said belt, and a way for the upper reach of said chain adapted to support said flights in erected position, the front end of the way being positioned so that the flights are swung to erected position as they pass over the front sprocket, the rear end of said way being spaced from the rear sprocket so that the flights drop rearwardly from erected position as they pass over the rear sprocket.

7. In a structure of the class described, the combination of a conveyer belt, a propelling chain and sprockets therefor disposed within said belt, flights pivotally mounted on said chain to travel when erected at the sides of said belt, and means for erecting and collapsing said flights.

8. In a structure of the class described, the combination of a conveyer belt, a propelling chain and sprockets therefor disposed within said belt, and flights mounted on said chain to travel at the sides of said belt.

9. In a structure of the class described, the combination of a main conveyer, a propeller provided with pivoted flights mounted to engage when erected with articles on said main conveyer, and to propel the articles while in contact therewith, means for abruptly swinging said flights to erected position at the front end of said propeller, and means for collapsing said flights with a rearward movement.

10. In a structure of the class described, the combination of a main conveyer, a propeller provided with pivoted flights mounted to contact when erected with articles on said main conveyer and to propel the articles while in contact therewith, and means for swinging said flights to erected position, at the front end of said propeller.

11. In a structure of the class described, the combination of a conveyer belt, a propelling chain and sprockets therefor disposed within said belt, flights pivotally mounted on said chain in pairs and adapted when erected to travel at the sides of said belt, a way for the upper reach of said chain adapted to support said flights in erected position, the front end of the way being positioned so that the flights are swung quickly to erected position as they pass over the front sprocket, the rear end of said way being spaced from the rear sprocket so that the flights drop rearwardly from erected position as they pass over the rear sprocket, driving connections for said belt and chain whereby the chain is driven at a speed slightly greater than that of the belt, means for controlling the feeding of articles on said belt, and driving connections for said feed control means to said chain whereby the delivery of the articles is timed so that as the flights swing to their erected position they engage the articles with a blow-like action.

12. In a structure of the class described, the combination of a conveyer belt, a propelling chain and sprockets therefor disposed within said belt, flights pivotally mounted on said chain in pairs and adapted when erected to travel at the sides of said belt, a way for the upper reach of said chain adapted to support said flights in erected position, driving connections for said belt and chain, means for controlling the feeding of articles on said belt, and driving connections for said feed control means to said chain.

13. In a structure of the class described,

the combination of a conveyer belt, side bars disposed above and at the sides of said belt, a series of supporting rollers for the upper reach of said belt, a propelling chain and sprockets therefor disposed within said belt, flights mounted on said chain to travel when erected at the sides of said belt, driving connections for said belt and chain whereby the chain is driven at a speed slightly greater than that of the belt, and means for controlling the feeding of articles on said belt timed so that the articles are engaged by said flights.

14. In a structure of the class described, the combination of a conveyer belt, a propeller chain and sprockets therefor disposed within the belt, flights pivotally mounted on said chain to travel when in erected position at the sides of said belt, means for abruptly swinging said flights to erected position, means for collapsing said flights with a rearward movement, driving means whereby said chain is driven at a speed slightly exceeding that of the belt, means for controlling the feeding of the article on said belt timed so that as the flights swing to their erected position they engage the articles with a blow-like action.

15. In a structure of the class described, the combination of a conveyer belt, a propeller chain and sprockets therefor disposed within the belt, flights pivotally mounted on said chain to travel when in erected position at the sides of said belt, means for abruptly swinging said flights to erected position, and means for collapsing said flights with a rearward movement.

16. In a structure of the class described, the combination of a conveyer belt, a propeller chain and sprockets therefor disposed within the belt, flights mounted on said chain to travel when in erected position at the sides of said belt, means for swinging said flights to erected position, and means for collapsing said flights with a rearward movement, and means for controlling the feeding of the article on said belt timed so that as the flights swing to their erected position they engage the articles.

17. In a structure of the class described, the combination of a conveyer belt, a propelling conveyer provided with flights adapted to engage the articles on said belt, driving connections whereby said propelling conveyer is driven at a speed exceeding that of the belt, and means for controlling the feeding of articles on said belt timed so that the articles are engaged by said flights.

18. In a structure of the class described, the combination of a conveyer belt, a propelling conveyer provided with flights adapted to engage the articles on said belt, and means for controlling the feeding of articles on said belt timed so that the articles are engaged by said flights, comprising a stop member and means for removing said stop member from the path of said articles at determined intervals.

19. In a structure of the class described, the combination of a conveyer belt, a propelling conveyer provided with flights adapted to engage the articles on said belt, driving connections whereby said propelling conveyer is driven at a speed exceeding that of the belt, and means comprising a pair of spaced delivery belts for removing the articles from in front of said flights at the delivery end of said conveyer belt.

20. In a structure of the class described, the combination of a conveyer belt, a propelling conveyer provided with flights adapted to engage the articles on said belt, driving connections whereby said propelling conveyer is driven at a speed exceeding that of the belt, and means for removing the articles from in front of said flights at the delivery end of said conveyer belt.

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

HARRY L. JOHNSON. [L. S.]

Witnesses:

BERNARD J. ONEN,

THERESA F. GIBBONS.