March 10, 1959 R. W. VERGOBBI 2,876,608

PACKAGING MACHINE

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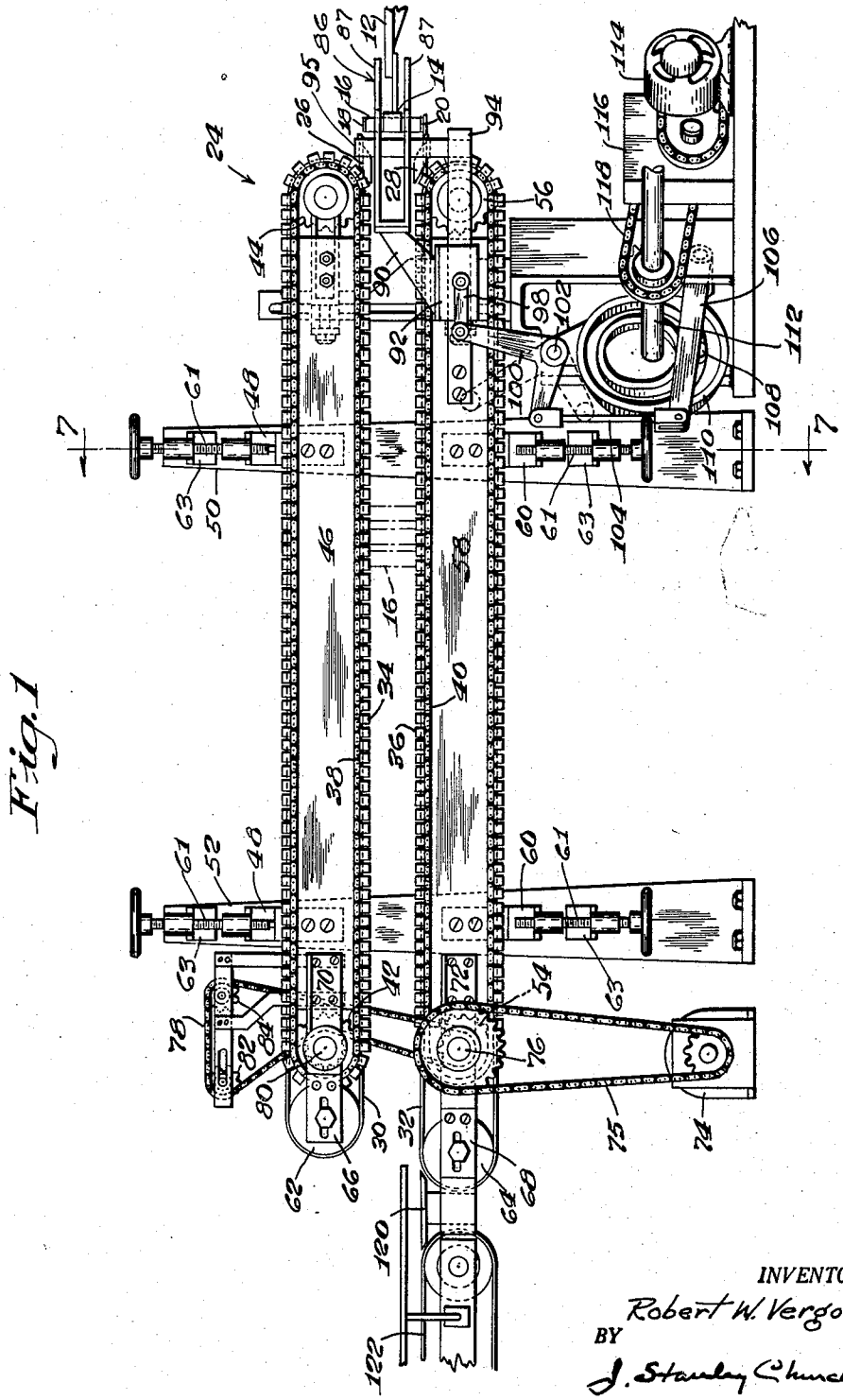


Fig. 1

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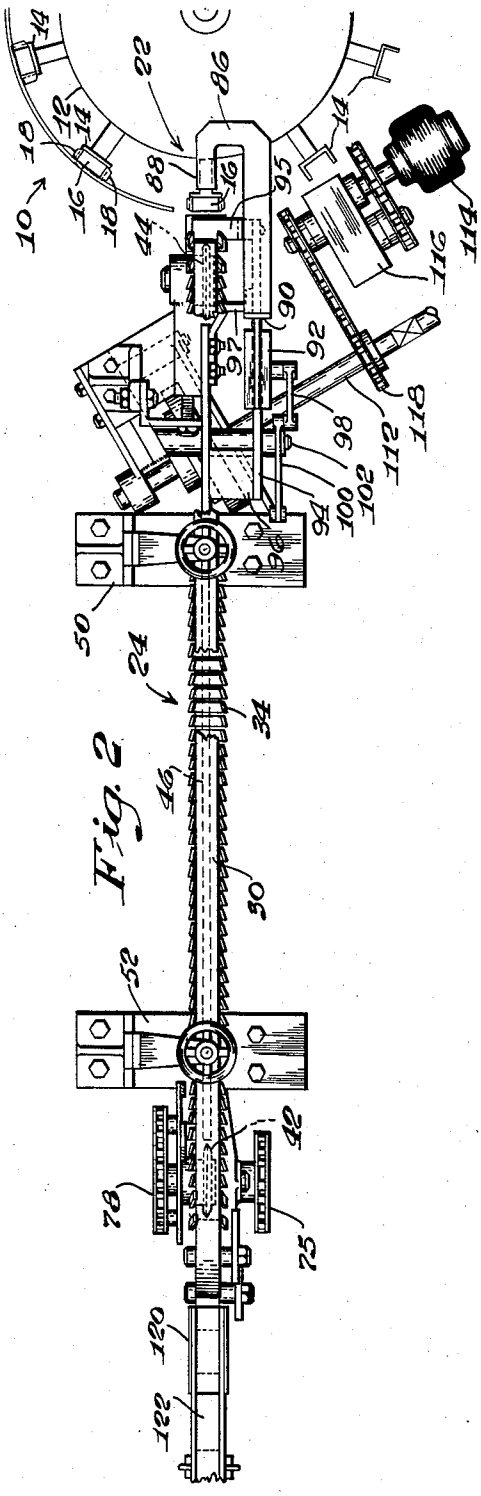


Fig. 2

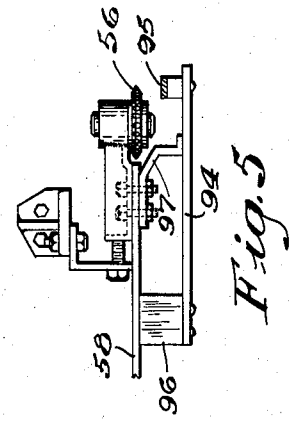


Fig. 5

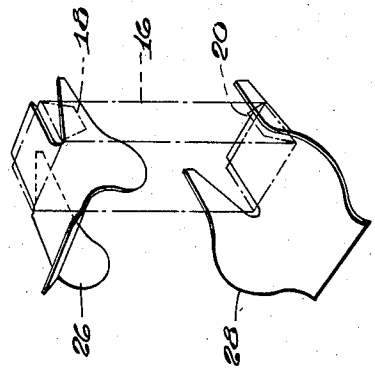


Fig. 4

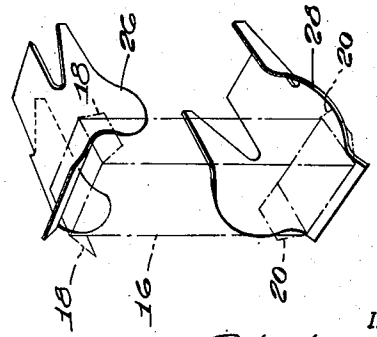


Fig. 3

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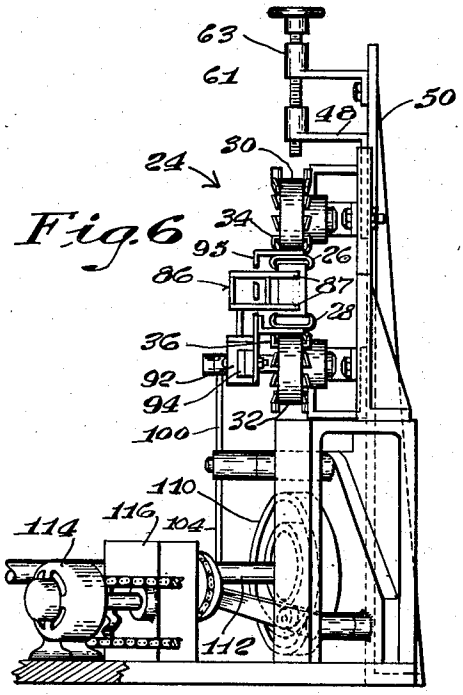


Fig. 6

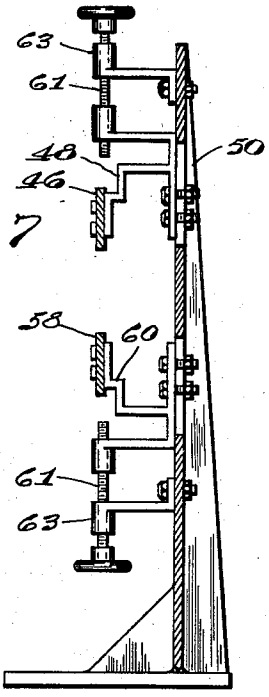


Fig. 7

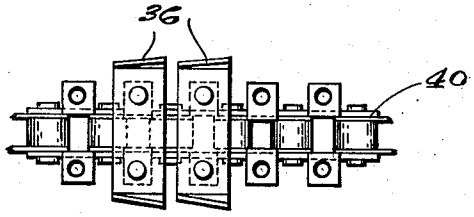


Fig. 8

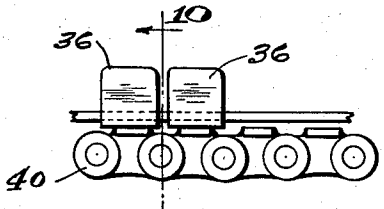


Fig. 9

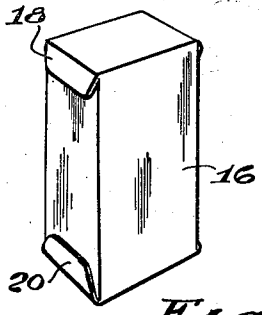


Fig. 11

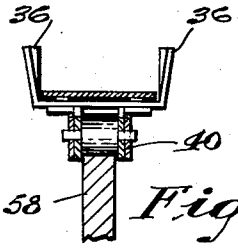


Fig. 10

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2,876,608

PACKAGING MACHINE

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Application November 2, 1954, Serial No. 466,359

8 Claims. (Cl. 53—387)

This invention relates to a packing machine and more particularly to conveying apparatus for folding and pressing the adhesively coated flap portions of cartons delivered thereto from a packaging machine.

The invention has for an object to provide novel and improved apparatus of the character specified particularly adapted for handling cartons of the type having flap portions which are to be folded against and adhesively secured to the outer side walls of the carton.

With this general object in view and such others as may hereinafter appear, the invention consists in the conveying apparatus and in the various structures, arrangements and combinations of parts hereinafter described and particularly defined in the claims at the end of this specification.

In the drawings illustrating the preferred embodiment of the invention:

Fig. 1 is a side elevation of conveying apparatus embodying the present invention;

Fig. 2 is a plan view of the same;

Fig. 3 is a detail perspective view of flap folding mechanism forming a part of the apparatus shown in Fig. 1;

Fig. 4 is a similar view showing the carton in a different position in the folding mechanism;

Fig. 5 is a detail plan view of a portion of the apparatus shown in Fig. 2;

Fig. 6 is an end view of the apparatus as seen from the right of Fig. 1;

Fig. 7 is a cross-sectional view taken on the line 7—7 of Fig. 1;

Fig. 8 is a plan view detail of the chain embodied in the present conveying apparatus;

Fig. 9 is a side elevation of the same;

Fig. 10 is a cross-sectional view taken on the line 10—10 of Fig. 9; and

Fig. 11 is a perspective view of a carton having flap portions folded against and adhesively secured to the side walls of the carton.

In general the present invention contemplates conveying apparatus of the type embodying upper and lower belts for use with a packing machine wherein a carton after being filled and the closing flaps folded and adhesively sealed is transferred from the packing machine to be received between the upper and lower belts to apply continued pressure upon the ends of the carton to firmly set the adhesively sealed flaps while the adhesive is drying during conveyance of the carton to the discharge point. Such conveying apparatus is referred to generally in the packaging trade as a "dryer," and in accordance with the present invention provision is made for handling cartons provided with laterally extended flaps at both top and bottom of the carton which are arranged to be folded against the outer side walls of the carton. In practice the laterally extended flaps are provided with a coating of adhesive in the packaging machine, and provision is made for folding and adhesively securing the laterally extended flaps against the side walls of the carton during its transfer from the packaging machine to the conveying apparatus and for maintaining a continuous lateral pressure against the folded flaps to firmly set the adhesive during the travel of the carton through the conveying apparatus.

Referring now to the drawings, 10 represents a packaging machine having an intermittently rotated disk 12 provided with a plurality of carton holding members or pockets 14 mounted thereon. The cartons 16 are held in a vertical position, and in the operation of the machine the cartons are successively presented to the various instrumentalities of the packaging machine for filling, closing and adhesively sealing the carton. In the illustrated embodiment of the invention the cartons 16 are provided with laterally extended tabs or flaps 18, 20 at the top and bottom of the carton respectively and which are arranged to be folded against the side walls on opposed sides of the carton, the flaps 18, 20 being provided with a coating of adhesive on their inner surfaces during their travel through the packaging machine. When the carton is presented to the rejecting station, indicated generally at 22, provision is made for transferring the carton from the pocket 14 to the "dryer" or conveyer, indicated generally at 24, the carton being moved into operative engagement with upper and lower stationary folding members or guides 26, 28 during the transferring operation.

During the progress of the cartons through the conveying apparatus 24, a continuous pressure is applied against the ends of the carton by a pair of upper and lower spaced superposed elongated belts 30, 32, and also a continuous lateral pressure is applied against the folded and adhesively secured side flaps 18, 20 by U-shaped clamp or presser members 34, 36 carried by upper and lower chains 38, 40 respectively, movable with the belts 30, 32 whereby to firmly set the adhesively sealed flaps of the carton while the adhesive is drying and during the conveyance thereof to the discharge end of the conveyer.

As herein illustrated, the upper chain 38 of the conveying apparatus 24 is arranged to run over a drive sprocket 42 at the discharge end of the conveyer, and over an idler sprocket 44 at the receiving end of the conveyer. The horizontal runs of the chain are supported on the upper and lower edges of an elongated guide and backing plate 46 attached to brackets 48 which are adjustably secured to upright floor brackets 50, 52, as shown. The lower chain 40 is similarly arranged to run over a drive sprocket 54 at the discharge end of the apparatus and over an idler sprocket 56 at the receiving end, the horizontal runs of the chain being supported on the upper and lower edges of a similar elongated guide and backing plate 58. The plate 58 is attached to brackets 60 also adjustably secured to the upright floor brackets 50, 52. As clearly shown in Fig. 7, adjustment may be effected by elongated screws 61 carried by brackets 63 secured to the uprights 50, 52, the screws being threadedly engaged with hub portions of the brackets 48, 60.

As shown in Fig. 1, the upper and lower belts 30, 32 are arranged to run on top of and along with their respective chains 38, 40, the belts running between the legs of the U-shaped presser members carried by the chains and passing around the idler sprockets 44, 56 and the chains at the receiving end of the conveyer. At the discharge end of the conveyer the belts 30, 32 extend beyond their respective chains, for a purpose to be hereinafter described, and are arranged to run over idler pulleys 62, 64 spaced from the drive sprockets 42, 54 and adjustably supported in extensions 66, 68 secured to bearing brackets 70, 72 attached to the upper and lower backing plates 46, 58, as shown.

As illustrated in Figs. 1 and 2, the chains 38, 40 are arranged to be driven by a motor 74 through a chain and

sprocket drive 75 connected to the shaft 76 for the lower drive sprocket 54 to drive the latter in a counterclockwise direction, and through a second chain and sprocket drive 78 connecting the shaft 76 to the shaft 80 for the upper drive sprocket 42, the drive 78 including idler sprockets 82, 84 for guiding the drive chain so as to effect rotation of the upper shaft 80 in a clockwise direction.

As shown in detail in Figs. 8 and 10, the U-shaped presser members 34, 36 carried by the conveyer chains 38, 40 are shaped so that the outwardly extended legs of the U are bent to form a tapered opening or space between the legs to facilitate entrance of the carton transferred therebetween. As illustrated in Figs. 1 and 2, the transfer mechanism includes a hook-shaped transfer member 86 arranged to be reciprocated to engage a carton in a pocket at the rejecting station and to push the same through the stationary folding members 26, 28 and between the belts 30, 32, the carton being also frictionally urged between the legs of the U-shaped members 34, 36 to apply pressure against the side flaps 16, 18 at the top and bottom of the carton during the conveyance of the carton through the apparatus.

The hook-shaped member 86 includes vertically spaced plates 87 arranged to straddle the pocket 14, as shown in Fig. 1, and the ends 88 of the hook portions may be positioned in back of the carton when the latter comes to rest at the rejecting station. Thereafter, the transfer member 86 is operated to engage the back of the carton to push the same out through the open front end of the pocket and into the conveying apparatus. The transfer member 86 is arranged to be reciprocated in timed relation to the intermittent movement of the packaging machine, and as herein shown, the member 86 is connected by a bracket 90 to a slide member 92 mounted for reciprocation on a bar 94 secured to the backing plate 58 by brackets 96, 97, as clearly shown in Fig. 5. The slide member 92 is connected by a link 98 to one arm of a bell crank 100 pivotally mounted at 102, the second arm of the bell crank being connected by a link 104 to a cam lever 106 provided with a roller 108 cooperating with a cam 110 fast on a cam shaft 112. The cam shaft 112 is arranged to be driven by a motor 114 through connections including a gear reduction unit 116 and a chain and sprocket drive 118.

From the description thus far it will be seen that in the operation of the machine when a pocket 14 is intermittently moved into operative relation to the rejecting station 22, the flaps 18, 20 are extended laterally coextensive with the top and bottom of the carton, and the hook-shaped transfer member 86 is then operated to push the carton out of the pocket, through the curved folding guides 26, 28 to fold the flaps against the sides of the carton, and then between the belts 30, 32 and between the legs of the U-shaped presser members 34, 36, the carton being frictionally retained between the legs, whereupon the carton is advanced by the conveyer to the discharge end of the apparatus, a continuous pressure being maintained against the top, bottom and sides of the carton during its travel through the conveyer. In practice the transfer member 86 may then be retracted and returned to its initial position in operative relation to a succeeding carton presented to the rejecting station. As shown in Fig. 1, the folding members 26, 28 may be supported from the bar 94 by a bracket 95.

The cartons are frictionally engaged between the legs of the presser members 34, 36, and when they arrive at the discharge end of the conveying apparatus the extended upper and lower belts 30, 32 operate to release the carton from the frictional grip of the legs, the cartons being then advanced over a bridge plate 120 and onto a discharge conveyer 122.

While the preferred embodiment of the invention has been herein illustrated and described, it will be understood that the invention may be embodied in other forms within the scope of the following claims.

Having thus described the invention, what is claimed is:

1. A carton conveyer of the character described for setting the adhesive of folded and adhesively secured carton flaps folded against the top and bottom and side walls of the carton, said conveyer comprising a pair of elongated, spaced and parallel upper and lower chains, means carried by said chains for engaging the flaps folded against the side walls adjacent the top and bottom of the carton, and a pair of spaced and parallel belts running over and travelling along with said chains for engaging the top and bottom of said carton whereby to effect simultaneous setting of said adhesively secured flaps on the top, bottom and side walls of the carton.

2. A carton conveyer of the character described for setting the adhesive of folded and adhesively secured carton flaps folded against the top, bottom and side walls of a rectangular carton, said conveyer comprising a pair of elongated, spaced and parallel upper and lower chains, U-shaped presser members carried by said chains for frictionally engaging and pressing the flaps folded against the side walls adjacent the top and bottom of the rectangular carton, and a pair of spaced and parallel belts running over and travelling along with said chains and between the legs of said U-shaped member for engaging and pressing the top and bottom of the carton whereby to effect simultaneous setting of said adhesively secured flaps on the top, bottom and side walls of the carton.

3. A carton conveyer as defined in claim 2 wherein the upper and lower belts extend beyond the chains at the discharge end of the conveyer to free the carton from the frictional grip of said U-shaped pressers.

4. The combination with a packaging machine provided with a carton holding member having provision for operatively supporting a rectangular carton having laterally extended top and bottom flaps provided with a coating of adhesive, of an elongated conveyer comprising a pair of spaced and parallel upper and lower chains, a pair of spaced and parallel belts running over and travelling along with said chains, the entrance end of said conveyer being disposed adjacent to but spaced from said carton holding member, means for transferring the carton from said carton holding member to a position between said belts, flap folding means disposed between the carton holding member and the entrance end of said conveyer for effecting folding of the laterally extended top and bottom flaps against the side walls of the carton during the transfer operation, and presser means carried by said chains for engaging said folded and adhesively secured flaps and for holding them in pressed relation against the side walls of the carton during its travel through the elongated conveyer.

5. The combination as defined in claim 4 wherein the presser means carried by said chains comprises U-shaped presser members, the belts running between the legs of said U-shaped member, and wherein the carton is frictionally engaged between said legs.

6. The combination as defined in claim 5 wherein the carton is frictionally urged between said legs by said transfer means, and wherein the legs are shaped to provide a tapering space longitudinally of the conveyer to facilitate entrance of the carton between the legs.

7. The combination as defined in claim 6 wherein the belts extend beyond the chains at the discharge end of the conveyer to release the carton from the frictional grip of said U-shaped presser members.

8. The combination with a packaging machine provided with a carton holding member having provision for operatively supporting a carton having laterally extended top and bottom flaps provided with a coating of adhesive, of an elongated conveyer comprising a pair of spaced and parallel upper and lower chains, U-shaped presser members carried by said chains, a pair of spaced and parallel belts running over and travelling along with said chains and between the legs of said U-shaped presser, the entrance end of said conveyer being disposed ad-

jacent to but spaced from said carton holding member, means for transferring the carton from said carton holding member to said conveyer, flap folding means disposed between the carton holding member and the entrance end of said conveyer for effecting folding of the laterally extended top and bottom flaps against the side walls of the carton during the transfer operation, said transfer means moving the carton into frictional engagement

between the legs of said U-shaped members and between the upper and lower belts for holding the flaps in pressed relation against the carton during its travel through the conveyer.

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