

Aug. 3, 1954

A. V. VON HAASE
CARTON CLOSING MECHANISM

2,685,158

Filed Sept. 2, 1950

5 Sheets-Sheet 1

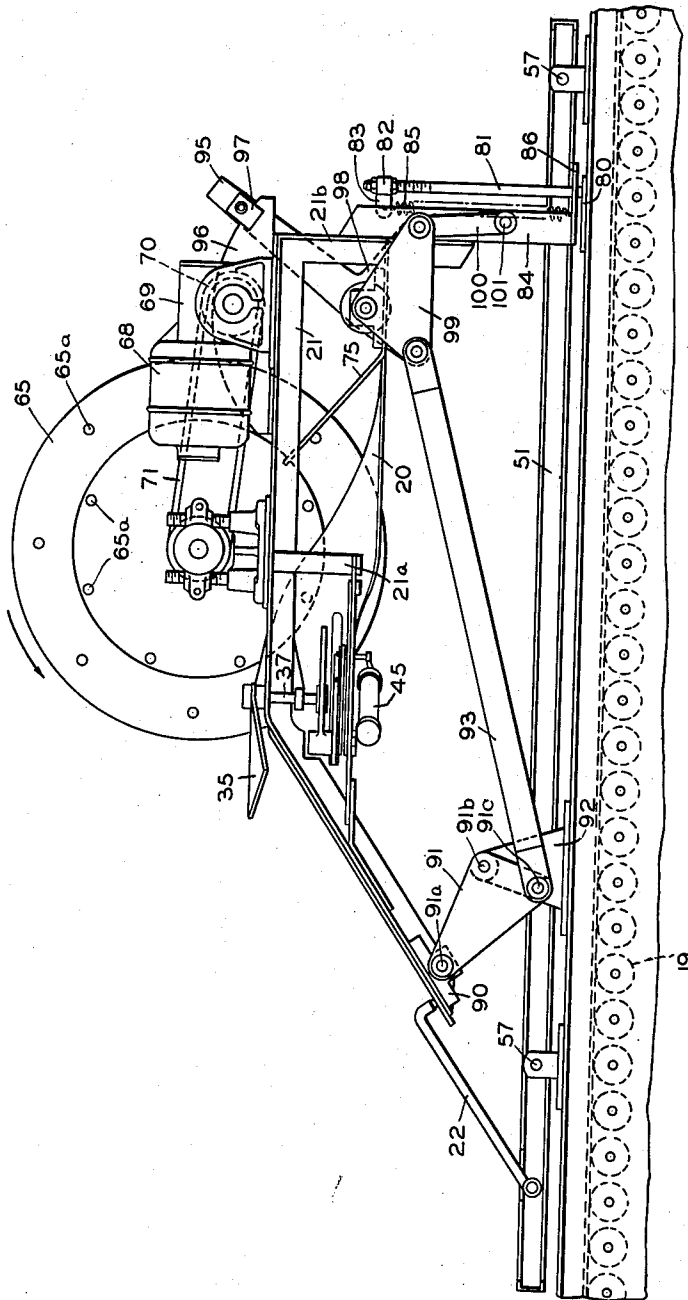


FIG-1

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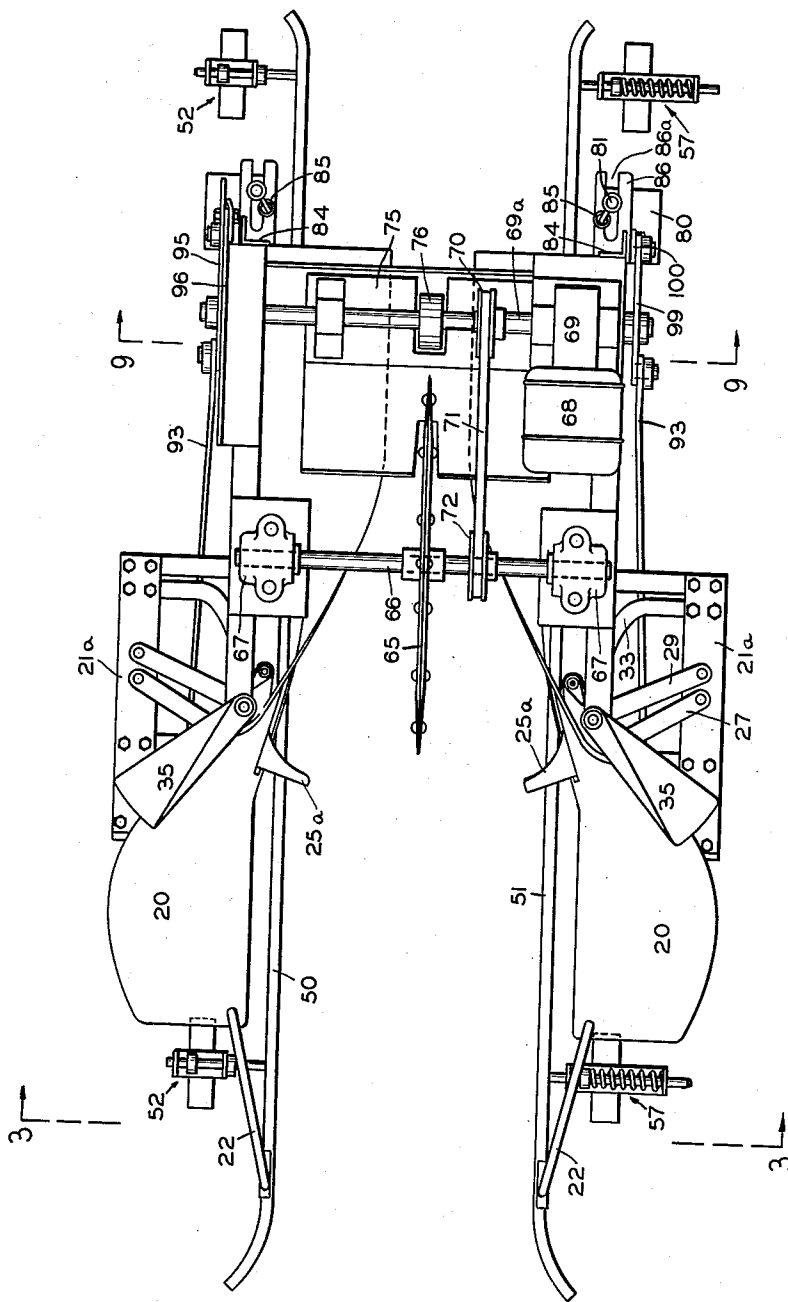


FIG-2

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5 Sheets-Sheet 3

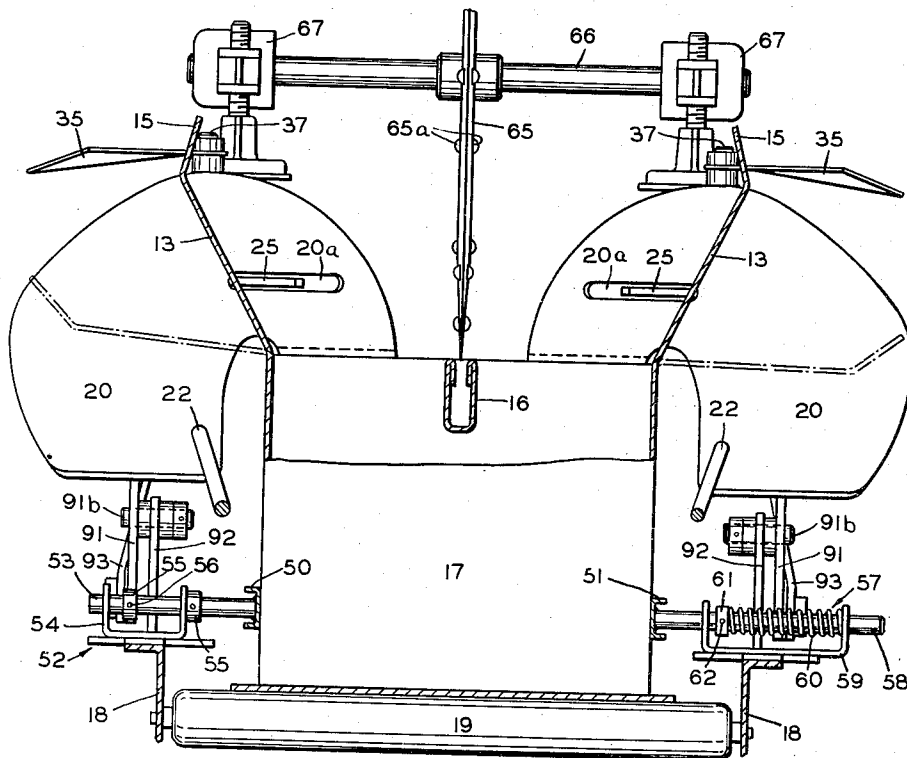


FIG-3

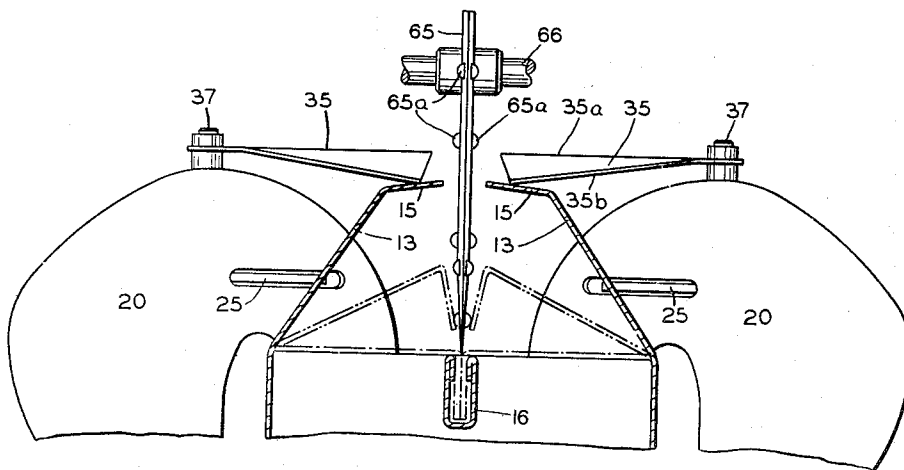


FIG-4

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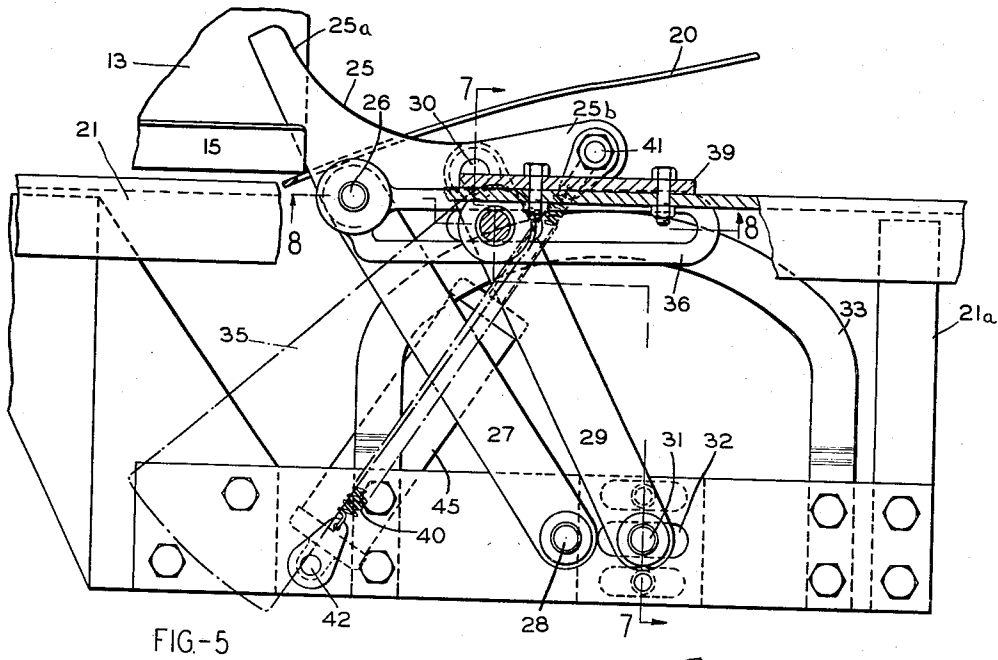
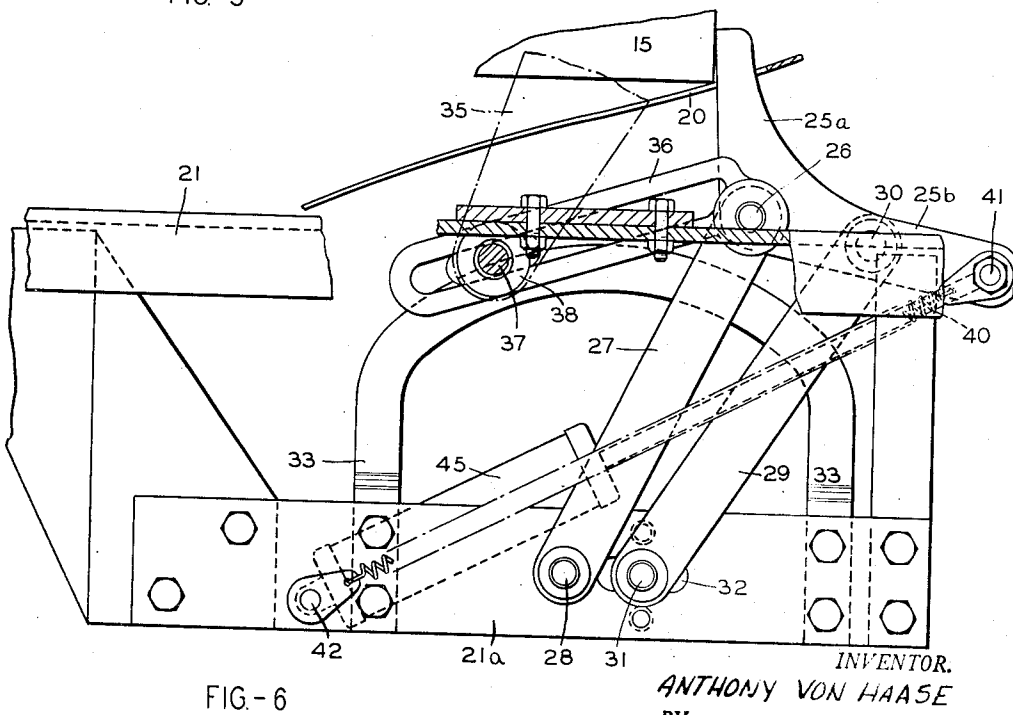
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5 Sheets-Sheet 4



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5 Sheets-Sheet 5

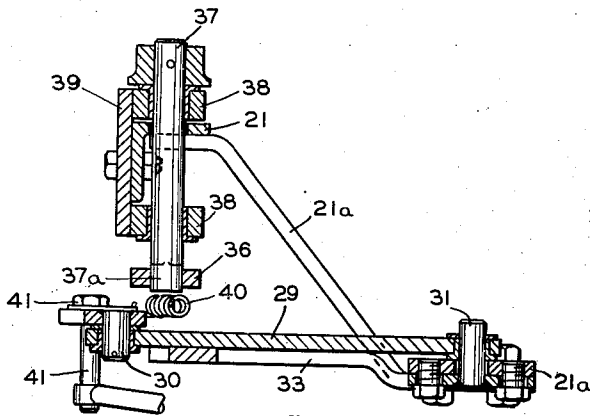


FIG. -7

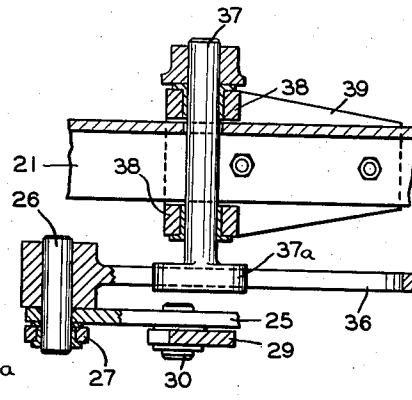


FIG. -8

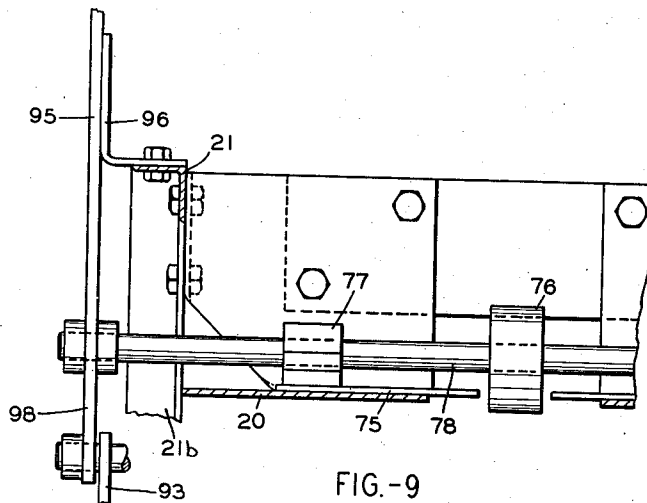


FIG. -9

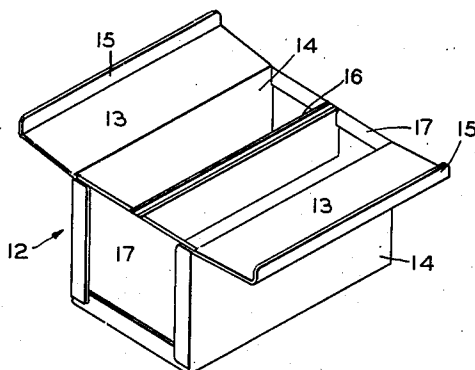


FIG. -10

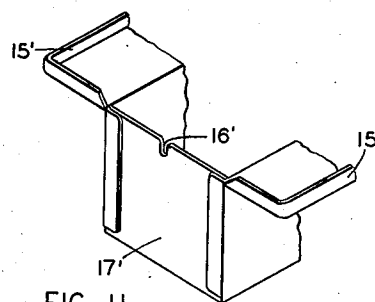


FIG. -11

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UNITED STATES PATENT OFFICE

2,685,158

CARTON CLOSING MECHANISM

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Application September 2, 1950, Serial No. 182,950

12 Claims. (Cl. 53—138)

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This invention relates to a carton closing mechanism and in particular to such a mechanism for closing a carton having a cover comprising two sections, the sections being hinged on opposite side edges of the carton.

An object of the invention is to provide a mechanism which will quickly and positively close a carton having a divided cover.

Another object is to provide a mechanism which has positive means whereby to guide the cover sections of a carton into final position.

Another object is to provide a mechanism which will operate efficiently on cartons having cover retaining tongues as well as those which have not.

Another object is to provide such a device embodying safety features which prevent damage to either carton or machine should an improperly packed carton be sent through the device.

Another object is to provide a carton closing mechanism which may be adjusted to operate efficiently on cartons of various sizes.

Other objects and advantages will become apparent from the following description and the accompanying drawings of an embodiment of the invention.

In the drawings, in which like reference numerals refer to like parts throughout,

Fig. 1 is a side elevational view of an embodiment of the invention;

Fig. 2 is a top plan view of the device;

Fig. 3 is a sectional view taken on the line 3—3 of Fig. 2 showing a carton as it enters and the covers engage the cam mechanism;

Fig. 4 is a sectional view similar to Fig. 3 but showing the position of the parts after the carton has progressed somewhat further;

Fig. 5 is an enlarged fragmentary view of a portion of Fig. 2 showing the parts when a carton is positioned as in Fig. 3;

Fig. 6 is a fragmentary view similar to Fig. 5, but showing the parts when a carton has advanced to the position shown in Fig. 4;

Figs. 7 and 8 are sectional views taken on the lines 7—7 and 8—8 respectively of Fig. 5;

Fig. 9 is a sectional view taken on the line 9—9 of Fig. 2;

Fig. 10 is a perspective view of a typical carton which may be closed by the mechanism illustrated in the preceding figures; and

Fig. 11 is a perspective view of a portion of a modified carton.

In Fig. 10, there is shown a carton of the general type with which the preferred embodiment of the present invention may be used. The illustrated carton is described in Patent No.

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2,191,180 issued to L. W. Reaume for Carton Structure, and therefore no detailed description will be made herein. It is to be understood, however, that the present invention is not limited to use with any particular carton or any particular type, but may operate efficiently on any number of carton structures of various sizes, shapes and constructions. The carton illustrated in Fig. 10 is shown merely as an example of a typical carton which may be closed by the hereininvolved invention and comprises a substantially rectangular cardboard box 12 having two cover members 13 hinged on opposite longitudinal sides 14. Each cover member 13 has integral therewith, a tongue 15 which in the closed position is bent at a right angle to the cover member 13 and fits within the slot of a U-shape guide member 16 which is supported by the end walls 17. In some cartons of this general type, the U-shape member 16 is omitted and the end walls 17' slotted as at 16' to hold the tongues 15' as shown in Fig. 11. Such a modified carton may be closed with equal facility by the closing mechanism an embodiment of which is hereinafter described.

In general, the preferred embodiment of the invention comprises a frame structure which carries a pair of cam plates, a pair of wings actuated by levers contacting the moving container, and a rapidly rotating centrally located disk. The cam plates serve to raise the covers upwardly from the position shown in Fig. 10. The wings cooperating with their actuating levers serve to bend the tongues 15 inwardly, and the disk with its projections bends the tongues 15 downwardly and leads them with the help of cams into the channel 16. Then, pressure means forces the covers down into final position.

In use, the carton closing mechanism is generally mounted adjacent a conveyor on which the cartons travel, and, in the embodiment described herein, is adapted to straddle such a conveyor and close the cartons as they are passed through the device. The method of mounting will be later described in detail, but, for the present, it is sufficient to note that the mechanism is adjustably mounted on the conveyor side rails 18.

As a carton (such as that shown in Fig. 10) riding on the conveyor 19 enters the closing mechanism, the cover members 13 are picked up by the cam plates 20 which are supported on a frame structure, the top members of which are designated by the numeral 21. Pickup rods 22 are provided to raise and guide the cover members 13 up to the cam plates 20 should the cover member hinges be so loose as to allow the

cover members 13 to drop to a lower position. Each cam plate 20 is similar in configuration to that surface generated by two lines which intersect at right angles when a first line is revolved about a second line and simultaneously advanced along said second line. In other words, at the point where a cover member 13 first intercepts the plate, the surface of the cam plate is substantially horizontal. The plate then twists so that at its rear portion the upper and lower surfaces have been reversed. The two cam plates are, of course, twisted in opposite directions so that each cover member 13 will be turned inwardly toward the center as it follows the curvature of the cam plate in much the same manner as a cam follower.

As previously pointed out, each cover member 13 has a tongue portion 15 integral therewith which fits within the U-shape member 16 when the cover members 13 are in the closed position. In order to insure proper positioning of the tongues 15, each side of the closing mechanism includes means to turn said tongue portion inwardly when the cover members reach a substantially upright position. Each cam plate has such means associated with it, of course, and, for the sake of clarity, only one such assembly will be described, it being understood that the two assemblies are mirror-images of each other. Each cam plate 20 has a slot 20a therein through which projects a lever 25 so positioned as to be intercepted by the leading edge of the cover member 13 as it passes along the cam plate. Referring particularly to Figs. 5 and 6, it is seen that each lever 25 is shaped as a conventional bell crank having the arms 25a and 25b, though in the present instance it does not operate in the usual manner. Pivotally mounted at the fulcrum 26 is a link 27 whose other end is pivotally mounted at 28 on an extension 21a of the frame structure 21. A link 29 is similarly mounted at an intermediate point 30 on the arm 25b, and its other end is pivotally mounted at 31 within the slot 32 through the frame extension 21a. Both links are slidably supported by the U-shape member 33 which is bolted to the frame extension 21a. As previously mentioned, the leading edge of the carton cover member 13 intercepts the straight edge of arm 25a of the lever 25 and exerts force against the arm as the carton moves along the conveyor. This force causes the lever 25 to move to the right as seen in Figs. 2, 5 and 6, and this in turn causes rotation of a wing 35. As previously mentioned, a link 27 is pivotally mounted at the fulcrum 26 of the lever 25, and also mounted on the same pivot is a slotted lever 36. A pivot 37, is rotatably mounted in bushings 38 in a bracket 39 secured to the frame structure 21, and bears a cross piece 37a (Fig. 8) on its lower end which rides in the slot of the lever 36. Also secured to the rotatable pivot 37 is the wing 35 which is generally of triangular shape. It is apparent that as the lever 25 is advanced to the right (Figs. 5 and 6), the slotted lever 36 will be rotated in a clockwise direction about an axis through the pivot 37. Because the bottom portion 37a of the pivot is captive within the slot of the lever 36, the pivot 37 will be rotated, as will the wing 35 carried thereby. The wing 35, when rotated in this manner, passes across the cover member and bends inwardly and downwardly the tongue 15 as seen in Fig. 4. It should be noted that lever 25 holds the cover member 13 firmly against cam 20 so that wing 35 may bend the tongue 15 as set forth

above. The leading edge 35a is slightly higher than the trailing edge 35b and so efficiently "sweeps" the tongue 15 into position. Referring again to Figs. 5 and 6 and particularly to the finger 25, because of the difference in distance between the pivotal points 26 and 30 and the points 28 and 31, the movement to the right causes the arm 25b to be pulled downwardly, thus changing the angle at which the carton cover member contacts the arm 25a. Initially, the arm 25a holds the cover member 13 against the cam plate 20 so that arm 35 may bend tongue 15 downwardly and inwardly, but as the carton moves along and pushes the lever 25 farther and farther to the right, the angle between the cover member 13 and the arm 25a increases until finally the cover member slips off or past the arm 25a. In some instances, it may be desirable to have the cover member 13 slip off the arm 25a more quickly than usual. Therefore, the position of the pivot 31 may be varied by fixing it at various predetermined points within the slot 32, and thereby changing the angle between the cover member 13 and the arm 25a. A spring 40, pivotally attached between the end of the arm 25b at 41 and the pin 42 on the frame extension 21a, returns the lever 25 and the wing 35 to their original positions, after the cover member has released the arm, and a dash pot 45 cushions the return movement.

As the carton passes onward from the position shown in solid lines in Fig. 4, the cover members are directed downwardly and still farther inwardly to the dot-dash position there shown. At this point, the cover members 13 are acted upon by means which bends tongues 15 downwardly and leads them with the help of cams 20 into the U-shape member 16. However, for this final closing action to take place efficiently, the carton must be accurately centered with respect to the longitudinal center line of the mechanism. The centering means, in this case, comprise a fixed guide rail 50 and a spring-mounted guide rail 51. Two fixture units 52, located one at each end of the mechanism, control the position of the rail 50, and each comprises a rod 53, one end of which is permanently attached to the rail 50, and a bracket 54 which supports the rod 53 and is secured to the conveyor side rail 18. Collars 55, which are secured to the rod 53 by means of set screws 56, bear against the bracket 54 and allow initial adjustment of the rail 50 for various widths of cartons. The spring-mounted rail 51 is also supported by two fixtures 57, located one at each end of the mechanism. Each of these fixtures comprises a rod 58, permanently attached at one end to the rail 51, which is slidably supported by a bracket 59, secured to the conveyor side rail 18. A spring 60, which surrounds the rod 58, is interposed between the collar 61 and the bracket 59, and thereby biases the rail 51 toward the left as seen in Fig. 3. The collar 61 can be adjusted on the rod 58 after loosening the set screw 62. If the rail 50 is initially correctly positioned, the center line of a carton passing between the rails will coincide with the center line of the disk 65 hereinafter described.

The means which bends the tongues 15 and leads them into place within the U-shape member 16 comprises a rotating disk 65 having a plurality of protuberances 65a on each side thereof and a peripheral knife-edge. This disk 65 with the help of cams 20 leads tongues 15 into member 16. The disk 65 is mounted on a shaft 66 which is supported in suitable bearings 67 secured to the top frame structure 21. Power is

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transmitted from a motor 68 through a reduction gear system 69 to a pulley 70 mounted on the reduction system shaft 69a. A belt 71 connects the pulley 70 to a pulley 72 mounted on the shaft 66 and rapidly rotates the disk 65 at a constant speed in a counter-clockwise direction as seen in Fig. 1. As a carton passes past the disk 65, the cover members are guided by the cam plates 20 into the position shown in dot-dash lines in Fig. 4. When the carton passes underneath the disk 65, the protuberances 65a engage the tongues 15 and bend them downwardly to the dot-dash position shown in Fig. 4.

A pressure means applies downward pressure on covers 13 after they reach the dot-dash position in Fig. 4, pushes the tongues 15 along the guiding opposite side surfaces of disk 65, and then forces the tongues 15 down into the U-shaped member 16. This pressure means comprises portions of cams 20, a pressure plate 75 and a roller 76. The pressure plate 75 is mounted on the rear portion of the cam plates 20, and has mounted on it the supports 77. The roller 76 is rotatably mounted on a fixed shaft 78 which passes through the supports 77, the shaft ends being mounted in a manner to be later described. It would appear that since the roller supports 77 are fixed to the pressure plate 75 which in turn is fixed to the cam plates 20, the downward pressure applied by the pressure plate and roller will be equal to the weight of the machine. However, the mechanism is mounted in such a manner that this is not true and the downward pressure is controllable.

In order to prevent damage to either carton, contents or machine should an improperly packed carton be sent through the device, an improved method of rear end mounting is used which embodies a "floating" type construction. A plate 80 is fixed to each side rail 18 and has mounted on it a post 81 having a positionable collar 82 and integral clip 83. The vertical rear frame structure members 21b are slotted and bolts through said slots fasten each member 21b to a member 84 which is parallel to said member 21b, and a spring 85 extends from each of the previously-mentioned clips 83 to a bracket 86 mounted on the bottom of the corresponding member 84. As seen in Fig. 2, each bracket 86 has a slot 86a cut therein through which the post 81 extends to limit sideward motion of the rear end of the device. It is now apparent that the force exerted because of the weight of the machine is opposed by an upward force due to the spring 85. By adjusting the position of the collar 82, the upward opposing force may be varied and the proper resultant downward force obtained to firmly close the carton cover members without the use of excessive pressure. Also, by using such a "floating" construction, the mechanism can be adjusted to ride over improperly packed cartons without causing ill effects.

The present invention also contemplates the provision of vertical adjustment means whereby the mechanism may be adapted for operating on cartons of various heights as well as various widths. To this end, assemblies are provided at both front and rear which are interconnected so that all are adjustable by movement of a single lever. At the front, a bearing block 90 is attached to each frame member 21 and has pivoted thereon a bell crank 91 attached at the point 91a. The plates 92 are fixed to the side rails 18, and each has the fulcrum 91b of the bell crank 91 pivoted thereon. Attached to the other arm of each

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crank 91 at the point 91c is a link 93 which connects the assembly to a rear assembly. It is apparent that if the links 93 are moved to the right or left (Fig. 1), the front portion of the carton closing mechanism will be lowered or raised. It is also apparent that if the link 93 is fixed in position and the rear part of the machine raised or lowered, the entire machine will pivot about the axis defined by the point 91b. This pivoting action takes place whenever the rear portion is raised on its spring mounting by a carton passing under the pressure plate 75 and roller 76.

The mechanism is raised and lowered by means of a lever 95 located at the right far side of the machine as seen in Fig. 1. A quadrant 96 is mounted on the frame structure 21 and a clamp 97 adjustably secures the lever 95 to the quadrant. A bell crank 98 is made integral with the lower end of the lever 95 and is mounted at its fulcrum on one end of the previously mentioned shaft 78 (which carries the roller 76) and a similar bell crank 99 is mounted on the other end. Pivotaly connected to the rear arms of the bell cranks 98 and 99 are links 100 whose other ends are similarly connected to the members 84 and 101. The forward arms of the bell cranks 98 and 99 are pivotaly connected to the links 93 previously mentioned when describing the front raising and lowering assemblies. Referring to Fig. 1, it is seen that when the clamp 97 and the bolts which secure the frame members 21b to the members 84 are loosened, the entire mechanism can be easily raised or lowered. Supposing the lever 95 to be moved forward or to the left as seen in Fig. 1, the shaft 78 will be lowered as will the rear part of the frame to which the shaft is secured, and the link 93 will be moved to the right thus lowering the front portion a similar amount. Hence, the upper horizontal member of frame 21 will always be horizontal regardless of the height of the frame structure and will always be parallel to the box conveying surface of conveyor 12. The rear and front parts of the frame will always move together and raise or lower an equal amount. By adjusting spring 85, the ideal closing pressure can be applied to cover members 13 of any height box at any corresponding height of frame 21.

It is now apparent that a carton closing mechanism is provided which is readily adaptable to operate on a multiplicity of carton sizes and structures. It operates efficiently and with a minimum possibility of breakage of damage to either machine, carton or contents. It is, of course, obvious that various changes in detail and arrangement of parts can be made by one skilled in the art without departing from the spirit of the invention.

What I claim is:

1. A mechanism of the class described for closing a carton having two cover members hinged at opposite sides of said carton, each said cover member having along its free edge a tongue adapted to fit a U-shape guide slot when said cover members are closed, said mechanism comprising conveyor means for advancing said carton along a path, a frame, a pair of cam plates carried by said frame adjacent said path and adapted to guide said cover members inwardly to their closed position, and a pair of rotatable wings, means supporting said wings to rotate about separate upright axes one on each side of the carton path and adjacent thereto, operating means for said wings, said operating means including an element positioned to be

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engaged by an advancing carton and movable by and with the latter whereby said wings are adapted to be actuated by the movement of said carton along said conveyor means, said wings being adapted to position said tongues for entering said guide slot.

2. A mechanism of the class described for closing a carton having two cover members hinged at opposite sides of said carton, each said cover member having along its free edge a tongue adapted to fit a U-shape guide slot when said cover members are closed, said mechanism comprising means for advancing said carton along a path, a pair of cam plates adjacent said path and adapted to pick up said cover members and turn them inwardly toward their closed position, a circular disc, and means mounting the disc for rotation in an upright plane substantially paralleling the carton path, the disc being disposed to be engaged on opposite sides by the tongues of the two cover members while the latter are being turned to closed position whereby the rotary movement of the disc guides the tongues into the carton slot.

3. A mechanism of the class described for closing a carton having two cover members hinged at opposite sides of said carton, each said cover member having along its free edge a tongue adapted to fit a U-shape guide slot when said cover members are closed, said mechanism comprising means for advancing said carton along a path, a frame, a pair of cam plates on said frame adjacent said path and adapted to guide said cover members inwardly to their closed position, a pair of rotatable wings carried by said frame and actuated by the movement of said carton along said conveyor means, said wings being adapted to position said tongues to enter said slot, closing means comprising a substantially flat rotating disk carried by said frame for guiding said tongues into said slot, said disk being mounted on the frame for rotation in a plane substantially parallel to the carton path, and means for preadjusting said mechanism to accommodate cartons of varied sizes comprising an adjustable reference surface carried by said frame and lying parallel to the plane of said disk for engaging one side of said carton.

4. A mechanism of the class described for closing a carton having two cover members hinged at opposite sides of said carton, each said cover member having along its free edge a tongue adapted to fit a U-shape guide slot when said cover members are closed, said mechanism comprising means for advancing said carton along a path, a frame, a pair of cam plates on said frame adjacent said path and adapted to guide said cover members inwardly to their closed position, means on said frame for bending said tongues inwardly toward each other, and means comprising a rotating disk carried by said frame and having laterally extending tongue engaging means, said disk being disposed to contact the tongues on the covers of an advancing carton whereby to frictionally engage said tongues and bend them downwardly into alignment with said slot.

5. A mechanism of the class described for closing a carton having two cover members hinged at opposite sides of said carton, each of said cover members having along its free edge a foldable tongue adapted to fit a U-shape guide slot when said cover members are closed, said mechanism comprising conveyor means for ad-

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vancing said carton along a path, a frame, a pair of cam plates carried by said frame adjacent said path and adapted to guide said cover members inwardly toward their closed position, a pair of rotatable wings, means carried by said frame supporting said wings to rotate about spaced upright axes one at each side of the carton path for folding said tongues inwardly toward each other, means on said frame for rotating said wings responsive to the movement of said carton and for holding said covers against said cams during the inward folding operation of said wings, a rotating member on said frame between said cams and disposed to engage the tongues on both cover members simultaneously for folding downwardly said tongues into alignment with said slot and guiding said tongues into said slot, and means for forcing said tongues into said slot and closing said cover members.

6. A mechanism of the class described for closing a carton having two cover members hinged at opposite sides of said carton, each of said cover members having along its free edge a foldable tongue adapted to fit a U-shape guide slot when said cover members are closed, said mechanism comprising conveyor means for advancing said carton along a path, a base frame supporting said conveyor means, a sub-frame located above and normally resting by gravity on said base frame in straddling relation to the carton path, raising and lowering means connecting said sub-frame to said base frame for simultaneously raising or lowering each part of said sub-frame an equal amount with respect to said base frame in adjusting the mechanism to cartons of different sizes, means on said sub-frame for positioning said tongues to enter said slot, and an adjustable pressure means on the sub-frame for fully closing said cover, said pressure means being arranged to transfer the weight of the sub-frame and its associated parts to a carton advancing along said path whereby the closing force applied to the carton cover members is supplied solely by the weight of said sub-frame.

7. A mechanism of the class described for closing a carton having two cover members hinged at opposite sides of said carton, each of said cover members having along its free edge a foldable tongue adapted to fit a U-shape guide slot when said cover members are closed, said mechanism comprising conveyor means for advancing said carton along a path, a base frame supporting said conveyor means, a sub-frame located above said base frame, raising and lowering means connecting said sub-frame to said base frame for simultaneously raising or lowering each part of said sub-frame an equal amount with respect to said base frame, means on said sub-frame for positioning said tongues to enter said slot, and an adjustable pressure means on the sub-frame for fully closing said cover by the weight of said sub-frame, said last mentioned means comprising means pivotally mounting said sub-frame with respect to said base frame, said pivotal mounting being on one side of the center of gravity of said sub-frame, a member on the sub-frame for pressing said cover members into fully closed position under the weight of said sub-frame, and an adjustably mounted spring operatively connecting said sub-frame and base frame and supporting a portion of said weight, whereby the closing pressure on said cover members is controllable.

8. A mechanism of the class described for clos-

ing a carton having two cover members hinged at opposite sides of said carton, each of said cover members having along its free edge a foldable tongue adapted to fit a U-shape guide slot when said cover members are closed, said mechanism comprising conveyor means for advancing said carton along a path, a base frame supporting said conveyor means, a sub-frame located above said base frame, raising and lowering means connecting said sub-frame to said base frame for simultaneously raising or lowering each part of said sub-frame an equal amount with respect to said base frame, means on said sub-frame for positioning said tongues to enter said slot, and an adjustable pressure means on the sub-frame for fully closing said cover by the weight of said sub-frame, said positioning means comprising a pair of cam plates carried by said sub-frame adjacent said path and adapted to guide said cover members inwardly toward their closed position, a pair of rotatable wings carried by said sub-frame for folding said tongues inwardly toward each other, means on said sub-frame for rotating said wings responsive to the movement of said carton and for holding said covers against said cams during the inward folding operation of said wings, and a rotating member on said sub-frame between said cams for folding downwardly said tongues into alignment with said slot and guiding said tongues into said slot.

9. A mechanism of the character described for closing a carton of the type having a cover member hinged along one edge to a side of the carton, the carton cover member having a marginal tongue portion spaced from and generally paralleling its hinged edge, the carton also having a guide slot for receiving the tongue portion of the cover member in closing the carton, said mechanism comprising means for supporting and advancing a carton along a predetermined path, a cam plate, means supporting the cam plate adjacent the carton path, the cam plate being formed to engage the cover member of an advancing carton and to swing such cover member inwardly to a closed position, a tongue folding member, means supporting the tongue folding member for movement into engagement with the tongue on the cover of an advancing carton, and actuating means for the tongue folding member, said actuating means including an element supported to project into the path of an advancing carton to be engaged by and to move with such carton, the actuating means being arranged to move the tongue folding member into engagement with the carton cover tongue during the movement of the actuating element by the carton.

10. A mechanism of the character described for closing a carton having a cover member hinged along one edge to a side of the carton, the cover member having a marginal tongue portion spaced from and generally paralleling its hinged edge and receivable in a guide slot of the carton during closing of the latter, said mechanism comprising means for advancing a carton along a predetermined path, means engageable with the cover member of an advancing carton and arranged to swing an engaged cover from open to closed position during the advancing movement of the carton, a tongue folding member, means mounting the tongue folding member for cyclic movement over a closed path into and out of en-

gagement with the tongue on the cover of an advancing carton, and actuating means for operating the tongue folding member, said actuating means including an element engageable with an advancing carton to move the tongue engaging member in response to movement of a carton against such element.

11. A mechanism of the character described for closing a carton of the type having a body that includes a guide slot, cover members hinged at their edges along opposite sides of the carton body and having tongues along the edges of the cover members spaced from and generally paralleling the hinged edges, the cover tongues being receivable in the guide slot of the carton during closing of the latter, said mechanism comprising conveyor means for advancing a carton along a predetermined path, frame means, a pair of cam plates carried by the frame means and disposed on opposite sides of the carton path, said cam plates being formed to engage and guide the cover members of an advancing carton to swing the cover members inwardly from open to closed positions, tongue folding members, means mounting the tongue folding members on the frame means for cyclic movement into and out of engagement with the tongues on the cover members of an advancing carton, a substantially circular disc, means mounting the disc for rotation in a plane paralleling the article path, the disc being disposed substantially midway between the cam plates for engaging the folded tongues on the cover members of an advancing carton and guiding such tongues into the guide slot of the carton.

12. A mechanism of the character described for closing a carton of the type comprising a body having a guide slot and cover members hinged along opposite edges of the body, the hinge axes paralleling the guide slot, each of the cover members having along one of its edges a tongue adapted to fit the guide slot of the body when the cover members are closed, said mechanism comprising a base frame having means for supporting and advancing a carton along a predetermined path with the hinge axes paralleling such path, a sub-frame above the base frame and pivotally mounted on the latter, a pair of cam plates carried by the sub-frame each adjacent the article path, the cam plates being adapted to engage and guide the cover members for movement toward closed positions, means movably mounted on the sub-frame for engaging the tongues of the cover members and directing such tongues into the carton guide slot, and a pressure member on the sub-frame engageable with the cover members of the carton advancing on the base frame, the sub-frame being so pivoted on the base frame that a portion of the weight of the sub-frame is applied yieldingly to the carton through the pressure member for fully closing the cover members of the carton by the weight of the sub-frame.

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2,124,845	Cobb	July 26, 1938
2,174,426	Talbot	Sept. 26, 1939