Feb. 3, 1953 B. S. HARRINGTON 2,627,152

AUTOMATIC CARTON CLOSING MACHINE

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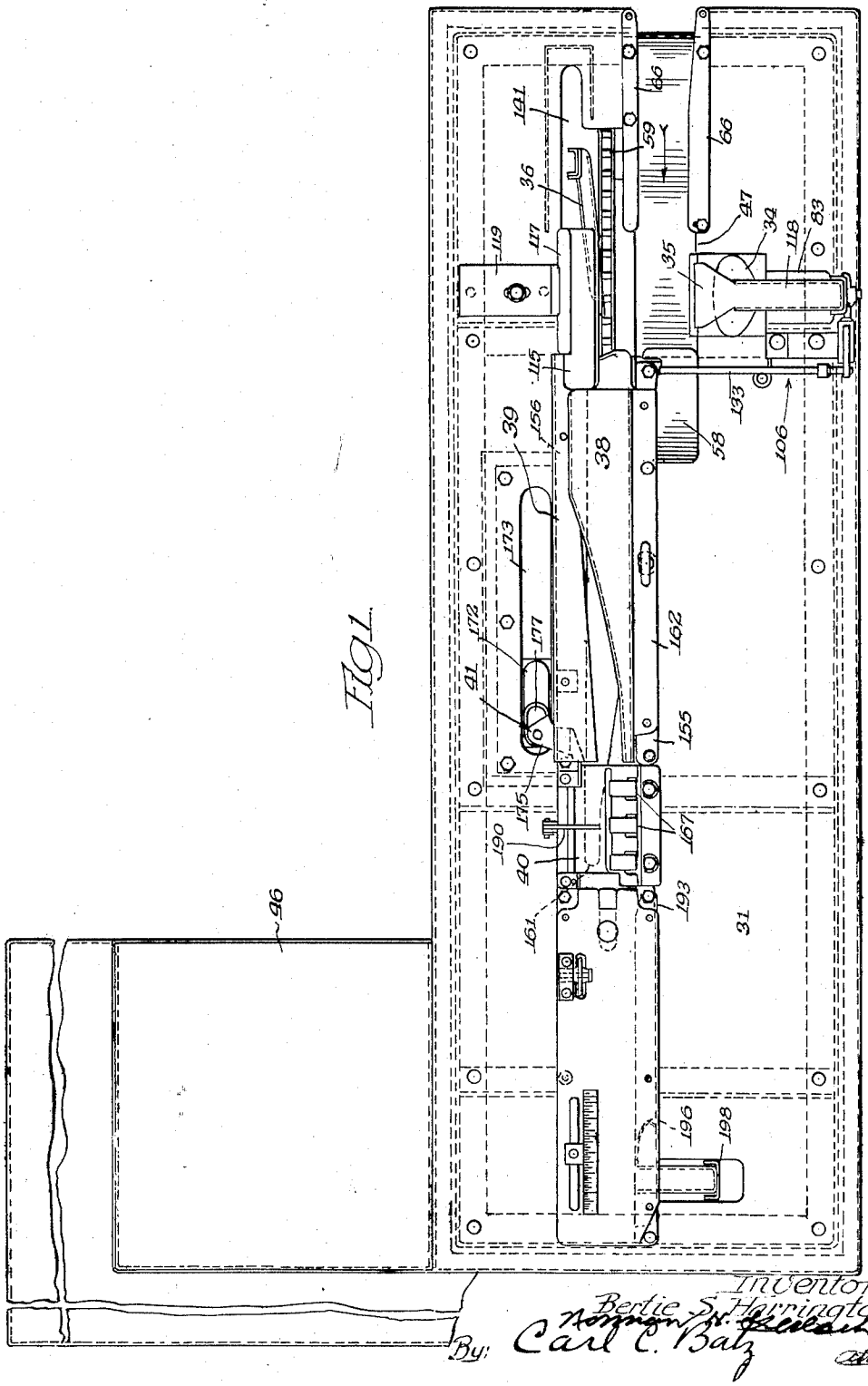


FIG. 1.

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AUTOMATIC CARTON CLOSING MACHINE

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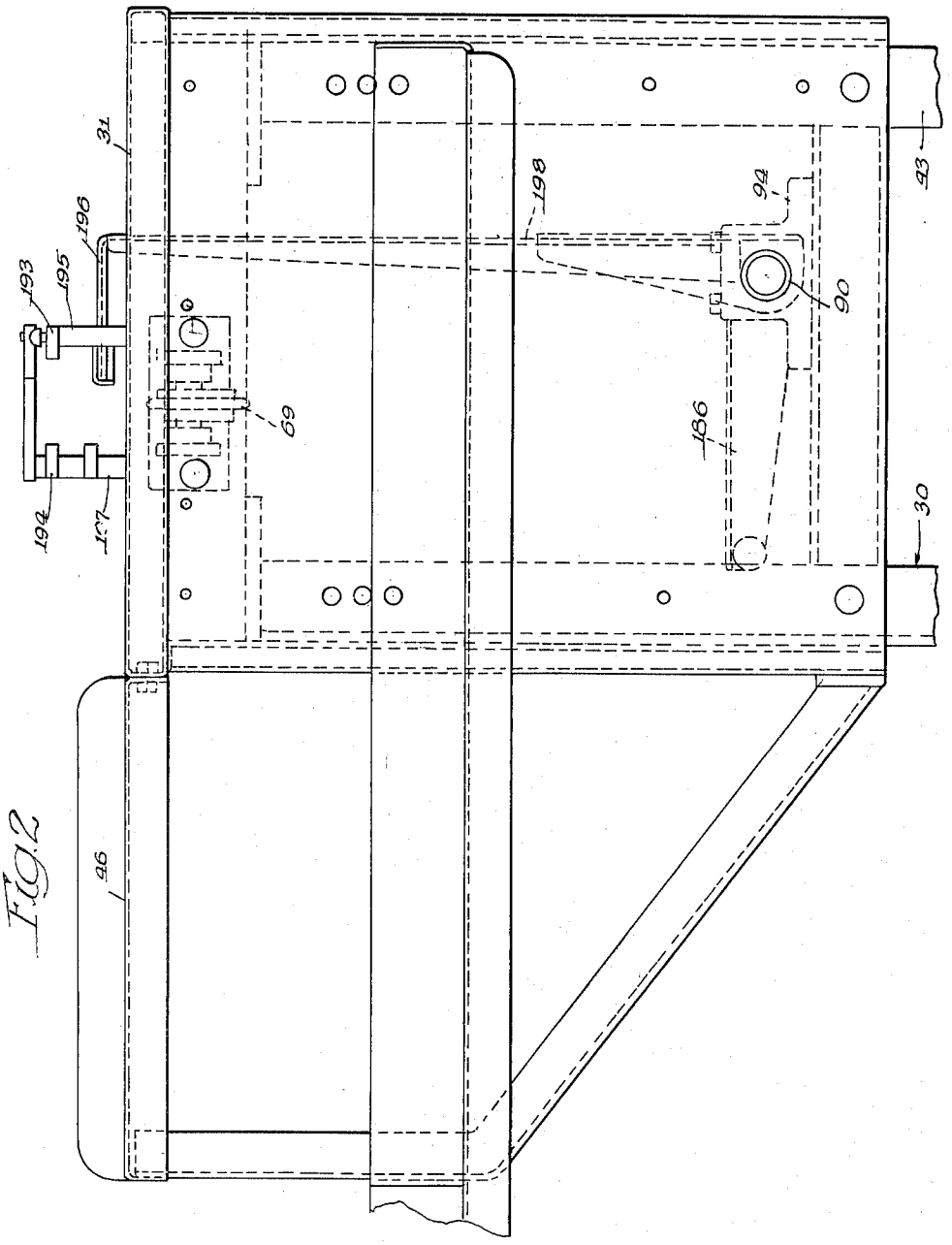


FIG 2

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AUTOMATIC CARTON CLOSING MACHINE

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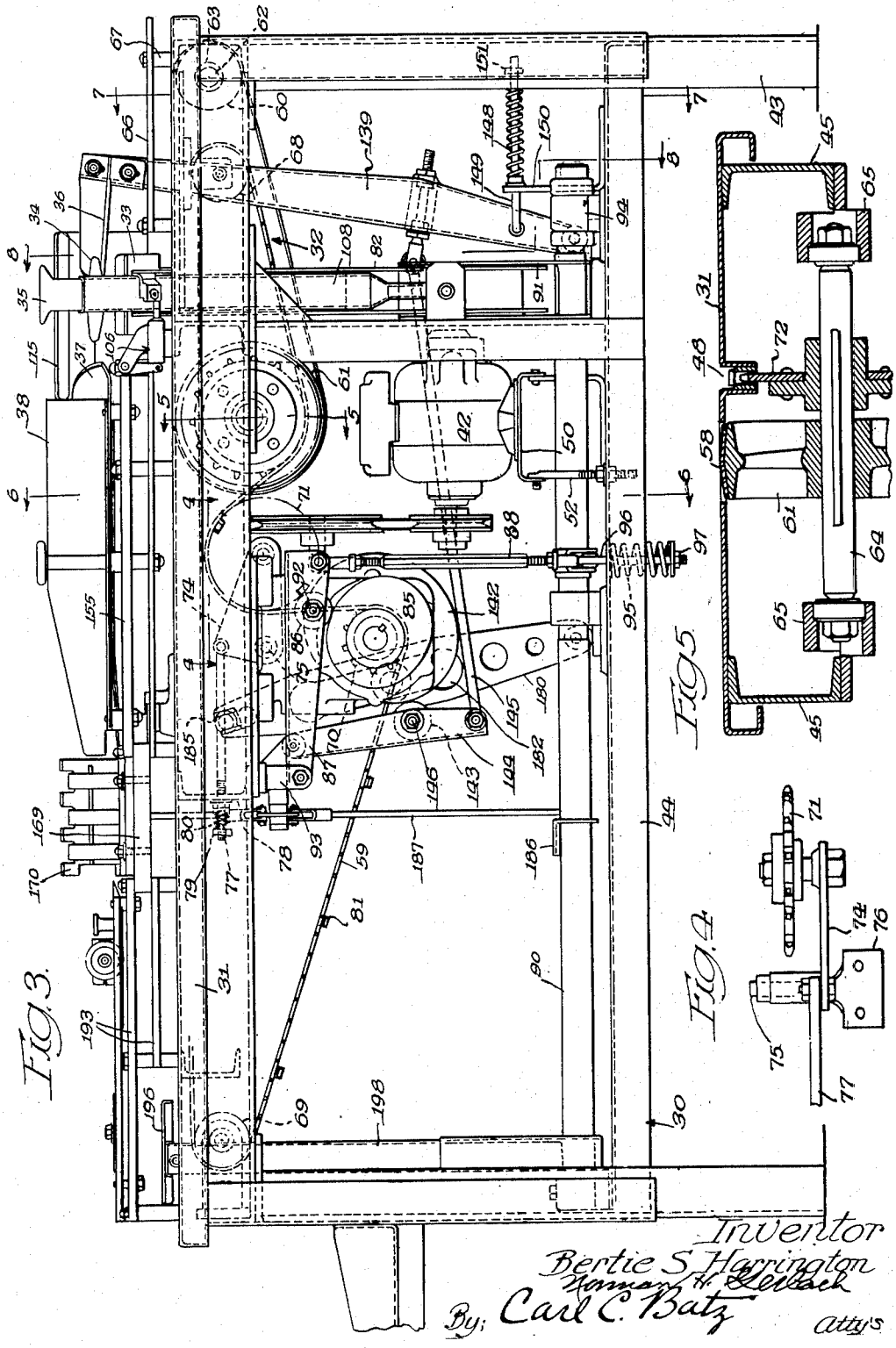


FIG. 3.

FIG. 4.

FIG. 5.

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AUTOMATIC CARTON CLOSING MACHINE

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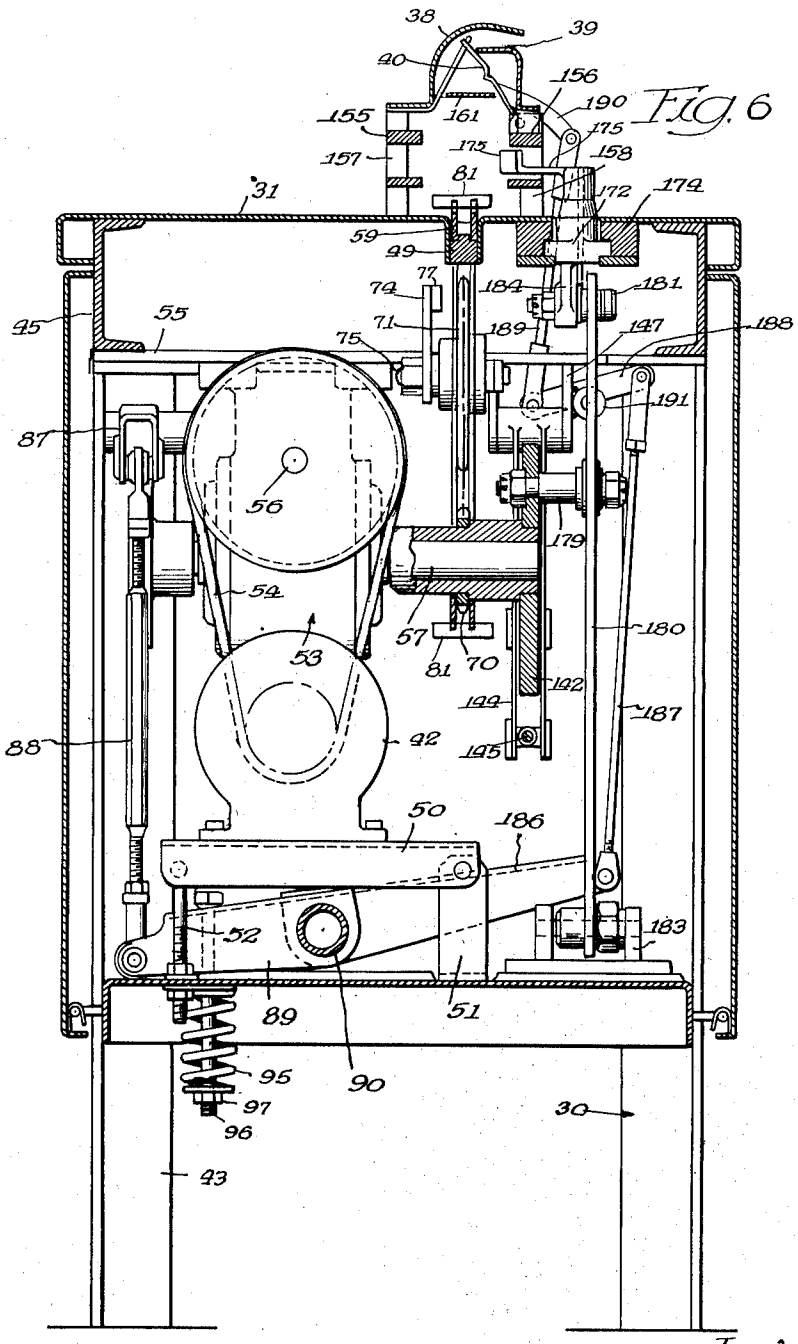


Fig. 6

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AUTOMATIC CARTON CLOSING MACHINE

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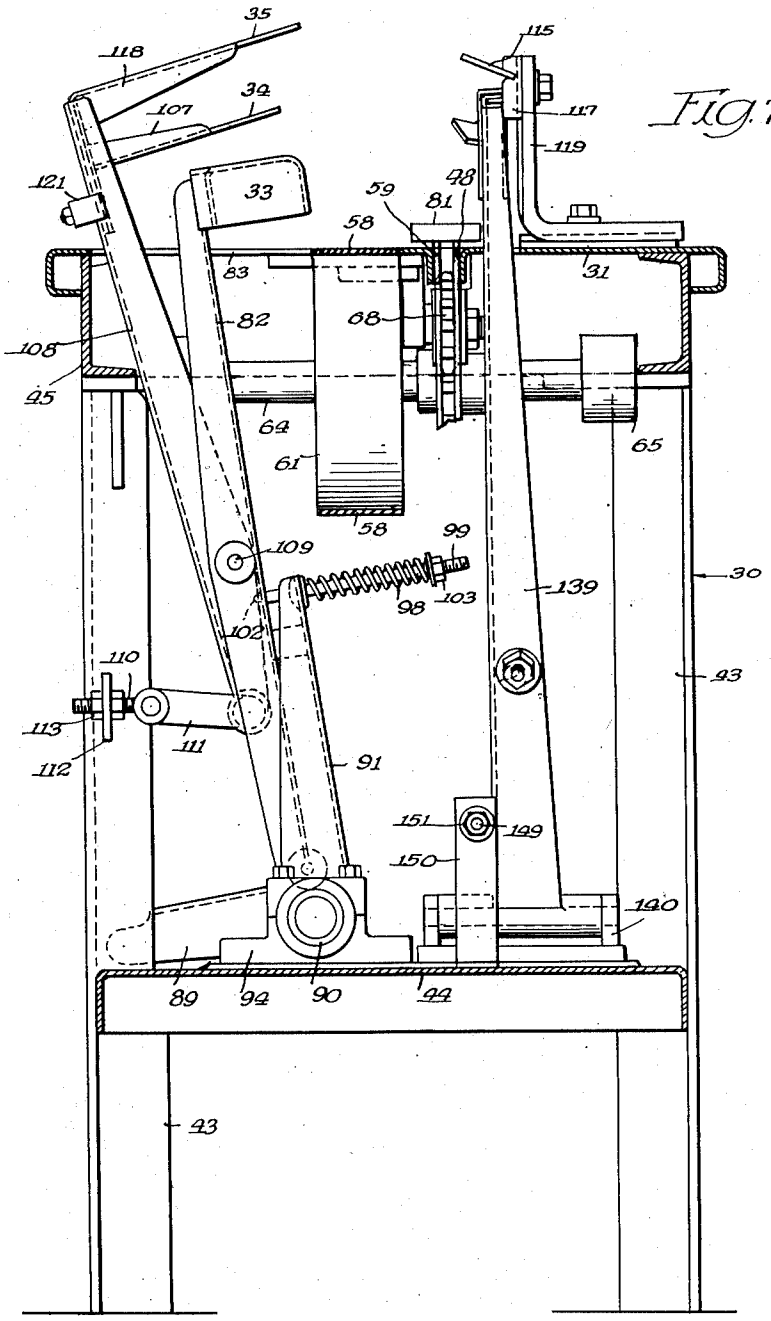


Fig. 7.

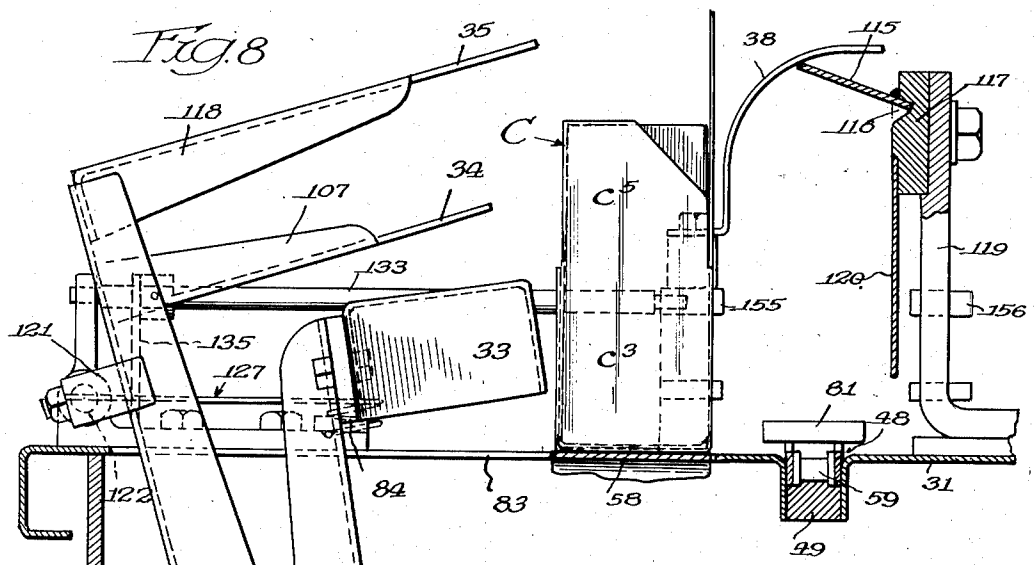
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Feb. 3, 1953 B. S. HARRINGTON 2,627,152

AUTOMATIC CARTON CLOSING MACHINE

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Fig. 8



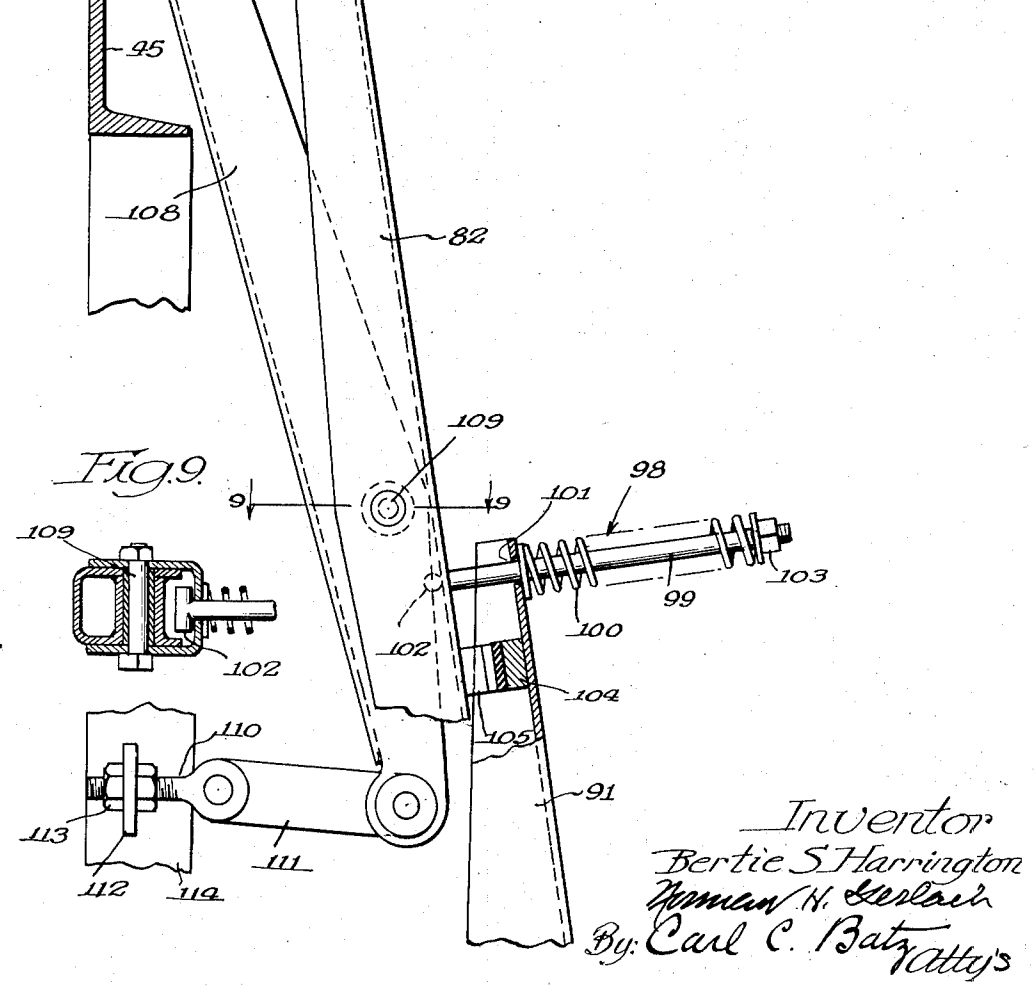


Fig. 9

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Feb. 3, 1953 B. S. HARRINGTON 2,627,152

AUTOMATIC CARTON CLOSING MACHINE

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FIG. 10

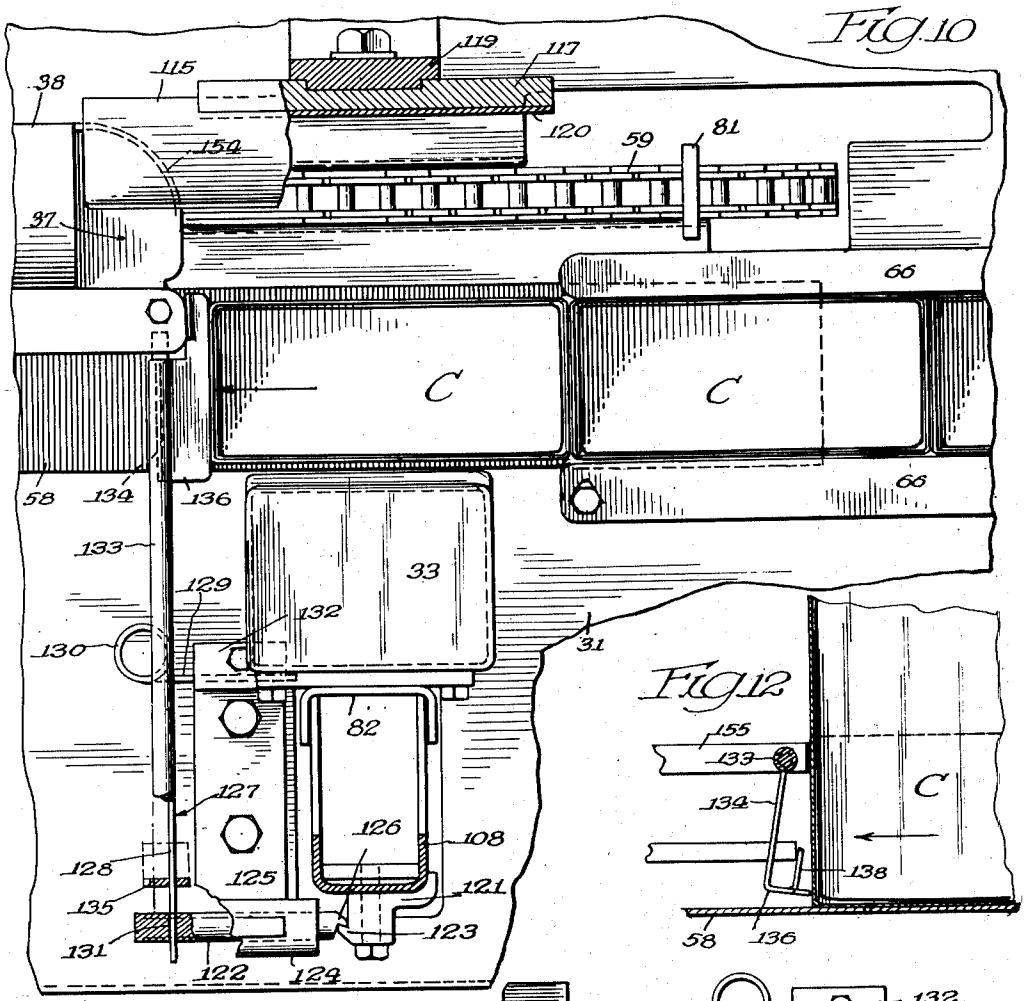


FIG. 12

FIG. 11

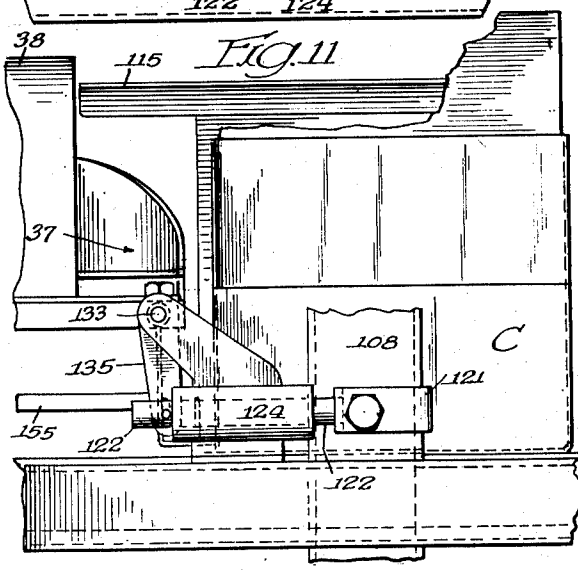
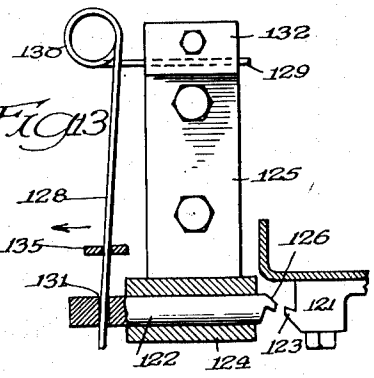


FIG. 13



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Feb. 3, 1953 B. S. HARRINGTON 2,627,152

AUTOMATIC CARTON CLOSING MACHINE

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Fig. 14

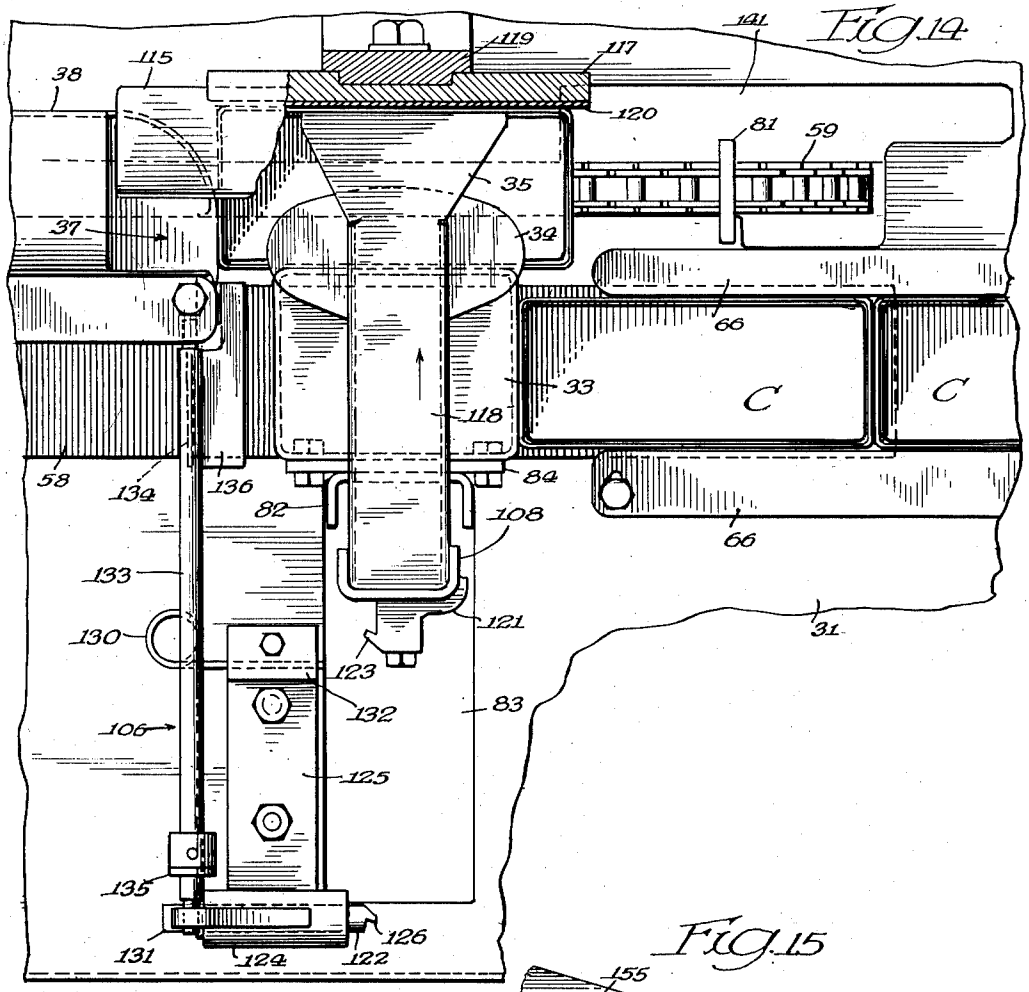
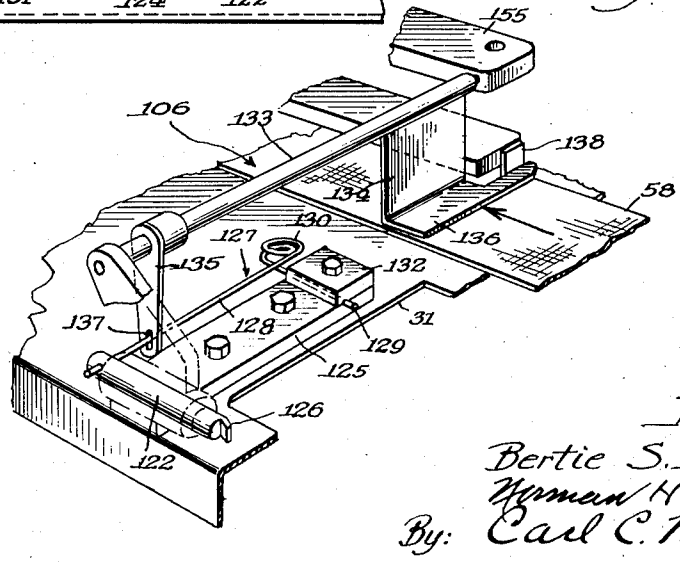


Fig. 15



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AUTOMATIC CARTON CLOSING MACHINE

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Fig. 16

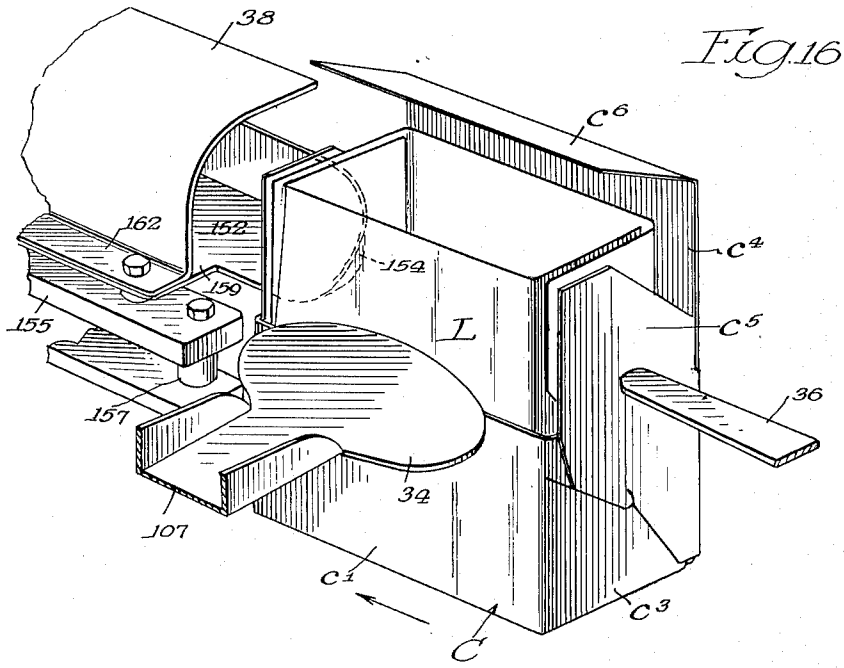
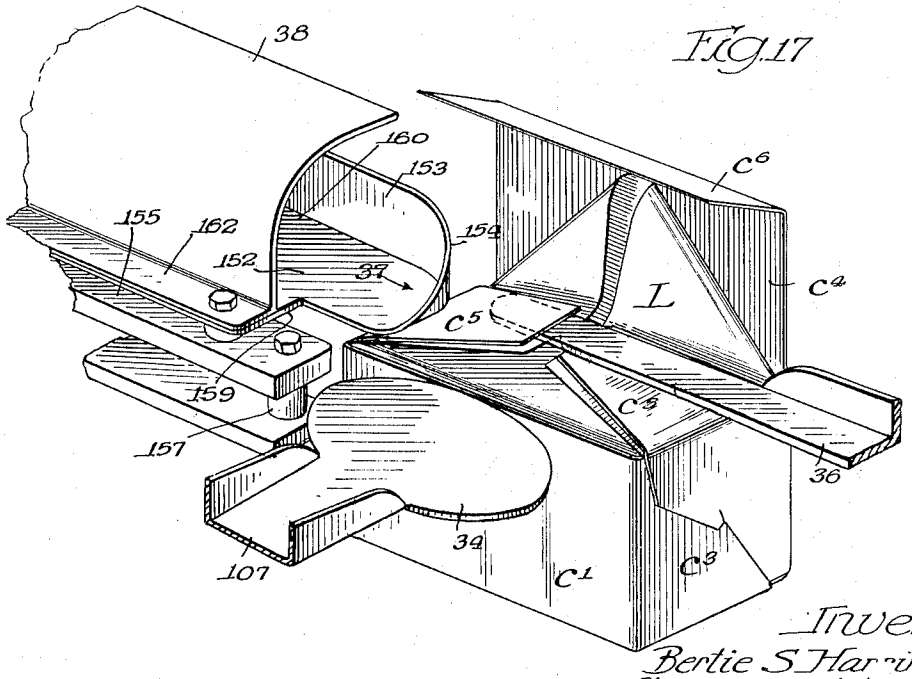


Fig. 17



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Fig. 18

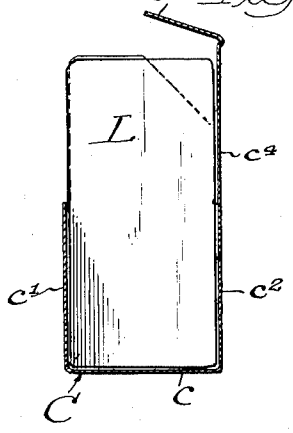


Fig. 19

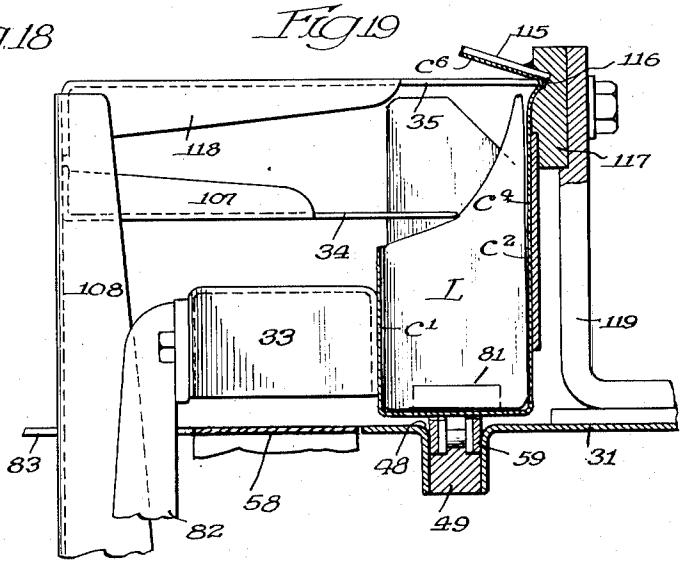


Fig. 20

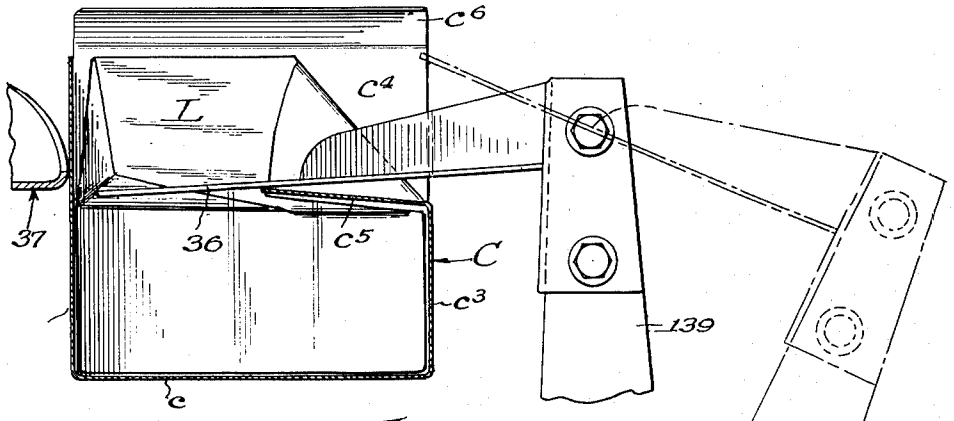
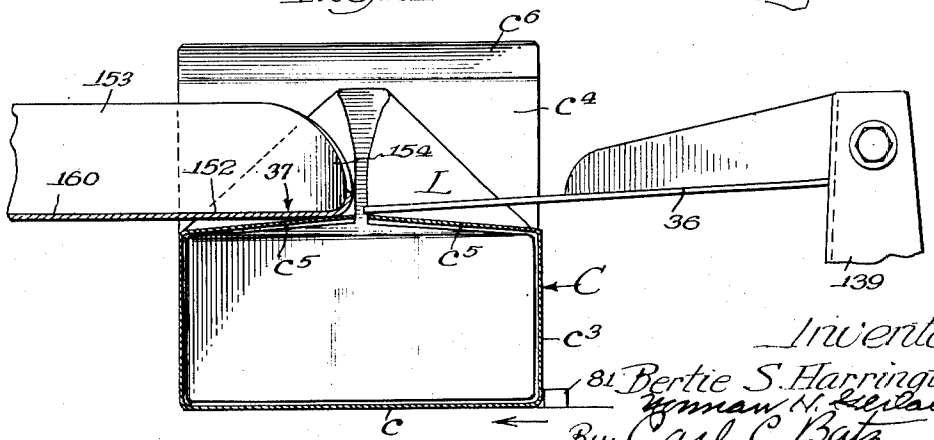


Fig. 21



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Fig.22

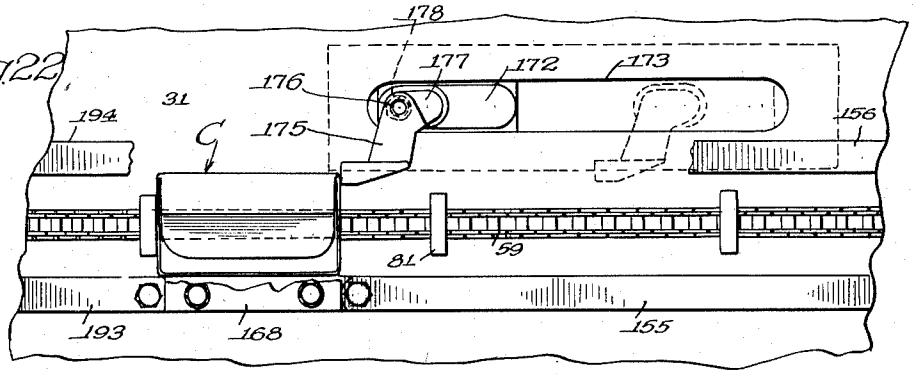


Fig.24

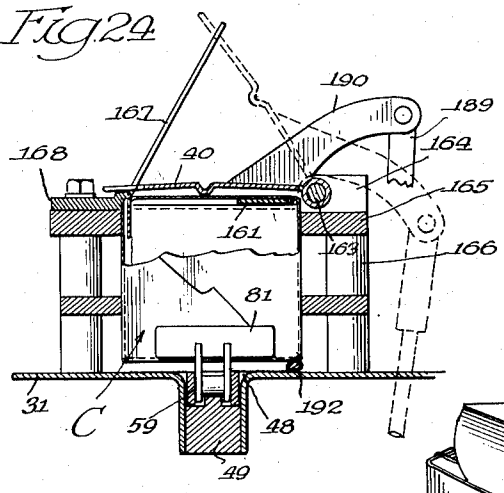


Fig.23

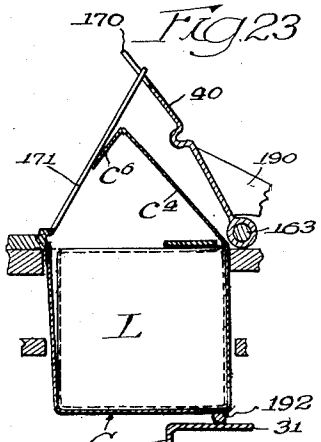


Fig.25

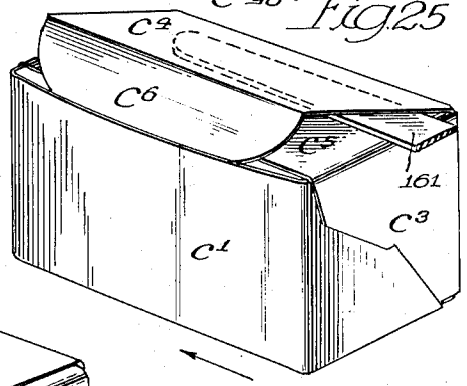
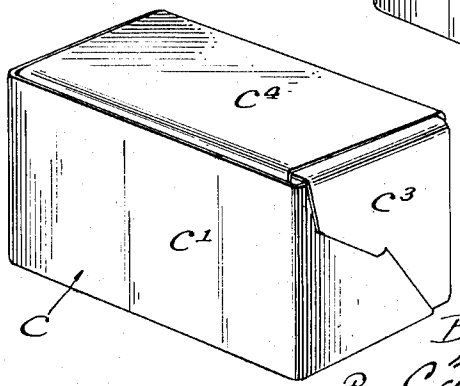


Fig.26



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Patented Feb. 3, 1953 2,627,152

UNITED STATES PATENT OFFICE

2,627,152

AUTOMATIC CARTON CLOSING MACHINE

Bertie S. Harrington, Chicago, Ill., assignor to Armour and Company, Chicago, Ill., a corporation of Illinois

Application March 13, 1948, Serial No. 14,672

60 Claims. (Cl. 53—44)

1

In general the present invention relates to machines for closing cartons of the type that is used in merchandising lard, vegetable compound, shortening or any like congealable substance and comprises: (1) a carton proper which is formed of waxed comparatively stiff cardboard and consists of a bottom wall, a front wall, a back wall, a pair of end walls with hinged flaps at their upper margins, and a cover that is hinged to the upper margin of the back wall and embodies a tongue at its front margin, and (2) a cup-shaped liner which is formed of liquid or moisture resistant paper, fits within the carton proper and has the upper parts of its front, end and back walls extending beyond the upper margins of the front, end and back walls of the carton proper and adapted to be folded inwards. More particularly the invention relates to that type of carton closing machine which is adapted to be used in connection with an automatic carton forming machine and an automatic filling machine, serves successively to close the cartons after filling thereof by the filling machine and operates to close each carton by first folding inwards and downwards the upper part of the front wall of the liner, then folding inwards and downwards the upper parts of the liner end walls and the flaps at the upper margins of the end walls of the carton proper and finally folding inwards and downwards the upper part of the liner back wall and the cover and at the same time inserting the tongue on the front margin of the cover between the upper margin of the front wall of the carton proper and the adjacent portion of the front wall of the liner.

One object of the invention is to provide a carton closing machine of this type which is an improvement upon, and has certain advantages over, previously designed machines for the same purpose and is characterized by high speed operation, simplicity of design, and a minimum number of operating parts.

Another object of the invention is to provide a carton closing machine of the type under consideration which is entirely automatic and includes as parts thereof: a horizontally elongated frame structure with a flat top; mechanism adapted to feed the cartons successively and longitudinally over the top, and consisting of a horizontally extending endless belt which is adapted successively to receive the cartons from the filling machine and has the discharge end of the upper or operative reach thereof terminating directly inwards of the receiving end of the top and a roller chain type conveyor which

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is laterally offset with respect to the endless belt, has a horizontal upper reach extending in a guide channel substantially throughout the entire length of the top and embodies equidistantly spaced fingers therealong for individually pushing the cartons longitudinally across the top of the frame structure; and a movably mounted pusher head which operates automatically and successively to shift the cartons laterally from the discharge end of the upper reach of the endless belt over the receiving end of the upper reach of the finger equipped roller chain type conveyor.

Another object of the invention is the provision, in a carton closing machine of the type and character under consideration, of the following parts which operate in timed relation with the pusher head each time the pusher head slides a carton over the receiving end of the upper reach of the roller chain type conveyor: (1) a movably mounted side tucker which operates to fold inwards and downwards the upper part of the front wall of the paper liner; (2) a movably mounted end tucker which operates during rotation of the side tucker to fold inwards and downwards the flap on the trailing end wall of the carton proper and the upper part of the adjacent end wall of the paper liner; and (3) a movably mounted folder member which operates simultaneously with the side tucker to fold the tongue into a position wherein it extends at substantially right angles to the cover of the carton proper.

Another object of the invention is to provide a carton closing machine of the type and character under consideration wherein the endless belt constituting a part of the carton feeding mechanism is driven at a greater rate of speed than the roller chain type conveyor, the latter has its fingers for carton pushing purposes spaced apart a materially greater distance than the length of a carton, and the pusher head is so operated that in connection with a carton pushing operation it pushes the carton over the receiving end of the upper reach of the roller chain conveyor so that it is positioned an appreciable distance ahead of the next following finger on such conveyor to the end that the pushed carton remains momentarily stationary at the time the side tucker, the end tucker and the tongue folder member are rendered operative, i. e., are brought into their operative positions.

Another object of the invention is the provision in a carton closing machine of the aforementioned character of a latch device which serves

to hold the pusher head, the side tucker and the tongue folder member against movement into their operative positions until a carton on the upper reach of the endless belt reaches the discharge end of such reach.

Another object of the invention is the provision in connection with a carton closing machine of the type and character hereinbefore recited, of the following additional operating parts: (1) a fixedly mounted end tucker which is positioned in opposed relation with the movably mounted end tucker and operates in connection with initial movement of a carton by the roller chain type conveyor and after operation of the side tucker, the movably mounted end tucker and the tongue folder member, to fold inwards and downwards the flap on the leading end wall of the carton proper and the upper part of the adjacent end wall of the liner; (2) a stationary cover and tongue positioner and a stationary cover guide which overlie the upper reach of the roller chain type conveyor at a point rearwards of the fixedly mounted end tucker and serve in connection with further movement of the carton by the conveyor partially to swing downwards the hinged cover of the carton proper; and (3) a cover closing member which is disposed directly adjacent the rear ends of the cover and tongue positioner and the cover guide, is pivoted to swing upwards and downwards about a horizontal axis and is controlled automatically so that after a carton emerges from said cover and tongue positioner and the cover guide it swings downwards and effects complete closing of the cover and insertion of the tongue between the upper margin of the front wall of the carton proper and the adjacent portion of the front wall of the liner.

Another object of the invention is to provide in connection with a carton closing machine of the last mentioned character, an advancer device which is located at one side of the rear ends of the cover and tongue positioner and the cover guide, is mounted to slide horizontally and also lengthwise of the upper reach of the roller chain type conveyor and is controlled automatically in such manner that it operates to push a carton from the rear ends of said positioner and guide at a speed greater than the speed of drive of the conveyor to the end that the carton, after emerging from the rear ends of the cover and tongue positioner and the cover guide, will remain stationary at the time the pivoted cover closing member is swung downwards for cover closing and tongue inserting purposes.

A further object of the invention is to provide a carton closing machine of the type and character under consideration in which all of the moving parts are operated or driven by a single prime mover in order that such parts operate in proper synchronism or timed relation.

A still further object of the invention is to provide a carton closing machine which is generally of new and improved construction, may be manufactured and operated at a comparatively low cost, and possesses high efficiency.

Other objects of the invention and the various advantages and characteristics of the present carton closing machine will be apparent from a consideration of the following detailed description.

The invention consists in the several novel features which are hereinafter set forth and are more particularly defined by claims at the conclusion hereof.

In the drawings which accompany and form a part of this specification or disclosure and in which like numerals of reference denote corresponding parts throughout the several views:

Figure 1 is a plan view of a carton closing machine embodying the invention;

Figure 2 is a rear end elevation;

Figure 3 is a side elevation illustrating in detail the electric motor which constitutes the prime mover for the machine and serves to drive or operate in proper timed relation the various movable operating parts of the machine;

Figure 4 is a horizontal section taken on the line 4—4 of Figure 3 and showing the take-up sprocket for the finger equipped roller chain type conveyor;

Figure 5 is a section taken on the line 5—5 of Figure 3 and showing the pulley at the discharge end of the endless belt and another sprocket for the roller chain type conveyor;

Figure 6 is a vertical transverse section taken on the line 6—6 of Figure 3 and illustrating in detail the mechanism for operating the slidably mounted device for advancing the cartons with respect to the upper reach of the roller chain type conveyor so that they are momentarily at rest under the pivotally mounted cover closing member and also the mechanism for automatically swinging the cover closing member downwards and upwards in timed relation with the carton advancer device;

Figure 7 is a vertical transverse section taken on the line 7—7 of Figure 3 and showing in detail the arms which serve movably to support the pusher head, the side tucker, the tongue folder member, and the end tucker that serves to fold inwards and downwards the flaps on the trailing end walls of the cartons;

Figure 8 is an enlarged transverse section taken on the line 8—8 of Figure 3 and illustrating in detail the manner in which the arm for the pusher head and the arm for the side tucker and the tongue closing member are pivotally mounted;

Figure 9 is a horizontal section on the line 9—9 of Figure 8;

Figure 10 is a fragmentary view, partly in plan and partly in horizontal section, showing the pusher head in its retracted position, i. e., before it is swung or shifted in the direction of the roller chain type conveyor;

Figure 11 is a side view of the latch device for retaining the pusher head, the side tucker and the tongue folder member in their retracted position until a carton reaches the discharge end of the endless belt;

Figures 12 and 13 are, respectively, vertical longitudinal and plan sections of the latch device;

Figure 14 is a view, partly in plan and partly in horizontal section, showing the pusher head, the side tucker and the tongue folder member after they are swung or shifted into their operative positions;

Figure 15 is a fragmentary perspective of the aforementioned latch device;

Figure 16 is a fragmentary perspective showing an open carton after it has been pushed over the receiving end of the upper reach of the roller chain type conveyor by the pusher head but before completion of the operating or swing type stroke of the side tucker;

Figure 17 is a view showing the carton of Fig-

ure 16 after completion of the operating stroke of the side tucker;

Figure 18 is a vertical transverse section of an open carton;

Figure 19 is a vertical transverse section showing the manner in which the pusher head operates to shift a carton laterally from the discharge end of the upper reach of the endless belt over the receiving end of the upper reach of the roller chain type conveyor, the manner in which the side tucker operates to fold inwards and downwards the upper part of the front wall of the paper liner and the manner in which the tongue folding member serves to fold the tongue with respect to the cover of the carton being closed in connection with operation of the machine;

Figure 20 is a vertical longitudinal section showing the manner in which the movably mounted end tucker serves when shifted into its operative position and while the carton being closed is momentarily at rest over the receiving end of the conveyor, to fold inwards and downwards the flap on the trailing end wall of the carton and also the upper part of the adjacent end wall of the liner;

Figure 21 is a view like Figure 20 except that it shows the carton after it has been initially advanced by the roller chain type conveyor to the point where the fixedly mounted end tucker is operative to fold inwards and downwards the flap on the leading end wall of the carton and also the upper part of the adjacent end wall of the liner;

Figure 22 is a plan view illustrating in detail the construction and design of the advancer device that is disposed adjacent the rear ends of the cover and tongue positioner and the cover guide;

Figure 23 is a vertical transverse section showing a carton after it has been advanced with respect to the upper reach of the roller chain type conveyor by the advancer device and before downward swinging of the cover closing member;

Figure 24 is a similar vertical transverse section like Figure 23 except that it shows the cover closing member after it has been swung downwards in order to effect complete closing of the cover of the carton proper and insertion of the tongue between the upper margin of the front wall of the carton proper and the adjacent portion of the front wall of the liner;

Figure 25 is a perspective showing a carton directly before completion of downward swinging of the cover closing member; and

Figure 26 is a perspective of a carton that has been fully closed by the machine.

The carton closing machine which is shown in the drawings constitutes the preferred form or embodiment of the invention. It is of unitary character and, as hereinafter described more in detail, is wholly automatic. It is contemplated that the machine will be used in connection with any suitable automatic carton forming machine and any suitable automatic filling machine and effect successive closing of the cartons after they are filled, one at a time, by the aforementioned filling machine. The cartons which are adapted to be closed successively and automatically by the present machine are conventional. They are used principally in merchandising lard, vegetable compound, shortening or any like congealable substance and, as best shown in Figures 18, 20, 21, 25 and 26 of the drawings, are of the type that comprises a carton proper C and a cup shaped liner L. The carton proper is formed of waxed comparatively stiff cardboard or like material and consists of a bottom wall c, a front wall c^1, a back wall c^2, a pair of end walls c^3, and a cover c^4. The end walls extend between the side margins of the front and back walls and have hinged flaps c^5 at their upper margins. The cover c^4 is hinged to the upper margin of the back wall c^2 and embodies at its front margin a tongue c^6. The liner L is formed of any suitable flexible, liquid or moisture resistant paper. It fits within the carton proper C and has the upper parts of its front, end and back walls extending beyond the upper margins of the front, end and back walls of the carton proper and adapted to be folded inwards. It is contemplated that each carton to be closed by the closing machine will be filled by the filling machine while the cover c^4 and flaps c^5 of the carton proper and the upper parts of the front, end and back walls of the liner L extend vertically. It is also contemplated that each carton to be closed will reach the closing machine while the cover c^4 and the tongue c^6 are substantially coplanar. After filling by the filling machine the cartons are fed lengthwise and in the form of a horizontal and rectilinear series to the closing machine and the latter operates successively or one at a time to effect closing of the cartons. As recited hereafter more in detail, each carton is closed by first folding inwards and downwards the upper part of the front wall of the liner L, then folding inwards and downwards the flap on the trailing end wall of the carton proper and simultaneously folding inwards and downwards the upper part of the adjacent liner end wall, then folding inwards and downwards the flap on the leading end wall of the carton proper and simultaneously folding inwards and downwards the upper part of the adjacent liner end wall and finally folding inwards and downwards the cover and the upper part of the liner back wall and at the same time inserting the tongue on the front margin of the cover between the upper margin of the front wall of the carton proper and the adjacent portion of the front wall of the liner. The tongue c^6 on the front margin of the cover is folded at substantially right angles to the cover during the time the upper part of the front wall of the liner is folded inwards and downwards in connection with initial closing of the carton.

As its main or principal components the closing machine comprises a horizontally elongated frame structure **30** with a flat horizontally extending top **31**; mechanism **32** for feeding the cartons successively and longitudinally over the top **31**, a movably mounted pusher head **33**, a movably mounted side tucker **34**, a movably mounted tongue folder member **35**, a movably mounted end tucker **36**, a stationary end tucker **37**, a stationary cover and tongue positioner **38**, a stationary cover guide **39**, a cover closing member **40**, and an advancer device **41**. A single prime mover in the form of a unidirectional electric motor **42**, together with auxiliary mechanism, serves, in connection with use of the carton closing machine, to drive or actuate the various movable parts of the machine in such manner that they operate in synchronism or timed relation.

Frame structure

The frame structure **30** comprises four vertically extending legs **43**, a horizontally extending platform **44** and a pair of parallel, laterally spaced channel beams **45**. The platform **44** is rectangular and has its corner portions suitably secured to the legs **43**. It is positioned a comparatively small distance above the lower ends of the legs

and underlies and is spaced an appreciable distance beneath the top 31 constituting a part of the frame structure 30. The channel beams 45 extend lengthwise of the frame structure and are arranged so that the webs thereof extend vertically and their flanges extend inwards. The ends of the channel beams are suitably connected to the upper ends of the legs 43. The top 31 is rectangular and extends lengthwise of the frame structure. It is preferably formed of heavy gauge sheet metal and has the side margins thereof resting on, and suitably secured to, the upper inwardly extending flanges of the channel beams 45. The right hand end of the top 31, as viewed in Figure 1 of the drawings, constitutes the receiving end of the top and the other or left hand end constitutes the discharge end of the top. The cartons to be closed are fed one at a time by the feed mechanism 32 so that they travel in a lengthwise manner longitudinally over the top 31. At its discharge end the top 31 is provided with a laterally extending extension 46. After closing, the cartons are shifted laterally onto this extension in order that they may be collected preparatory to being placed in a shipping or other container. At its receiving end the top 31 is provided with an elongated longitudinally extending cutout 47. This cutout has its front end open and extends rearwards a distance approximately one-third of the length of the top. It is positioned substantially midway between the side margins of the top. It is adapted to be aligned with the endless belt conveyor which forms a part of, and is adapted to effect successive feed of the cartons through, the aforementioned filling machine. The top 31 (see Figures 7, 8, 19 and 24) is shaped to form beneath its top surface an open top, longitudinally extending channel 48. This channel is located at one side of the cutout 47 and extends from the receiving end of the top to the discharge end. It has in the bottom thereof a guide bar 49 and this terminates small distances inwards of the front and rear ends of the channel. The front end of the channel, i. e., the end that is at the receiving end of the top 31, is located adjacent the central portion of the cutout 47.

The platform 44 constituting a part of the frame structure 30 serves to support the electric motor 42. The latter is located over the central portion of the platform and is fixedly secured to an elongated, substantially horizontal bed plate 50. The latter extends transversely of the frame structure and, as shown in Figure 6, has its inner end pivotally connected to a bracket 51 in order that it is capable of being swung upwards or downwards to a limited extent in order to effect vertical adjustment of the position of the electric motor 42. The distal end of the bed plate has associated with it an adjusting rod 52, the upper end of which is pivotally connected to the distal end of the bed plate and the lower end of which extends through a hole in the platform, has a male screw thread and embodies nuts above and below the platform. The electric motor 42 is mounted on the bed plate so that the armature shaft thereof extends lengthwise of the frame structure 30. It is connected to drive a worm gear variety speed reducing unit 53 by way of a pulley and belt connection 54. The unit 53 is suspended from a plate 55 which extends between, and is suitably secured to, the bottom flanges of the channel beams 45 of the frame structure. As best shown in Figure 6 the worm gear variety speed reducing unit 52 is located beneath the central portion of the top 31 and rearwards and above the electric motor 42. It embodies a driving shaft 56 and a driven shaft 57. The driving shaft 56 extends lengthwise of the frame structure and at right angles to the driven shaft 57. The pulley and belt connection 54 comprises a pulley on one end of the armature shaft of the motor 42, a pulley on one end of the driving shaft 56 of the speed reducing unit 52 and an endless belt around the two pulleys. The driven shaft 57 extends transversely of the frame structure 30 and has exposed ends. The belt of the pulley and belt connection is rendered taut by swinging the motor 42 downwards by way of proper adjustment of the nuts on the lower end of the adjusting rod 52.

Carton feeding mechanism

The feed mechanism 32 whereby the cartons that are to be closed are fed lengthwise over the top 31 from the receiving end of the latter to the discharge end consists of an endless belt 58 and an endless roller chain type conveyor 59.

The endless belt 58 extends around an idler pulley 60 and a driven pulley 61. The idler pulley 60 is located adjacent the front or open end of the cutout 47 in the receiving end of the top 31 and is supported for rotation about a horizontal axis by way of a shaft 62 which underlies and extends crosswise of said front end of the cutout and has its ends journalled in suitable bearing brackets 63. The latter are connected to, and depend from, the portions of the top 31 that are adjacent the front end of the cutout 47. The driven pulley 61 is located directly beneath the inner end of the cutout 47 in the top 31 and is fixedly secured to the central portion of a horizontally extending shaft 64. The latter extends transversely of the frame structure 30 and has its ends journalled in bearings 65 which are suitably supported adjacent the bottom flanges of the channel beams 45. As hereinafter described the shaft 64 is driven continuously in response to drive or operation of the electric motor 42. The pulleys 60 and 61 serve to support the belt 58 so that the upper reach thereof extends horizontally and is disposed in, and lengthwise of, the cutout 47 in the top 31. The upper reach on the endless belt is adapted to receive the cartons to be closed from the endless belt conveyor of the filling machine with which the closing machine is associated and serves successively or one at a time to feed the cartons from the front end of the cutout to the rear end of the cutout.

The cartons to be closed are guided along the front end and intermediate portion of the cutout 47 during travel on the upper reach of the endless belt 58 by way of a pair of horizontally extending, laterally spaced guide bars 66. The latter extend lengthwise of the cutout and are supported in an elevated position with respect to the top 31 by way of posts 67 which are connected to, and project upwards from, the portions of the top that define the front end and intermediate portion of the cutout 47. The rear ends of the guide bars terminate forwards of the discharge end of the upper reach of the endless belt. The pulleys 60 and 61 around which the endless belt 58 extends rotate in a counterclockwise direction as viewed in Figure 3. The belt serves successively to propel the cartons to be closed a small distance above the cutout 47 in the top 31 of the frame structure.

The endless roller chain type conveyor 59 is propelled or driven in the same direction as the endless belt and has a horizontal upper reach which is disposed in, and travels along, the lon-

gitudinally extending channel 48 in the top 31. Such upper reach of the conveyor is supported for sliding movement within the channel by way of the guide bar 49 that is disposed in, and forms the bottom of, the channel 48. The front or receiving end of the upper reach of the conveyor is disposed adjacent to, and in side by side relation with, the rear end of the upper reach of the endless belt 58 and is trained around an idler sprocket 68. The other or rear end of the upper reach of the roller chain type conveyor is trained around an idler sprocked 69. The idler sprocket 68 is located directly forwards of the front end of the guide bar 49 and is supported for rotation about a horizontal axis by way of an axle and suitable bearings. The idler sprocket 69 is located directly rearwards of the rear end of the guide bar 59 and is suitably supported for rotation about a horizontal axis. The endless roller chain type conveyor extends downwards and inwards from the idler sprocket 69, then passes under and part way around a driven sprocket 70, then extends upwards and passes over and part way around a take-up sprocket 71, then extends downwards and under an idler sprocket 72, and then extends upwards and outwards and passes part way around the idler sprocket 68. As shown in Figure 6, the driven sprocket 70 is fixedly secured to the inner end of the driven shaft 57 of the worm gear variety speed reducing unit 53. The take-up sprocket 71 is rotatably mounted on one end of a horizontally extending stub axle. The other end of the stub axle is fixedly secured to one end of a horizontally elongated plate 74 which is pivoted to swing vertically by way of a pivot pin 75. The latter extends loosely through a hole in the other end of the plate 74 and is fixedly connected to a bracket 76 which depends from the horizontal plate 55 from which the speed reducing unit is suspended. The plate 74 is urged in a counterclockwise direction as viewed in Figure 3 by means of a horizontally extending rod 77. The latter extends lengthwise of the frame structure 30 and has one end thereof pivotally connected to the plate 74 at a point above the pivot pin 75. The other end of the rod extends through a hole in a horizontally extending channel type crossbeam 78 and is provided rearwards of the crossbeam with a nut 79. A coil variety compression spring 80 is interposed between the crossbeam 78 and the nut 79 and serves to urge the rod 77 rearwards Such urging on the part of the rod is transmitted to the plate 74 which, in turn, tends to swing the take-up sprocket 71 upwards to the end that the endless roller chain variety conveyor is maintained taut at all times. The sprocket 72 is keyed or otherwise fixedly secured to the shaft 64 on which the driven pulley 61 for the endless belt 58 is mounted. In connection with drive or operation of the electric motor 42 the driven sprocket 70 on the driven shaft 57 of the speed reducing unit 53 causes the roller chain type conveyor 59 to travel continuously in a counterclockwise direction as viewed in Figure 3. Drive of such conveyor results in counterclockwise drive of the sprocket 72 and the latter, in turn, operates to drive in the same direction the pulley 61 through the medium of the shaft 64. The pulley 61 is of greater diameter than the sprocket 72 and hence the upper reach of the endless belt 58 travels rearwards at a greater rate of speed than the upper reach of the roller chain variety conveyor 59. Drive of the endless belt is continuous but, as heretofore mentioned, at a greater rate of speed than the conveyor 59. Such conveyor is provided with a series of equidistantly spaced pusher variety fingers 81. Such fingers extend outwards and operate in connection with travel in the upper reach of the conveyor 59 to push the the cartons lengthwise over the top 31 from a point adjacent the receiving end of the upper reach of the conveyor to a point adjacent the discharge end of such reach. As best shown in Figure 8, the fingers 81, when travelling in the upper reach of the conveyor 59, are disposed above the channel 48 in the top 31 of the frame structure. The space between each two consecutive fingers 81 is materially greater than the length of each carton for reasons to be described more in detail hereafter. Preferably the space between each two consecutive fingers is one-third longer than the length of a carton. The take-up sprocket 71 embodies a pair of diametrically opposite notches for accommodating the fingers 81 as the roller chain type conveyor travels around such sprocket.

As hereinbefore pointed out, when the electric motor 42 is in operation in connection with use of the carton closing machine the endless belt 58 and the roller chain type conveyor 59 are driven continuously and in the same direction and the former, i. e., the endless belt, is driven at a greater rate of speed than the latter.

Pusher head, side tucker and tongue folder member

The pusher head 33 is mounted by way of an upstanding arm 82 to swing back and forth transversely across the receiving end of the top 31 of the frame structure 30 and serves in connection with its operative stroke, to shift a carton from the discharge end of the upper reach of the endless belt 58 over the receiving end of the upper reach of the roller chain type conveyor 59. It is block-like in shape and at the end of its retractile stroke it is located on the side of the endless belt that is opposite the side adjacent which the conveyor 59 is located or disposed. The upstanding arm 82 is U-shaped in cross section and is arranged so that the side flanges thereof project outwards. The lower end of the arm 82 is suitably pivotally supported so that the arm as a whole is free to swing transversely of the frame structure 30. The upper end of the arm 82 extends through a transversely extending slot 83 in the receiving end of the top 31 and has welded to it at a point above the slot a crosspiece 84. The outer portion of the pusher head 33 is bolted or otherwise fixedly secured to the crosspiece so that the pusher head is fixedly connected to the upper end of the arm 82. The inner end of the slot 83 terminates adjacent the rear end of the cutout 47 in the receiving end of the top 31. Inward swinging of the arm 82 imparts the operative stroke to the pusher head 33 and outward swinging of the arm imparts the retractile stroke to the pusher head. When the arm 82 swings inwards the pusher head 33 is first brought into abutment with the front wall c^1 of the carton on the discharge end of the upper reach of the endless belt 58 and then shifts the carton sidewise or laterally from the belt into a position wherein it overlies the receiving end of the upper reach of the conveyor 59. Inward and outward swinging of the arm 82 is effected by mechanism comprising a cam wheel 85, a cam roller 86, a cam roller supporting arm 87, a link 88, an arm 89, a rock shaft 90 and an arm 91. The cam wheel 85 is keyed or otherwise fixedly secured to the outer end of the driven shaft 57 of the

speed reducing unit 53. The cam roller 86 is disposed over the cam wheel and rides on the periphery thereof. It is rotatably mounted on a stub axle 92 which is fixedly connected to the arm 87 at a point intermediate its ends. As shown in Figure 3 the arm 87 extends substantially horizontally and is disposed lengthwise of the frame structure 30. It underlies the central portion of the top 31 and has the end thereof that is nearer the discharge end of the top pivotally connected to a bracket 93 in order that it is free to swing upwards and downwards. The bracket 93 is connected to, and depends from, the plate 55 from which the speed reducing unit 53 is suspended. The link 88 is in the form of a turnbuckle and extends substantially vertically. The upper end of the link 88 is pivotally connected to the end of the arm 87 that is nearer the receiving end of the top 31 and the lower end of the link is pivotally connected to one end of the arm 89. The last mentioned arm extends substantially horizontaly and overlies the central portion of the platform 44. It is positioned transversely of the frame structure 30 and has its other end, i. e., its inner end, fixedly connected to the central portion of the rock shaft 90. Such rock shaft overlies, and extends lengthwise of, the platform 44 and has its ends journalled in bearings 94. The cam wheel 85 revolves in a counterclockwise direction, as viewed in Figure 3, and is so shaped that during each revolution of the driven shaft 57 of the speed reducing unit 53 it operates through the medium of the cam roller 86, first to raise and then to lower the arm 87. Raising of the arm 87 operates through the medium of the link 88 and the arm 89, to rock the rock shaft 90 in a clockwise direction, as viewed in Figures 6 and 7, and lowering of the arm 87 operates through the medium of the link 88 and said arm 89, to rock the rock shaft 90 in a counterclockwise direction. A coil variety compression spring 95 under the platform 44 serves to impart downward swinging movement to the link 88 and also to maintain the cam roller 86 in abutment with the periphery of the cam wheel 85. Such spring surrounds the lower end of a vertically extending slide rod 96 and is interposed between the platform 44 and a nut 97 on the lower extremity of the slide rod. The slide rod extends slidably through a hole in the platform 44 and has its upper end attached to the distal end of the arm 89. During each complete revolution of the cam wheel the rock shaft 90 is rocked first in one direction and then in the opposite direction. The arm 91 is positioned inwards of, and in opposed relation with, the lower end of the pusher head supporting arm 82 and extends substantially vertically. The lower end of the arm 91 is fixedly connected to the front end of the rock shaft 90 and the upper end of said arm is operatively connected to the central portion of the arm 82 by a yielding spring type connection 98 (see Figures 7 and 9). Such connection comprises a substantially horizontal rod 99 and a coil variety compression spring 100. The rod 99 extends transversely of the frame structure 30 and extends through an over-sized hole 101 in the upper end of the arm 91 in order that the rod and the arm are subject to relative sliding movement. The outer end of the rod 99 extends through a hole in the central portion of the web part of the upstanding arm 82 and is provided with a cross-piece 102 which abuts against the outer face of the web part and serves to anchor the outer end of the rod 99 to the central portion of the arm 82. The compression spring 100 surrounds the inner end of the rod 99 and has one end thereof in abutment with the upper end of the arm 91. The other end of the spring 100 abuts against a nut 103 on the inner end extremity of the rod 99. The upstanding arm 91 swings clockwise and counterclockwise in response to rocking of the rock shaft 90. When the arm 91 is swung in a clockwise direction, as viewed in Figures 7 and 8, and the arm 82 is free to impart the operative stroke to the pusher head the yielding spring type connection 98 between the upper end of the arm 91 and the central portion of the arm 82 causes the arm 82 to swing with the arm 91 and this results in the pusher head 33 swinging in the direction of the receiving end of the upper reach of the roller chain type conveyor 59 and shifting a carton from the discharge end of the upper reach of the endless belt over the receiving end of the upper reach of the conveyor. When the upstanding arm 91 is swung in a counterclockwise direction, as viewed in Figures 7 and 8, after swinging inwards the upstanding arm 82, it operates through the medium of a pair of coacting lugs 104 and 105 on the two arms to swing the arm 82 outwards and thus effect the retractile stroke of the pusher head 33. The arm 82 is under control of a latch device 106 which, as described in detail hereafter, locks the arm 82 against inward swinging movement until such time as a carton to be closed reaches the discharge end of the upper reach of the endless belt 58 and is in position to be shifted over the receiving end of the conveyor 59. If the upstanding arm 82 is locked by the latch device 106 during clockwise swinging of the arm 91 the arm 91 swings relatively to the upstanding arm 82 due to operation of the yielding spring type connection 98. In connection with clockwise swinging of the arm 91 relatively to the arm 82 the spring 100 forming a part of the connection 98, is compressed as the upper end of the arm 91 slides inwards along the rod 99. The cam wheel 85 is so arranged, designed or shaped that it operates to raise the arm 87 and resultantly to swing the arms 91 and 82 inwards at the precise time that one of the fingers 81 on the roller chain type conveyor 59 passes the rear portion of the pusher head. This results in the pusher head, in connection with its operative stroke, pushing a carton to be filled over the receiving end of the conveyor 59 and into a position wherein the carton is an appreciable distance ahead of the next following finger (see Figure 14). With this particular timing arrangement the laterally shifted carton is stationary for a short length of time, i. e., until said next following finger 81 moves into abutment with the trailing end wall of the carton proper and commences endwise pushing of the carton over and along the channel 48 in the top 31. The period during which the laterally shifted carton is at rest over the receiving end of the upper reach of the conveyor 59 is sufficient to permit complete retraction of the pusher head. In other words, before the carton is pushed rearwards by the next following finger 81 full retraction of the pusher head occurs.

The contour or shape of the cam wheel 85 is such that when it imparts the operative stroke to the pusher head 33 the pusher head starts at a comparatively slow rate of speed and then accelerates. This results in the pusher head be-

ing brought so slowly into engagement with the adjacent carton that the latter is not subjected to shock tending to effect spillage of the contents of the carton. The cam wheel 85 is also of such shape or contour that it imparts a relatively rapid retractile stroke to the pusher head 33.

The side tucker 34 overlies the pusher head 33 and swings conjointly with the latter although its rate of speed and its distance of stroke are greater. It is in the form of a flat, substantially elliptical plate and operates immediately after shift of a carton to be closed by the pusher head over the receiving end of the upper reach of the conveyor 59 and while the carton is at rest preparatory to being engaged by the next following finger 81 to fold inwards and downwards the upper part of the front wall of the liner of the carton. The outer portion of the side tucker embodies an extension 107 which is U-shaped in cross section and has its outer end fixed connected to the upper end of an upstanding arm 108. The latter is of U-shaped cross section and is arranged so that the side flanges thereof extend inwards. The lower ends of the inwardly extending side flanges of the upstanding arm 108 fit inside of the central portion of the outwardly extending side flanges of the upstanding arm 82, as best shown in Figures 8 and 9. A horizontally extending pivot bolt 109 extends through aligned holes in the side flanges of the two arms 82 and 108 and serves pivotally to connect the central portion of the arm 82 to the lower central portion of the arm 108. The lower extremity of the arm 108 terminates substantially midway between the pivot bolt 109 and the lower extremity of the upstanding arm 82 and is connected to a horizontally extending eye bolt 110 by a pair of substantially horizontal, parallel, laterally spaced links 111 (see Figure 8). The shank of the eye bolt extends through a hole in a vertically extending plate 112 and is adjustably anchored in place by a pair of nuts 113 which are arranged in straddled relation with the plate. Said plate is welded or otherwise fixedly secured to a channel beam variety upright 114, the upper end of which is connected to one of the channel beams 45 and the lower end of which is connected to the adjacent side margin of the platform 44. The outer ends of the links 111 are suitably pivotally connected to the eye of the adjacent bolt 110 and the inner ends of the links are suitably pivotally connected to the lower end of the upstanding arm 108. In view of the fact that the arms 82 and 108 are pivotally connected together by the pivot bolt 109 the arm 108 is caused to swing inwards and outwards with the arm 82. Because, however, the lower extremity of the arm 108 is pivotally supported and the pivotal arrangement for the lower extremity of the arm 108 is located an appreciable distance above the pivoted lower extremity of the arm 82 the arm 108, in connection with either inward or outward swinging of the arm 82, swings at a greater rate of speed and to a greater extent than the arm 82. The arrangement of the arms 82 and 108 is such that when the pusher head 33 swings inwards during the operative stroke thereof and in connection with pushing or displacement of a carton on the discharge end of the upper reach of the endless belt over the receiving end of the upper reach of the roller chain type conveyor 59 the side tucker 34 travels inwards beyond the pusher head 33 and while the carton is at rest over the receiving end of the upper reach of the conveyor 59 effects the desired inwards and downward folding of the upper part of the front wall of the liner of the carton.

During the retractile stroke of the pusher head 33 the side tucker 34 moves outwards with the pusher head but travels at a greater rate of speed and to a further extent. By adjusting the nuts 113 on the shank of the eye bolt 110 the angular position of the arm 108 with respect to the arm 82 may be varied. The manner in which the side tucker 34 operates to effect inward and downward folding of the upper part of the front wall of the liner of a carton momentarily at rest over the receiving end of the upper reach of the conveyor 59 is illustrated in Figures 16, 17 and 19 of the drawings.

The tongue folder member 35 overlies and swings inwards and outwards conjointly with the side tucker 34. It is in the form of a flat plate that is at least as long as the tongue on the cover of the carton proper and has a straight inner side edge. The latter is adapted during completion of the operative stroke of the tucker member 34, to coact with an angularly disposed plate 115 and a groove 116 in a horizontally elongated block 117 to effect the desired creasing and folding of the tongue with respect to the cover of the carton proper of the carton being closed. The outer portion of the folder member 35 is provided with an elongated extension 118 which is of U-shaped cross section and has its outer end fixedly connected to the upper extremity of the upstanding arm 108. As best shown in Figures 7 and 8, the tongue folder member 35 projects inwards a comparatively small distance with respect to the side tucker 34. The horizontally elongated block 117 is fixedly supported by way of an angle bracket 119 and is positioned directly opposite the folder member 35. It is located on the side of the receiving end of the upper reach of the conveyor 59 that is opposite the side at which the pusher head 33, the side tucker 34 and the folder member 35 are normally positioned. The angle bracket 119 embodies a horizontally extending leg which is bolted or otherwise fixedly secured to the top 31 of the frame structure 30. The bracket also embodies a vertically extending leg, to the upper end of which the block 117 is bolted. A vertically extending plate 120 is connected to, and depends from, the lower portion of the block 117 and forms a stop whereby a carton, in connection with lateral pushing or shift thereof by the pusher head 33, is brought to rest in proper position over the receiving end of the upper reach of the conveyor 59. The groove 116 is of V-shaped cross section. It is formed in the inner face of the block 117 at a point above the plate 120 and is so positioned that it reaches the straight inner edge of the folder member 35 when such member reaches the end of its operative stroke (see Figure 19). The plate 115 overlies the receiving end of the upper reach of the conveyor 59 and extends upwards at a comparatively small angle with respect to the horizontal. The lower side margin of the plate 115 is welded to the surface of the block 117 that defines the upper portion of the groove 116. When a carton is momentarily at rest on the receiving end of the upper reach of the conveyor 59 after being pushed laterally, the straight inner edge of the folder member 35, during completion of the operative stroke of said member, enters the groove 116 in the block 117, as shown in Figure 19, and effects creasing of the juncture

of the tongue and cover of the carton. At the same time it also coacts with the angularly disposed plate 115 to fold the tongue downwards so that it extends at substantially right angles to the cover.

As soon as a carton to be closed reaches the discharge end of the upper reach of the endless belt 58 the two upstanding arms 82 and 108 swing inwards in the direction of the stop forming plate 120. In connection with inward swinging of the arm 82 the pusher head 33 slides the carton over the discharge end of the upper reach of the endless belt into a position wherein it rests on the receiving end of the top 31 and directly overlies the receiving end of the upper reach of the roller chain type conveyor 59. Because of the spacing of the fingers and the manner in which the conveyor 59 is driven the pushed carton is spaced an appreciable distance ahead of the next following pusher and hence momentarily remains stationary, as hereinbefore pointed out. As the pusher head 33 reaches the end of its operative stroke the side tucker 34 and the tongue folder member 35 swing inwards and over and beyond the pusher head. In connection with completion of the operative stroke of the side tucker 34 the latter folds inwards and downwards the upper part of the front wall of the liner of the carton and in connection with completion of the operative stroke of the folder member 35 such member, in conjunction with the angularly disposed plate 115 and the groove 116, creases and folds the tongue on the cover of the carton proper. Before the next following finger on the conveyor 59 moves into engagement with the trailing end wall of the carton proper the upstanding arms 82 and 108 swing outwards and effect retraction of the pusher head, the side tucker and the tongue folder member.

The latch device 106 serves to lock the upstanding arms 82 and 108 against inward swinging movement until such time as a carton to be closed reaches the discharge end of the upper reach of the endless belt 58 and is positioned opposite the depending stop forming plate 120. It is mounted for the most part on the top 31 of the frame structure 30 directly rearwards of the slot 83 in which the upper ends of the arms 82 and 108 travel, and comprises a latch dog 121 and a coacting slidably mounted latch bolt 122. The dog 121 is bolted or otherwise fixedly secured to the arm 108 at a point directly beneath the side tucker 34. It projects outwards from the arm 108 and embodies a rearwardly extending and angularly disposed finger 123. The latch bolt 122 extends horizontally and also lengthwise or longitudinally of the top 31. It is slidably mounted in a sleeve 124 on one end of an elongated plate 125 and is so positioned that it is aligned with the latch dog 121 when the arm 108 is in its fully retracted position. The plate 125 extends transversely of the frame structure 30 and is clamped by bolts against the top surface of the top 31. The front end of the latch bolt 122 is provided with an angularly disposed finger 126 and this finger is adapted, when the latch bolt is slid forwards, to interlock with the finger 123 on the latch dog 121 and thus render the latch device 106 operative to lock the upstanding arms 82 and 108 against inward swinging movement in response to clockwise swinging of the arm 91. When the latch bolt 122 is slid rearwards disengagement of the finger 126 with respect to the finger 123 is effected and the latch device 106 is thus rendered ineffective and permits inward swinging of the arms 82 and 108. The fingers 123 and 126 are so angularly positioned and designed that when the latch bolt 122 is slid forwards while the arm 108 approaches the end of outward swing thereof in connection with retraction of the side tucker and the tongue folder member the finger 123 on the latch dog snaps into interlocked relation with the finger 126 on the adjacent end of the slidably mounted latch bolt 122. The latch bolt 122 is urged forwards into its locked position by way of a wire spring 127.

The latter consists of an end part 128, an end part 129 and a looped intermediate part 130. The two end parts 128 and 129 extend horizontally and are positioned at substantially right angles to one another. The end part 128 extends transversely of the top 31 and is arranged so that the outer extremity thereof extends through a transverse hole 131 in the rear end of the latch bolt 122. The other end part of the wire spring 127 extends lengthwise of the top 31 and is clamped to the inner end of the plate 125 by a clamping member 132. The looped intermediate part 130 of the spring 127 is so constructed or designed that it urges forwards the spring end part 128 which, in turn, urges forward the latch bolt 122. The latch device 106 also comprises means for sliding the latch bolt 122 rearwards against the force of the spring 127 when a carton to be closed reaches the discharge end of the upper reach of the endless belt 58. Such means consists of a horizontally extending rock shaft 133, an abutment finger 134 and an arm 135. The rock shaft 133 is suitably journalled at its ends and extends transversely of the top 31. It is located above and directly behind the plate 125 and has its inner end positioned over the discharge end of the upper reach of the endless belt. The abutment finger 134 is connected to, and depends from, the inner end of the rock shaft and has its lower portion bent forwards at right angles so as to form directly above the upper reach of the belt a forwardly extending member 136 for engaging the leading end wall of the carton proper of a carton on the discharge end of the discharge end of the upper reach of the endless belt. When a carton, after reaching the discharge end of the upper reach of the endless belt, strikes against the member 136, it causes the abutment finger 134 to swing rearwards and results in the rock shaft 133 rocking in a clockwise direction, as viewed in Figures 11 and 15. The arm 135 is fixedly connected to, and depends from, the outer end of the rock shaft 133 and has in its lower end a longitudinally extending slot 137 through which extends the end part 128 of the wire spring 127. In connection wth clockwise turning or rocking of the rock shaft 133 the arm 135 swings rearwards and operates through the medium of the end part 128 of the spring 127 to slide the latch bolt 122 rearwards into its inoperative or unlatched position. As soon as a carton is shifted laterally by the pusher head 33 from the discharge end of the upper reach of the endless belt 58 the end part 128 of the wire spring 127 swings forwards and results in forward sliding of the latch bolt 122 into its operative position and forward swinging of the abutment finger 134. Rearward swinging of the abutment finger 134 is limited by means of an upstanding lug 138 on the inner end of the carton engaging member 136. Due to the angu-

lar position or arrangement of the coacting fingers 123 and 126 the latch bolt 122 cannot be slid into its released or inoperative position by engagement of a carton with the member 136 on the depending abutment finger 134 until such time as the arm 91 is swung fully outwards by the main rock shaft 90. When the arm 91 is swung outwards to its fullest extent it moves the upstanding arm 108 outwards a sufficient distance to disengage the finger 123 on the latch dog 121 from the finger 126 on the front end of the latch bolt 122. If at the time of disengagement of the finger 123 from the coacting finger 126 there is a carton pressing against the member 136 of the abutment finger 134 the abutment finger is caused to swing rearwards by the pressure or force of the adjacent carton and operates through the medium of the rock shaft 133, the depending arm 135 and the spring end part 128, to slide the latch bolt 122 rearwards into its inoperative position. Upon such sliding movement of the latch bolt the arms 82 and 108, in connection with the next inward swinging movement of the arm 91, swing inwards and impart the operative strokes to the pusher head 33, the side tucker 34 and the tongue folder member 35, as hereinbefore pointed out. Should a carton impinge against the member 136 of the abutment finger 134 after the arm 91 starts swinging inwards the latch bolt 122 will remain in its latched or operative position and hold retracted the arms 82 and 108 until such time as the arm 91 is swung fully outwards in connection with retraction thereof by reverse rocking of the rock shaft 90. The latch device 106 constitutes or exemplifies simple automatic means for holding the pusher head, the side tucker and the tongue folding member against movement into their operative positions until such time as a carton on the upper reach of the endless belt reaches the discharge end of such reach and the arm 91 is swung outwards to its fullest extent.

Movably mounted end tucker

The movably mounted end tucker 36 is positioned above the receiving end of the upper reach of the endless conveyor 59. It is in the form of an elongated flap strip and extends lengthwise of the top 31. A pivoted upstanding arm 139 serves to support the end tucker 36 so that it is capable of swinging rearwards into an operative position and backwards into an inoperative position. When the end tucker 36 is swung rearwards into its operative position it functions to fold inwards and downwards the flap on the trailing end wall of the carton which is momentarily at rest over the receiving end of the upper reach of the conveyor 59 and also to fold inwards and downwards the upper part of the adjacent end wall of the liner of the carton, as best shown in Figure 20 of the drawings. The movable end tucker 36 is controlled in such manner that it is disposed forwards in its inoperative position at the time the pusher head 33, the side tucker 34 and the tongue folder member 35 reach the ends of their operative strokes, and begins to move rearwards toward its operative position as soon as the pusher head, the side tucker and the tongue folder member commence their retractile strokes. In other words, the movably mounted end tucker 36 commences to move rearwards into its operative position at the time the pusher head, the side tucker and the tongue folder member commence to recede. As soon as the three last mentioned parts start to recede but while the side tucker 34 is still operative to hold in its folded position the upper part of the front of the liner the movably mounted end tucker 36 swings quickly into its complete operative position in order to effect downward folding of the flap on the trailing end wall of the carton and the upper part of the adjacent end wall of the carton liner. The timing or speed of travel of the movably mounted end tucker during its retractile stroke is such that the end tucker is clear of the succeeding or next following carton at the time the latter is moved laterally by the pusher head 33 onto the receiving end of the upper reach of the conveyor 59. The lower end of the upstanding arm 139 is pivotally connected to a bracket 140 on the front end of the platform 44. The pivotal arrangement for the arm 139 is such that the arm is permitted to swing lengthwise of the frame structure 30. The upper end of the arm 139 extends through a notch 141 in the top 31 and has the front end of the end tucker 36 fixedly secured to its upper extremity.

The end tucker 36 is swung back and forth between its operative and inoperative positions by way of mechanism comprising a cam wheel 142, a cam roller 143, a depending arm 144 and a link 145. As shown in Figure 6, the cam wheel 142 is fixedly connected to the inner end of the driven shaft 57 of the worm gear variety speed reducing unit 53 and is located at one side of the sprocket 70 for driving the roller chain type conveyor 59. The cam roller 143 bears against the rear portion of the periphery of the cam wheel 142 and is rotatably mounted on a stub axle 146 on the central portion of the depending arm 144. The upper end of the arm 144 is pivotally connected to a bracket 147 in such manner that the arm 144 is free to swing lengthwise of the frame structure 30. As shown in Figure 6, the bracket 147 is connected to, and depends from the plate 55 from which the speed reducing unit 53 is suspended. The link 145 extends between and is pivotally connected to the lower end of the arm 144 and the central portion of the upstanding arm 139. The cam wheel 142 is so shaped that it operates in connection with each revolution thereof, to swing the depending arm 144 rearwards and then forwards. Rearward swinging movement on the part of the arm 144 operates, through the medium of the link 145 and the arm 139, to swing the end tucker 136 rearwards into its inoperative position. Forward swinging movement of the arm 144 operates, through the medium of said link 145 and the arm 139, to swing the end tucker 36 forwards into its operative position. A helical compression spring 148 serves to retract, i. e., swings forwards, the arms 139 and 144 and also to maintain the cam roller 143 in engagement with the periphery of the cam wheel 142. This spring 148 extends horizontally and is operatively connected to the upstanding arm 139 by a horizontally extending rod 149. The latter is supported for longitudinally sliding movement by way of an angle bracket 150 which, as shown in Figure 3, embodies a vertically extending leg and a horizontally extending leg. The horizontally extending leg of the bracket 150 is fixedly connected to the front end of the platform 44. The central portion of the rod 149 extends slidably through an oversized hole in the upper end of the vertically extending leg of the bracket 150. The rear end of the rod 149 is pivotally connected to the upstanding arm 139 at a point a substantial distance above the bracket 140 and the front end of the rod is provided with a

nut 151. The spring 148 extends around the front end portion of the rod 149 and is arranged so that one end thereof abuts against the nut 151 and the other end thereof abuts against the upper end of the vertically extending leg of the angle bracket 150.

The cam wheel 142 is so designed that after it operates to swing the end tucker 36 into its operative position it retains the end tucker in such position until after the carton which has been operated on by the movable end tucker commences to move rearwards as a result of being engaged by the next following finger 81 on the conveyor 59. As shown in Figure 20, the length of the movable end tucker 36 is such that the rear or operative end of the tucker projects almost to the flap of the leading end wall of the container being closed when such container is momentarily at rest after being shifted over the receiving end of the upper reach of the conveyor 59 by the pusher head 33. The reason for this will be explained hereafter. After the container which has been operated on by the movable end tucker 36 starts to move rearwards over the channel 48 in which the upper reach of the conveyor 59 travels, the movable end tucker 36, in response to the action of the cam wheel 142 and the compression spring 148, swings rearwards into its inoperative position wherein it is in readiness again to swing forwards in connection with the next carton closing operation.

Stationary end tucker

The stationary end tucker 37 overlies the channel 48 in which the upper reach of the endless roller chain type conveyor 59 travels in a rearward direction and is disposed directly behind the abutment finger 134 of the latch device 106 and the rear end of the block 117. It is located above the top 31 of the frame structure 30 a distance minutely greater than the height of the cartons to be closed. As best shown in Figures 16 and 17, the stationary end tucker 37 consists of an elongated, horizontally extending, flat plate 152 and an upstanding flange 153 along the one side margin and the front end margin of the plate 152. The front portion of the flange 153 is curved and defines a tucker toe 154. The stationary end tucker 37 extends between a pair of horizontally extending, vertically spaced guide bars 155 at one side of the central portion of the channel 48 and a pair of horizontally extending, vertically spaced guide bars 156 at the other side of the central portion of the aforesaid channel. The guide bars 155 extend lengthwise of the top 31. They are supported in vertically spaced relation by posts 157 and are located at the side of the channel 48 adjacent which the pusher head 33 is normally disposed. The other guide bars, i. e., the guide bars 156 are located at the other side of the intermediate portion of the channel 48. They are supported in vertically spaced relation by posts 158 and coact with the guide bars 155 to guide the cartons in endwise fashion and series form over the intermediate portion of the channel 48 in response to pushing of the cartons by the equidistantly spaced fingers 81 on the conveyor 59. The upstanding flange 153 which constitutes a part of the stationary end tucker 37 and projects upwards from one side margin and the front end margin of the plate 152 is disposed adjacent but slightly inwards of the uppermost guide bar 156. The other side margin of the plate 152 is extended to form a horizontally extending ear 159 which is fixedly connected to the upper ends of the posts 157 in order rigidly to support the end tucker 37 in place. When a carton is initially pushed rearwards after inward and downward folding of the upper part of the front wall of the liner by the side tucker 34 and inward and downward folding of the flap on the trailing end wall of the carton proper and the upper part of the adjacent end wall of the liner by the movable end tucker 36, the stationary end tucker 37, as the result of the action of the curved or rounded front end portion of the flange 153, folds inwards and downwards the flap on the leading end wall of the carton proper of the carton and the upper part of the adjacent end wall of the liner, as best shown in Figures 17 and 21. The rear portion of the plate 152 constituting a part of the stationary end tucker 37 is extended rearwards an appreciable distance to form a flat, horizontally elongated and extending coplanar flap holding plate 160. The latter extends to a point adjacent the rear ends of the guide bars 155 and 156 and embodies at its rear end a flat, horizontally extending extension finger 161. Such extension finger is located adjacent, and projects beyond the rear ends of, the guide bars 156 and functions as hereinafter described. The flap holding plate 160 which, as hereinbefore described, is in the form of a rearwardly projecting extension of the plate 152 constituting part of the stationary end tucker 37, serves, after folding of the flap on the leading end wall of the carton proper of the carton, to hold downwards both of the flaps of the carton as the carton is pushed along the central portion of the channel 48 by the next following finger 81 on the endless conveyor 59. The rear end of the movable end tucker 36 extends to a point immediately adjacent the stationary end tucker 37 when the movable end tucker is fully shifted into its operative position and the movable end tucker remains in its operative position until the subjacent carton is initially propelled along the central portion of the channel 48. As a result of this the rear end of the movable tucker guides the flap that it has folded inwards and downwards under the stationary end tucker 37, as shown in Figure 21. Because of this action on the part of the rear end of the movable end tucker 36 the two flaps in connection with further rearward travel of the carton by the upper reach of the endless conveyor 59, are held in place in their down position by the flap holding plate 160. The side margins of the plates 152 and 160 that are adjacent the uppermost guide bar 156 are spaced inwards from such guide bar sufficiently to accommodate the cover of a carton in transit over the central portion of the channel 48 and between the guide bars 155 and 156.

As best shown in Figure 15, the upstanding lug 138 on the inner end of the member 136 of the abutment finger 134 coacts with the front end of the lowermost guide bar 155 to limit rearward swinging of the abutment finger when a carton is propelled against the member 136 by the endless belt 58.

Cover and tongue positioner and cover guide

The cover and tongue positioner 38 and the cover guide 39 overlie the central portion of the channel 48 and are disposed one opposite the other. They coact in connection with pushing or transit of the cartons between the guide bars 155 and 156 partially to swing downwards the covers of the cartons and also to hold the tongues in their bent or folded position with respect to the covers. Preferably the positioner

and guide member are in the form of sheet metal stampings. The cover and tongue positioner **38** is horizontally elongated and extends lengthwise of the top **31** of the frame structure **30**. It is arcuate in cross section and extends upwards and inwards. The lower side margin of the positioner **38** is provided with a laterally extending right angle flange **162** and this is fixedly secured to the upper ends of the posts **157** which serve, as hereinbefore pointed out, to hold in spaced relation the guide bars **155** that extend along one side of the central portion of the channel **48**. In connection with pushing of the cartons between the guide bars **155** and **156** the bent or folded tongues slide under the upper portion of the positioner **38** and such portion serves to hold the tongues in their folded or creased position with respect to the carton covers.

As shown in Figure 1, the rear end of the angularly disposed plate **115** on the block **117** abuts against the front upper corner of the positioner **38** in order that the tongues, after folding or creasing thereof and in connection with initial rearward travel of the cartons on the upper reach of the conveyor **59**, are guided under the upper portion of the positioner.

The cover guide **39** is horizontally elongated and extends lengthwise of the top **31**. It is disposed opposite the positioner **38**, as heretofore indicated, and extends upwards and inwards from the uppermost guide bar **156**. At its lower side margin the cover guide is provided with a right angle flange and this is secured to the upper ends of the posts **158**. During pushing of the cartons along and over the central portion of the channel **48** the upper portion of the cover guide engages the lower portions of the covers of the cartons and swings them inwards to a limited extent. The shape or configuration of the upper portion of the cover guide is such that the covers are progressively swung inwards and downwards as the cartons travel past the cover guide. As the covers of the cartons are progressively swung inwards to a limited extent by the cover guide **39** the bent tongues slide downwards under the upper portion of the cover and tongue positioner **38**. As hereinbefore described the cover and tongue positioner **38** and the cover guide **39** coact during travel of the cartons between the guide bars **155** and **156** progressively to swing the covers of the cartons inwards and downwards to a limited extent while at the same time maintaining the tongues on the outer side margins of the cover in their bent position with respect to the covers. Preferably the cover guide **39** is so constructed or designed that it operates to swing the covers of the cartons downwards so that they are at an angle of approximately 45° with respect to the horizontal when the cartons emerge from the rear ends of the positioner **38** and the cover guide **39**.

Cover closing member and advancer device

The cover closing member **40** is disposed directly behind or rearwards of the rear ends of the cover and tongue positioner **38** and the cover guide **39** and is in the form of a substantially flat plate. It is pivotally mounted on a horizontally extending pivot rod **163** in order that it is capable of swinging downwards and upwards. In its up position it extends at an angle of approximately 45° with respect to the horizontal and in its down position it extends substantially horizontally and overlies the channel **48**. The pivot rod **163** extends lengthwise of the top **31** of the frame structure and has its ends connected to a pair of upwardly extending lugs **164** on the uppermost of a pair of vertically spaced, longitudinally extending parallel guide bars **165**. The latter are supported by posts **166** and are in alignment with, and form continuations of, the guide bars **156**. In connection with downward swinging, the cover closing member **40** coacts with an upwardly and inwardly extending, fixedly mounted plate **167** to complete closing of the cover of a subjacent carton and at the same time to effect insertion of the carton tongue between the upper margin of the front wall of the carton proper and the adjacent portion of the front wall of the liner (see Figure 24). Said plate **167** is disposed directly opposite the cover closing member **40** and embodies along its lower margin an outwardly extending flange **168** which is bolted to a horizontally and longitudinally extending block **169**. As shown in Figure 3, the front end of the block **169** is disposed and clamped between the rear ends of the guide bars **155**. The outer margin of the cover closing member **40** embodies a longitudinal series of spaced apart, outwardly extending fingers **170** and these are aligned with, and are adapted to slide in, transversely extending slots **171** in the upwardly and inwardly extending plate **167**. The cover closing member **40** is swung downwards and upwards by mechanism that is described hereafter.

The advancer device **41** is located directly outwards of the rear portions of the guide bars **156** and operates automatically to push a carton from the rear ends of the cover and tongue positioner **38** and the cover guide **39** at a speed greater than the speed of drive of the conveyor **59** to the end that the carton is pushed ahead of the finger **81** behind it and remains momentarily stationary while it is under the cover closing member **40**. The cover closing member is swung downwards by its swinging mechanism while the subjacent carton is at rest or stationary therebeneath as a result of the carton being advanced ahead of its pushing finger **81** by the advancer device. Such device comprises a slider **172** which extends upwards through a longitudinally extending slot **173** in the top **31** of the frame structure. As best shown in Figures 1 and 22, this slot is located directly outwards of the rear portions of the guide bars **156**. The lower portion of the slider **172** is mounted in a slideway **174** in order that the slider is capable of sliding back and forth in parallel relation with the upper reach of the endless roller chain type conveyor **59**. The slideway **174** is connected to, and depends from, the portion of the top **31** that defines the slot **173**. In addition to the slider **172** the advancer device comprises a pawl **175** on the upper portion of the slider **172** and mechanism for sliding the slider rearwards and forwards. The pawl **175** extends inwards with respect to the slider **172** and is connected by a vertically extending pivot pin **176** to the slider **172** in order that it is free to swing about a vertical axis. A stop lug **177** on the upper portion of the slider **172** coacts with the proximal end of the pawl **175** to limit inward swinging movement of the pawl. A coil spring **178** serves to urge the pawl inwards into abutment with the stop lug. This spring extends around the vertically extending pivot pin **176** and has one end thereof anchored to the proximal end of the pawl and its other end anchored to the upper portion of the slider **172**. In connection with rearward sliding

movement of the slider 172 the pawl, while swung inwards against the stop lug 177 by the spring 178, is adapted to engage the trailing end wall of the carton proper of the carton that is directly rearwards of the slider and, due to the fact that the slider travels at a greater rate of speed than the conveyor 59, slides or pushes the carton ahead of the finger 81 that follows it. It is contemplated that when the slider 172 reaches the end of its rearward stroke the pushed or advanced carton will be adjacent the preceding finger 81 and positioned directly under the cover closing member 40. The carton will remain stationary under the cover closing member until the finger 81 that follows it is again brought into abutment with the trailing end wall of its carton proper. At such time the following finger 81 will push the carton to the discharge end of the upper reach of the conveyor 59. As heretofore pointed out, when the carton is momentarily at rest under the cover closing member 40 such member is swung downwards for cover closing and tongue inserting purposes. In connection with forward sliding or the retractile stroke of the slider 172 the pawl 175, if engaged by the next following carton, will be swung outwards so that it is free to clear or pass by such carton without interrupting the rearward travel of the carton by its pushing finger.

The mechanism for sliding back and forth or reciprocating the slider 172 comprises a horizontally extending pin 179, an upstanding arm 180 and a pin 181. One end of the pin 179 extends through, and is fixedly connected to, the cam wheel 142 (see Figure 6). The other end of said pin 179 extends through a longitudinally extending slot 182 in the central portion of the upstanding arm 180. The lower end of the arm 180 is pivotally connected to a bracket 183 on the platform 44 in such manner that the arm 180 is permitted to swing back and forth lengthwise of the frame structure 30. In connection with rotation of the cam wheel 142 the pin 179 travels through a circular course and effects oscillation or back and forth swinging movement of the upstanding arm 180. The pin, in connection with travel in its circular course, slides up and down in the slot 182 in the central portion of the upstanding arm 180. The pin 181 extends horizontally and is disposed in parallel relation with the pin 179. One end of the pin 181 extends through and is fixedly connected to, a depending bearing type lug 184 on the lower portion of the slider 172. The other end of the pin 181 is disposed in, and extends through, a longitudinally extending notch 185 in the upper end of the upstanding arm 180. In connection with oscillation or swinging movement of the arm 180 the pawl equipped slider 172 is caused to slide back and forth and effect, through the medium of the pawl, the desired successive advancement of the cartons under the cover closing member 40. The arm 180 swings faster than the upper reach of the roller chain type conveyor 59 travels and it is for this reason that the pawl on the slider 172 is capable of pushing the carton that is directly rearwards thereof ahead of its pushing finger 81 to the end that the carton is momentarily at rest after it emerges from the rear end of the positioner 38 and the cover guide 39 and while under the cover closing member 40. The advancer device 41 operates in synchronism with the other movable operating parts of the machine and serves automatically to advance each carton emerging from the rear ends of the cover and tongue positioner 38 and the cover guide 39 to such an extent that the carton remains stationary for a sufficient length of time to permit the cover closing member 40 in connection with downward swinging thereof to effect full closing of the carton cover and insertion of the tongue on the cover into place. Due to the fact that the mechanism for sliding back and forth the slider 172 includes the horizontally extending pin 179 which, as hereinbefore described, extends through the longitudinally extending slot 182 in the central portion of the upstanding arm 180, the slider 172 constituting the advancer device 41 in connection with its rearward or operative stroke starts at a slow rate of speed, accelerates during the middle part of its stroke and then decelerates toward the end of its stroke. This type of motion on the part of the slider is of special advantage in that in connection with a carton advancing operation it avoids sudden starts and stops and hence eliminates or avoids spillage of the contents of the carton.

The aforementioned mechanism for swinging the cover closing member 40 downwards and upwards comprises a substantially horizontal arm 186, an upstanding link 187, a rocker arm 188, an upstanding link 189 and an arm 190. The substantially horizontal arm 186 extends transversely of the frame structure 30 and has one end thereof mounted on, and fixedly secured to, the main rocker shaft 90, which, as previously pointed out, is rocked back and forth continuously in connection with operation of the electric motor 42 constituting the single prime mover for the machine. As best shown in Figure 6, the arm 182 extends inwards from the rocker shaft 90. The lower end of the upstanding link 187 is pivotally connected to the distal end of the arm 186 and the upper end of said link is pivotally connected to one end of the rocker arm 188. As shown in Figure 6, the rocker arm extends substantially horizontally and is centrally fulcrumed by way of a pivot pin which is journalled in a bearing 191. The latter is fixedly secured to one end of the bracket 147 to which the upper end of the upstanding arm 144 is pivotally connected. The link 189 is in the form of a turnbuckle and has its lower end pivotally connected to the other end of the rocker arm 188. The arm 190 is welded or otherwise fixedly connected to the upper or outer surface of the cover closing member 40 and projects outwards. The outer end of said arm is pivotally connected to the upper end of the upstanding link 189. When the main rocker shaft 90 is rocked in a clockwise direction, as viewed in Figure 6, the arm 189 swings downwards and operates, through the medium of the link 187, the rocker arm 188, the link 189 and the arm 190, to swing downwards the cover closing member 40. The swinging mechanism for the member 40 is so designed and arranged that it swings the member downwards directly after the pawl equipped slider 172 of the advancer device 41 slides a carton under the member. The cover closing member 40 is swung upwards directly before the pusher finger that follows the subjacent carton moves into engagement with the carton preparatory to effecting further advance of the carton over the channel 48.

Fixedly mounted on the top 31 of the frame structure directly inwards of the guide bars 156 is a longitudinally extending rail 192. This rail has a downwardly inclined front end and serves when a carton is shifted by the advancer device 41 under the closing member 40 to raise the carton with respect to the top 31. There is but a single rail and this serves to support the carton along the rear margin of the bottom wall of the

carton proper. The extension finger 161 on the rear end of the flap holding plate 160 coacts with the rail 192 to prevent the raised carton under the cover closing member 40 from swinging forwards, i. e., in the direction of the front wall of the carton proper. As shown in Figures 1, 23, 24 and 25, the extension finger 161 is located directly inwards of the pivot rod 163 for the cover closing member and is so arranged that when a carton is supported in a raised position by the rail 192 its outer side edge bears slidably against the upper margin of the back wall of the carton proper. When a carton is supported at the back portion thereof by the rail 192 and the extension finger 161 and without any support under its front portion the congealable material within the liner of the carton tends to bulge outwards the front wall of the carton proper and thus facilitates, in connection with downward swinging of the cover closing member 40, insertion of the tongue of the cover of the carton proper into place between the upper margin of the front wall of the carton proper and the adjacent portion of the front wall of the carton liner. The rearwardly extending extension finger 161 has a twofold purpose in that it serves, first of all, to hold in their downwardly folded positions the flaps on a carton beneath the cover closing member to the end that the flaps do not impede complete closing of the cover of the carton by the cover closing member and, secondly, to prevent the carton under the cover closing member from tilting forwards while it is supported along the back margin of the bottom thereof by the rail 192. After the cover of a carton is fully closed as the result of downward swinging of the cover closing member 40 it is in the condition shown in Figure 26 of the drawings and is propelled by the following pushing finger 81 to the discharge end of the upper reach of the conveyor 59. As the fully closed carton is pushed rearwards from under the cover closing member 40 the stationary extension finger 161 is automatically withdrawn from its operative position between the cover and flaps of the carton proper of the carton.

Additional equipment

In addition to the parts heretofore mentioned the carton closing machine comprises a pair of horizontal, vertically spaced guide bars 193 and a pair of horizontally extending, vertically spaced coacting guide bars 194. The guide bars 193 are supported by posts 195 and are located at one side of the discharge end of the upper reach of the conveyor 59. They are positioned rearwards of, but in alignment with, the guide bar 155 and form, in effect, continuations of the latter. The rear end of the block 169 is clamped between the front ends of the guide bars 193, as shown in Figure 3. The rear end of the uppermost guide bar 193 projects beyond the rear end of the lowermost guide bar 193 and overlies an ejector head 196. The guide bars 194 are disposed in opposed relation with the guide bars 193 and are supported in vertically spaced relation by posts 197. They are aligned with, and form continuations of, the guide bars 165 and are of such length that the rear ends thereof terminate adjacent the rear end of the lowermost guide bar 193 and slightly forwards of the discharge end of the upper reach of the conveyor 59.

The ejector head 196 is fixedly connected to, and projects inwards from, the upper end of an upstanding arm 198. The lower end of the arm 198 is keyed or otherwise fixedly secured to the rear end of the main rock shaft 90 and as a result the arm 198 swings transversely of the frame structure 30 in connection with rocking of the shaft 90. The upper end of the arm 198 extends through a transverse slot 199 in the top 31. When a completely closed carton is propelled over the discharge end of the upper reach of the conveyor 59 and the arm 198 swings inwards the carton is pushed by the ejector head 196 so that it is shifted laterally onto the extension 46 which projects laterally from the rear or discharge end of the top 31.

Operation

The following is a description of the closing of a single carton by the machine. The carton, after it is filled by the filling machine with which the carton closing machine is associated, leaves the filling machine by travelling in an endwise direction toward the receiving end of the top 31 of the closing machine. The carton, after discharge from the filling machine, is received on the receiving end of the upper reach of the endless belt 58. When the carton reaches the belt the cover and flaps of the carton proper extend upwards and the upper parts of the front, end and back walls of the liner of the carton also extend upwards. After passing onto the receiving end of the upper reach of the belt the carton is propelled in an endwise fashion until the leading end wall of the carton proper strikes against the member 136 at the lower end of the abutment finger 134 on the latch device 106. As soon as the latch device is released after the upstanding arm 91 is swung outwards to the fullest extent by the rock shaft 90 the upstanding arms 82 and 108 swing inwards in response to inward swinging of the arm 91. In connection with inward swinging of the arm 82 the pusher head 33 at the upper end of said arm 82 pushes the carton sidewise into a position wherein it overlies the receiving end of the upper reach of the endless roller chain type conveyor 59. Sidewise displacement of the container is arrested by the stop forming plate 120 that depends from the block 117. In connection with inward swinging of the arm 108 the side tucker 34 travels past the pusher head 33 and folds inwards and downwards the upper part of the front wall of the liner of the carton. Also in connection with inward swinging of the arm 108 the tongue folder member 35, as it reaches the end of its operative stroke, coacts with the angularly disposed plate 115 and the groove 116 to crease and fold the tongue of the carton proper relatively to the cover of the carton proper. As the arms 82 and 108 swing outwards in connection with the retractile strokes of the pusher head, the side tucker and the tongue folder member, the movable end tucker 36 swings rearwards and, as previously pointed out, operates to fold inwards and downwards the flap on the trailing end wall of the carton proper and the upper part of the adjacent end wall of the liner. The movable end tucker 36 remains in its operative position until the pushing finger 81 that follows the trailing end wall of the carton proper moves into engagement with such end wall and pushes the carton rearwards over the channel 48 in the top 31. In connection with initial rearward shift of the carton the stationary end tucker 37 folds inwards and downwards the flap on the leading end wall of the carton proper and the upper part of the adjacent end wall of the liner. After passing the stationary end tucker 37 the carton is pushed

under the flap holding the plate 160 and between the cover and tongue positioner 38 and the cover guide 39. In connection with travel of the carton under the plate 160 the plate serves to hold the two flaps in their downwardly folded positions, and the positioner 38 and the cover guide 39 coact to swing the cover of the carton proper substantially half way down while at the same time maintaining the bent position of the tongue with respect to the cover. When the carton reaches the rear ends of the positioner 38 and the cover guide 39 the advancer device 41 pushes the carton ahead of its pusher finger 81 into a position wherein it is disposed on the rail 192 and is under the cover closing member 40. While the carton is momentarily at rest in such position the cover closing member 40 swings downwards and completes closing of the cover while at the same time it effects insertion of the tongue between the upper margin of the front wall of the carton proper and the adjacent portion of the front wall of the liner. After complete closing of the cover the pushing finger 81 that follows the carton moves into engagement with the trailing end wall of the carton proper and pushes the fully closed carton until it is disposed over the discharge end of the upper reach of the conveyor 59 and is in alignment with the ejector head 196. Upon reaching the discharge end of the upper reach of the conveyor 59 the ejector head, in connection with inward swinging of the arm 198, slides the carton laterally onto the lateral extension 46 of the top 31.

As heretofore indicated or described the cartons pass onto the upper reach of the endless belt 58 one at a time and in endwise fashion and are successively closed.

The herein described carton closing machine is essentially simple in design and possesses extremely high efficiency. It may be operated at a comparatively high rate of speed without spillage of the congealable material or substance with which the liners of the carton are filled and this is directly attributable to the fact that each carton remains stationary in connection with inward and downward folding of the upper part of the front wall of the liner and inward and downward folding of the flap of the trailing end wall of the carton proper and the upper part of the adjacent end wall of the liner. Inasmuch as there is but a single prime mover for the machine the various operating parts operate at all times in synchronism or properly timed relation.

The invention is not to be understood as restricted to the details set forth since these may be modified within the scope of the appended claims without departing from the spirit and scope of the invention.

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

1. A machine adapted automatically to close cartons of the type that embodies a box-like carton proper with upstanding flaps on its end walls and a hinged upstanding cover on its back wall, and comprising a frame structure with a substantially horizontal support mounted thereon, a prime mover in associated relation with the frame structure, an endless conveyor on the frame structure, means for driving said conveyor continuously in one direction, said conveyor being provided with pusher fingers projecting above the support and spaced apart a greater distance than the length of a carton, power driven mechanism for feeding the cartons to be closed one at a time to the support into a location wherein each carton is disposed ahead of the next following pusher finger to the end that each carton first remain stationary at said location on the support for a limited period of time and then travels endwise over the support, a movably mounted end tucker mounted on the frame structure adjacent said location, connected for actuation by the prime mover in timed relation with said feed mechanism, and operative when a carton remains stationary at said location to fold inwards and downwards the flap on the trailing end of the carton proper, a second end tucker mounted on the frame structure in opposed relation with the movable end tucker and arranged and adapted after operation of said movable end tucker on a carton to fold inwards and downwards the flap on the leading end wall of the carton proper, a prime mover actuated carton advancer adjacent a portion of the support and operative automatically when a carton is on said portion to advance the carton ahead of its pusher finger to the end that it remains momentarily stationary at a particular point on the support, and means mounted on the frame structure above said point and operative automatically, after a carton is brought momentarily to rest at said point as the result of the action of said advancer, to close the cover.

2. A machine adapted automatically to close cartons of the type that embodies a box-like carton proper with upstanding flaps on its end walls and a hinged upstanding tongue equipped cover on its back wall, and a cup-shaped liner fitting within the carton proper and having the upper parts of its front, end and back walls extending upwards beyond the upper margins of the front, end and back walls of the carton proper, and comprising a frame structure with a substantially horizontal support mounted thereon, a prime mover in associated relation with the frame structure, an endless conveyor on the frame structure, means for driving said conveyor continuously in one direction, said conveyor being provided with pusher fingers projecting above the support and spaced apart a greater distance than the length of a carton, power driven mechanism for feeding the cartons to be closed one at a time to the support into a location wherein each carton is disposed ahead of the next following pusher finger to the end that each carton first remains stationary at said location on the support for a limited period of time and then travels endwise over the support, a movably mounted side tucker mounted on the frame structure adjacent the location on the support, connected for actuation by the prime mover in timed relation with the feed mechanism, and operative automatically when a carton remains stationary at said location on the support to fold inwards and downwards the upper part of the front wall of the liner of the carton, a movably mounted end tucker mounted on the frame structure adjacent said location, connected for actuation by the prime mover in timed relation with said feed mechanism and the side tucker, and operative when a carton remains stationary at said location to fold inwards and downwards the flap on the trailing end of the carton proper and the upper part of the adjacent end wall of the liner, a second end tucker mounted on the frame structure in opposed relation with the movable end tucker and arranged and adapted after operation of said movable end tucker on a carton to fold inwards and downwards the flap on the leading

end wall of the carton proper and the upper part of the adjacent end wall of the liner of the carton, a prime mover actuated carton advancer adjacent a portion of the support and operative automatically when a carton is on said portion to advance the carton ahead of its pusher finger to the end that it remains momentarily stationary at a particular point on the support, and means mounted on the frame structure above said point and operative automatically, after a carton is brought momentarily to rest at said point as the result of the action of said advancer, to close the cover and effect insertion of the tongue of the cover between the upper margin of the front wall of the carton proper and the adjacent portion of the front wall of the liner.

3. A machine adapted automatically to close cartons of the type that embodies a box-like carton proper with upstanding flaps on its end walls and a hinged upstanding cover on its back wall, and comprising a frame structure with a substantially horizontal support mounted thereon, a prime mover in associated relation with the frame structure, an endless conveyor provided with means for driving said conveyor continuously in one direction and provided with pusher fingers projecting above the support and spaced apart a greater distance than the length of a carton, power driven mechanism for feeding the cartons to be closed one at a time to the support into a location wherein each carton is disposed ahead of the next following pusher finger to the end that each carton first remains stationary at said location on the support for a limited period of time, then travels endwise over the support to a second location on the support and then remains stationary at said second location for a limited period of time, a movably mounted end tucker mounted on the frame structure adjacent the first location, connected for actuation by the prime mover in timed relation with said feed mechanism, and operative when a carton remains stationary at said first location to fold inwards and downwards the flap on the trailing end wall of the carton proper, a second end tucker mounted on the frame structure in opposed relation with the movable end tucker and arranged and adapted after operation of said movable end tucker on a carton to fold inwards and downwards the flap on the leading end wall of the carton proper, a prime mover actuated carton advancer adjacent a portion of the support and operative automatically when a carton is on said portion to advance the carton ahead of its pusher finger to the second location to the end that it remains momentarily stationary at said second location, and a movable cover closing member mounted on the frame structure adjacent the second location on the support, connected for actuation by said prime mover, and operative automatically when a carton remains stationary at said second location to close the cover.

4. A machine adapted automatically to close cartons of the type that embodies a box-like carton proper with upstanding flaps on its end walls and a hinged upstanding tongue equipped cover on its back wall, and a cup-shaped liner fitting within the carton proper and having the upper parts of its front, end and back walls extending upwards beyond the upper margins of the front, end and back walls of the carton proper, and comprising a frame structure with a substantially horizontal support mounted thereon, a prime mover in associated relation with the frame structure, an endless conveyor provided with means for driving said conveyor continuously in one direction and provided with pusher fingers projecting above the support and spaced apart a greater distance than the length of a carton, power driven mechanism for feeding the cartons to be closed one at a time to the support into a location wherein each carton is disposed ahead of the next following pusher finger to the end that each carton first remains stationary at said location on the support for a limited period of time, then travel endwise over the support to a second location on the support and then remains stationary at said second location for a limited time period of time, a movably mounted side tucker mounted on the frame structure adjacent the first location on the support, connected for actuation by the prime mover in timed relation with the feed mechanism, and operative automatically when a carton remains stationary at the first location on the support to fold inwards and downwards the upper part of the front wall of the liner of the carton, a movably mounted end tucker mounted on the frame structure adjacent the first loctaion, connected for actuation by the prime mover in timed relation with said feed mechanism and the side tucker, and operative when a carton remains stationary at said first location to fold inwards and downwards the flap on the trailing end wall of the carton proper and the upper part of the adjacent end wall of the liner, a second end tucker mounted on the frame structure in opposed relation with the movable end tucker and arranged and adapted after operation of said movable end tucker on a carton to fold inwards and downwards the flap on the leading end wall of the carton proper and the upper part of the adjacent end wall of the liner of the carton, a prime mover actuated carton advancer adjacent a portion of the support and operative automatically when a carton is on said portion to advance the carton ahead of its pusher finger to the second location to the end that it remains momentarily stationary at said second location, and a movable cover closing member mounted on the frame structure adjacent the second location on the support, connected for actuation by said primer mover, and operative automatically when a carton remains stationary at said second location to close the cover and effect insertion of the tongue on the cover between the upper margin of the front wall of the carton proper and the adjacent portion of the front wall of the liner.

5. A machine adapted automatically to close cartons of the type that embodies a box-like carton proper with upstanding flaps on its end walls, and comprising a frame structure with a substantially horizontal support mounted thereon, a prime mover in associated relation with the frame structure, an endless conveyor provided with means for driving said conveyor continuously in one direction and provided with pusher fingers projecting above the support and spaced apart a greater distance than the length of a carton, power driven mechanism for feeding the cartons to be closed one at a time to the support into a location wherein each carton is disposed ahead of the next following pusher finger to the end that each carton first remains stationary at said location on the support for a limited period of time and then travels endwise over the support, a movably mounted end tucker mounted on the frame structure adjacent said location, connected for actuation by the prime mover in

timed relation with said feed mechanism, and operative when a carton remains stationary at said location to fold inwards and downwards the flap on the trailing end wall of the carton proper, and a stationary end tucker mounted on the frame structure over the support and in opposed relation with the movable end tucker and arranged and adapted in connection with initial travel of a carton from the first location to fold inwards and downwards the flap on the leading end wall of the carton proper.

6. A machine adapted automatically to close cartons of the type that embodies a box-like carton proper with upstanding flaps on its end walls and a hinged upstanding cover on its back wall, and comprising a frame structure with a substantially horizontal support mounted thereon, a prime mover in associated relation with the frame structure, an endless conveyor provided with means for driving said conveyor continuously in one direction and provided with pusher fingers projecting above the support and spaced apart a greater distance than the length of a carton, power driven mechanism for feeding the cartons to be closed one at a time to the support into a location wherein each carton is disposed ahead of the next following pusher finger to the end that each carton first remains stationary at said location on the support for a limited period of time and then travels endwise over the support, a movably mounted end tucker mounted on the frame structure adjacent said location, connected for actuation by the prime mover in timed relation with said feed mechanism, and operative when a carton remains stationary at said location to fold inwards and downwards the flap on the trailing end wall of the carton, a stationary end tucker mounted on the frame structure over the support and in opposed relation with the movable end tucker and arranged and adapted in connection with initial travel of a carton from the first location to fold inwards and downwards the flap on the leading end wall of the carton proper, a prime mover actuated carton advancer adjacent a portion of the support and operative automatically when a carton is on said portion to advance the carton ahead of its pusher finger to the end that it remains momentarily stationary at a particular point on the support, and means mounted on the frame structure above said point and operative automatically, after a carton is brought momentarily to rest at said point as the result of the action of said advancer, to swing inwards and downwards the cover for cover closing purposes.

7. A machine adapted automatically to close cartons of the type that embodies a box-like carton proper with upstanding flaps on its end walls and a hinged upstanding tongue equipped cover on its back wall, and a cup-shaped liner fitting within the carton proper and having the upper parts of its front, end and back walls extending upwards beyond the upper margins of the front, end and back walls of the carton proper, and comprising a frame structure with a substantially horizontal support mounted thereon, a prime mover in associated relation with the frame structure, an endless conveyor provided with means for driving said conveyor continuously in one direction and provided with pusher fingers projecting above the support and spaced apart a greater distance than the length of a carton, power driven mechanism for feeding the cartons to be closed one at a time to the support into a location wherein each carton is disposed ahead of the next following pusher finger to the end that each carton first remains stationary at said location on the support for a limited period of time and then travels endwise over the support, a movably mounted side tucker mounted on the frame structure adjacent the location on the support, connected for actuation by the prime mover in timed relation with the feed mechanism, and operative automatically when a carton remains stationary at said location on the support to fold inwards and downwards the upper part of the front wall of the liner of the carton, a movably mounted end tucker mounted on the frame structure adjacent said location, connected for actuation by the prime mover in timed relation with said feed mechanism and the side tucker, and operative when a carton remains stationary at said location to fold inwards and downwards the flap on the trailing end wall of the carton proper and the upper part of the adjacent end wall of the liner, a stationary end tucker mounted on the frame structure over the support and in opposed relation with the movable end tucker and arranged and adapted in connection with initial travel of a carton from the first location to fold inwards and downwards the flap on the leading end wall of the carton proper and the upper part of the adjacent end wall of the liner of the carton, a prime mover actuated carton advancer adjacent a portion of the support and operative automatically when a carton is on said portion to advance the carton ahead of its pusher finger to the end that it remains momentarily stationary at a particular point on the support, and means mounted on the frame structure above said point and operative automatically, after a carton is brought momentarily to rest at said point as the result of the action of said advancer, to swing inwards and downwards the cover for cover closing purposes and at the same time effect insertion of the tongue on the cover between the upper margin of the front wall of the carton proper and the adjacent portion of the front wall of the liner.

8. A machine adapted automatically to close cartons of the type that embodies a box-like carton proper with upstanding flaps on its end walls and a hinged upstanding tongue equipped cover on its back wall, and comprising a frame structure with a substantially horizontal support mounted thereon, a prime mover in associated relation with the frame structure, an endless conveyor provided with means for driving said conveyor continuously in one direction and provided with pusher fingers projecting above the support and spaced apart a greater distance than the length of a carton, power driven mechanism for feeding the cartons to be closed one at a time to the support into a location wherein each carton is disposed ahead of the next following pusher finger to the end that each carton first remains stationary at said location on the support for a limited period of time, then travels endwise over the support to a second location on the support and then remains stationary at said second location for a limited period of time, a movably mounted end tucker mounted on the frame structure adjacent the first location, connected for actuation by the prime mover in timed relation with said feed mechanism, and operative when a carton remains stationary at said first location to fold inwards and downwards the flap on the trailing end wall of the carton proper, a stationary end tucker mounted on the frame structure above the support and in opposed relation with

the movable end tucker and arranged and adapted in connection with initial travel of a carton from said first location to fold inwards and downwards the flap on the leading end wall of the carton proper, a prime mover actuated carton advancer adjacent a portion of the support and operative automatically when a carton is on said portion to advance the carton ahead of its pusher finger to the second location to the end that it remains momentarily stationary at said second location, and a movable cover closing member mounted on the frame structure adjacent the second location on the support, connected for actuation by said prime mover, and operative automatically when a carton remains stationary at said second location to close the cover and effect insertion of the tongue on the cover inside of the upper margin of the front wall of the carton proper.

9. A machine adapted automatically to close cartons of the type that embodies a box-like carton proper with upstanding flaps on its end walls and a hinged upstanding tongue equipped cover on its back wall, and a cup-shaped liner fitting within the carton proper and having the upper parts of its front, end and back walls extending upwards beyond the upper margins of the front, end and back walls of the carton proper, and comprising a frame structure with a substantially horizontal support mounted thereon, a prime mover in associated relation with the frame structure, an endless conveyor provided with means for driving said conveyor continuously in one direction and provided with pusher fingers projecting above the support and spaced apart a greater distance than the length of a carton, power driven mechanism for feeding the cartons to be closed one at a time to the support into a location wherein each carton is disposed ahead of the next following pusher finger to the end that each carton first remains stationary at said location on the support for a limited period of time, then travels end wise over the support to a second location on the support and then remains stationary at said second location for a limited period of time, a movably mounted side tucker mounted on the frame structure adjacent the first location on the support, connected for actuation by the prime mover in timed relation with the feed mechanism, and operative automatically when a carton remains stationary at the first location on the support to fold inwards and downwards the upper part of the front wall of the liner of the carton, a movably mounted end tucker mounted on the frame structure adjacent the first location, connected for actuation by the prime mover in timed relation with said feed mechanism and the side tucker, and operative when a carton remains stationary at said first location to fold inwards and downwards the flap on the trailing end wall of the carton proper and the upper part of the adjacent end wall of the liner, a stationary end tucker mounted on the frame structure above the support and in opposed relation with the movable end tucker and arranged and adapted in connection with initial travel of a carton from said first location to fold inwards and downwards the flap on the leading end wall of the carton proper and the upper part of the adjacent end wall of the liner of the carton, a prime mover actuated carton advancer adjacent a portion of the support and operative automatically when a carton is on said portion to advance the carton ahead of its pusher finger to the second location to the end that it remains momentarily stationary at said second location, and a movable cover closing member mounted on the frame structure adjacent the second location on the support, connected for actuation by said prime mover, and operative automatically when a carton remains stationary at said second location to close the cover and effect insertion of the tongue on the cover between the upper margin of the front wall of the carton proper and the adjacent portion of the front wall of the liner.

10. A machine adapted automatically to close cartons of the type that embodies a box-like carton proper with an upstanding cover hingedly connected to its back wall and provided with a coplanar tongue at its upper margin, and comprising a frame structure with a substantially horizontal support mounted thereon, a prime mover in associated relation with the frame structure, an endless conveyor provided with means for driving said conveyor continuously in one direction and provided with pusher fingers projecting above the support and spaced apart a greater distance than the length of a carton, power driven mechanism for feeding the cartons to be closed one at a time to the support into a location wherein each carton is disposed ahead of the next following pusher finger to the end that each carton first remains stationary at said location on the support for a limited period of time and then travels endwise over the support, means embodying a stationary element and a movably mounted prime mover actuated coacting element, mounted on the frame structure adjacent the location, and operative automatically when a carton remains stationary on said location to fold the tongue downwards into a position wherein it extends substantially at right angles to the cover, a prime mover actuated carton advancer adjacent a portion of the support and operative automatically when a carton is on said portion to advance the carton ahead of its pusher finger to the end that it remains momentarily stationary at a particular point on the support, and means mounted on the frame structure above the support and operative automatically, after a carton is brought momentarily to rest at said point as the result of the action of said advancer, to close the cover and effect insertion of the tongue of the cover inside of the upper margin of the front wall of the carton proper.

11. A machine adapted automatically to close cartons of the type that embodies a box-like carton proper with an upstanding cover hinged to its back wall and provided with a coplanar tongue at its upper margin, and comprising a frame structure with a substantially horizontal support mounted thereon, a prime mover in associated relation wtih the frame structure, and endless conveyor provided with means for driving said conveyor continuously in one direction and provided with pusher fingers projecting above the support and spaced apart a greater distance than the length of a carton, power driven mechanism for feeding the cartons to be closed one at a time to the support into a location wherein each carton is disposed ahead of the next following pusher finger to the end that each carton first remains stationary at said location on the support for a limited period of time and then travels endwise over the support, means embodying a stationary element and a movably mounted prime mover actuated coacting element, mounted on the frame structure adjacent the location, and operative automatically when a carton remains stationary on said location to fold the tongue downwards

into a position wherein it extends substantially at right angles to the cover, a prime mover actuated carton advancer adjacent a portion of the support and operative automatically when a carton is on said portion to advance the carton ahead of its pusher finger to the end that it remain momentarily stationary at a particular point on the support, and prime mover actuated means mounted on the frame structure above said point and operative automatically, after a carton is brought momentarily to rest at said point as the result of the action of said advancer, to close the cover and effect insertion of the folded tongue of the cover inside of the upper margin of the front wall of the carton proper.

12. A machine adapted automatically to close cartons of the type that embodies a box-like carton proper with upstanding flaps on its end walls and an upstanding cover hingedly connected to its back wall and provided with a coplanar tongue at its upper margin, and comprising a frame structure with a substantially horizontal support mounted thereon, a prime mover in associated relation with the frame structure, an endless conveyor provided with means for driving said conveyor continuously in one direction and provided with pusher fingers projecting above the support and spaced apart a greater distance than the length of a carton, power driven mechanism for feeding the cartons to be closed one at a time to the support into a location wherein each carton is disposed ahead of the next following pusher finger to the end that each carton first remains stationary at said location on the support for a limited period of time and then travels endwise over the support, means embodying a stationary element and a movably mounted prime mover actuated coacting element, mounted on the frame structure adjacent the location, and operative automatically when a carton remains stationary on said location to fold the tongue downwards into a position so that it extends substantially at right angles to the cover, a movably mounted end tucker mounted on the frame structure adjacent said location, connected for actuation by the prime mover in timed relation with said feed mechanism, and operative when a carton remains stationary at said location and after operation of the folding means to fold inwards and downwards the flap on the trailing end wall of the carton proper, a second end tucker mounted on the frame structure in opposed relation with the movable end tucker and arranged and adapted after operation of said movable end tucker on a carton to fold inwards and downwards the flap on the leading end wall of the carton proper, a prime mover actuated carton advancer adjacent a portion of the support and operative automatically when a carton is on said portion to advance the carton ahead of its pusher finger to the end that it remains momentarily stationary at a particular point on the support, and means mounted on the frame structure above the support and operative automatically, after a carton is brought momentarily to rest at said point as the result of the action of said advancer to close the cover and effect insertion of the tongue of the cover inside of the upper margin of the front wall of the carton proper.

13. A machine adapted automatically to close cartons of the type that embodies a box-like carton proper with upstanding flaps on its end walls and an upstanding cover hingedly connected to its back wall and provided with a coplanar tongue at its upper margin, and a cup-shaped liner fitting within the carton proper and having the upper parts of its front, end and back walls extending upwards beyond the upper margins of the front, end and back walls of the carton proper, said machine comprising a frame structure with a substantially horizontal support mounted thereon, a prime mover in associated relation with the frame structure, an endless conveyor provided with means for driving said conveyor continuously in one direction and provided with pusher fingers projecting above the support and spaced apart a greater distance than the length of a carton, power driven mechanism for feeding the cartons to be closed one at a time to the support into a location wherein each carton is disposed ahead of the next following pusher finger to the end that each carton first remains stationary at said location on the support for a limited period of time and then travels endwise over the support, a movably mounted side tucker mounted on the frame structure adjacent the location on the support, connected for actuation by the prime mover in timed relation with the feed mechanism, and operative automatically when a carton remains stationary at said location on the support to fold inwards and downwards the upper part of the front wall of the liner of the carton, means embodying a stationary element and a movably mounted prime mover actuated coacting element mounted on the frame structure adjacent the location and operative automatically when a carton remains stationary on said location to fold the tongue downwards into a position so that it extends substantially at right angles to the cover, a movably mounted end tucker mounted on the frame structure adjacent said location, connected for actuation by the prime mover in timed relation with said feed mechanism and the side tucker, and operative when a carton remains stationary at said location and after operation of the side tucker and the folding means to fold inwards and downwards the flap on the trailing end of the carton proper and the upper part of the adjacent end wall of the liner, a second end tucker mounted on the frame structure in opposed relation with the movable end tucker and arranged and adapted after operation of said movable end tucker on a carton to fold inwards and downwards the flap on the leading end wall of the carton proper and the upper part of the adjacent end wall of the liner of the carton, a prime mover actuated carton advancer adjacent a portion of the support and operative automatically when a carton is on said portion to advance the carton ahead of its pusher finger to the end that it remains momentarily stationary at a particular point on the support, and means mounted on the frame structure above said point and operative automatically, after a carton is brought momentarily to rest at said point as the result of the action of said advancer, to close the cover and effect insertion of the tongue of the cover between the upper margin of the front wall of the carton proper and the adjacent portion of the front wall of the liner.

14. A machine adapted automatically to close cartons of the type that embodies a box-like carton proper with upstanding flaps on its end walls and an upstanding cover hinged to its back wall and provided at its upper margin with a substantially coplanar tongue, and comprising a frame structure with a substantially horizontal support mounted thereon, a prime mover in associated relation with the frame structure, an endless

conveyor provided with means for driving said conveyor continuously in one direction and provided with pusher fingers projecting above the support and spaced apart a greater distance than the length of a carton, power driven mechanism for feeding the cartons to be closed one at a time to the support into a location wherein each carton is disposed ahead of the next following pusher finger to the end that each carton first remains stationary at said location on the support for a limited period of time, then travels endwise over the support to a second location on the support and then remains stationary at said second location for a limited period of time, means embodying a stationary element and a prime mover actuated coacting element, located adjacent the first location on the support, and operative automatically when a carton remains stationary on the first location to bend or fold the tongue downwards at substantially right angles to the cover, a movably mounted end tucker mounted on the frame structure adjacent the first location, connected for actuation by the prime mover in timed relation with said feed mechanism, and operative when a carton remains stationary at said first location and after operation of the side tucker to fold inwards and downwards the flap on the trailing end wall of the carton proper, a second end tucker mounted on the frame structure in opposed relation with the movable end tucker and arranged and adapted after operation of said movable end tucker on a carton to fold inwards and downwards the flap on the leading end wall of the carton proper, a prime mover actuated carton advancer adjacent a portion of the support and operative automatically when a carton is on said portion to advance the carton ahead of its pusher finger to the second location to the end that it remains momentarily stationary at said second location, and a movable cover closing member mounted on the frame structure adjacent the second location on the support, connected for actuation by said prime mover, and operative automatically when a carton remains stationary at said second location to close the cover and effect insertion of the tongue on the cover inside of the upper margin of the front wall of the carton proper.

15. A machine adapted automatically to close cartons of the type that embodies a box-like carton proper with upstanding flaps on its end walls and an upstanding cover hinged to its back wall and provided at its upper margin with a substantially coplanar tongue, and a cup-shaped liner fitting within the carton proper and having the upper parts of its front, end and back walls extending upwards beyond the upper margins of the front, end and back walls of the carton proper, said machine comprising a frame structure with a substantially horizontal support mounted thereon, a prime mover in associated relation with the frame structure, an endless conveyor provided with means for driving said conveyor continuously in one direction and provided with pusher fingers projecting above the support and spaced apart a greater distance than the length of a carton, power driven mechanism for feeding the cartons to be closed one at a time to the support into a location wherein each carton is disposed ahead of the next following pusher finger to the end that each carton first remains stationary at said location on the support for a limited period of time, then travels endwise over the support to a second location on the support and then remains stationary at said second location for a limited period of time, a movably mounted side tucker mounted on the frame structure adjacent the first location on the support, connected for actuation by the prime mover in timed relation with the feed mechanism, and operative automatically when a carton remains stationary at the first location on the support to fold inwards and downwards the upper part of the front wall of the liner of the carton, means embodying a stationary element and a coacting element mounted to move conjointly with the side tucker, located adjacent the first location on the support, and operative automatically when a carton remains stationary on the first location to bend or fold the tongue downwards at substantially right angles to the cover, a movably mounted end tucker mounted on the frame structure adjacent the first location, connected for actuation by the prime mover in timed relation with said feed mechanism and the side tucker, and operative when a carton remains stationary at said first location and after operation of the side tucker to fold inwards and downwards the flap on the trailing end wall of the carton proper and the upper part of the adjacent end wall of the liner, a second end tucker mounted on the frame structure in opposed relation with the movable end tucker and arranged and adapted after operation of said movable end tucker on a carton to fold inwards and downwards the flap on the leading end wall of the carton proper and the upper part of the adjacent end wall of the liner of the carton, a prime mover actuated carton advancer adjacent a portion of the support and operative automatically when a carton is on said portion to advance the carton ahead of its pusher finger to the second location to the end that it remains momentarily stationary at a said second location, and a movable cover closing member mounted on the frame structure adjacent the second location on the support, connected for actuation by said prime mover, and operative automatically when a carton remains stationary at said second location to close the cover and effect insertion of the tongue on the cover between the upper margin of the front wall of the carton proper and the adjacent portion of the front wall of the liner.

16. A machine adapted automatically to close cartons of the type that embodies a box-like carton proper with upstanding flaps on its end walls and an upstanding cover hinged to its back wall and provided at its upper margin with a substantially coplanar tongue, and a cup-shaped liner fitting within the carton proper and having the upper parts of its front, end and back walls extending upwards beyond the upper margins of the front, end and back walls of the carton proper, said machine comprising a frame structure with a substantially horizontal support mounted thereon, a prime mover in associated relation with the frame stucture, an endless conveyor provided with means for driving said conveyor continuously in one direction and provided with pusher fingers projecting above the support and spaced apart a greater distance than the length of a carton, power driven mechanism for feeding the cartons to be closed one at a time to the support into a location wherein each carton is disposed ahead of the next following pusher finger to the end that each carton first remains stationary at said location on the support for a limited period of time, then travels endwise over the support to a second location on the support and then remains stationary at said second location for a limited

period of time, a movably mounted side tucker mounted on the frame structure adjacent the first location on the support, connected for actuation by the prime mover in timed relation with the feed mechanism, and operative automatically when a carton remains stationary at the first location on the support to fold inwards and downwards the upper part of the front wall of the liner of the carton, means embodying a stationary element and a coacting element mounted to move conjointly with the side tucker, located adjacent the first location on the support and operative automatically when a carton remains stationary on the first location to bend or fold the tongue downwards at substantially right angles to the cover, a movably mounted end tucker mounted on the frame structure adjacent the first location, connected for actuation by the prime mover in timed relation with said feed mechanism and the side tucker, and operative when a carton remains stationary at said first location and after operation of the side tucker and said feeding means to fold inwards and downwards the flap on the trailing end wall of the carton proper and the upper part of the adjacent end wall of the liner, a stationary end tucker mounted on the frame structure above the support and in opposed relation with the movable end tucker and arranged and adapted in connection with initial travel of a carton from said first location to fold inwards and downwards the flap on the leading end wall of the carton proper and the upper part of the adjacent end wall of the carton liner, means mounted on said frame structure adjacent the portion of the support that is between the stationary end tucker and the second location and arranged and adapted in connection with travel of a carton to said second location partially to swing inwards and downwards the cover with its folded tongue, a prime mover actuated carton advancer adjacent a portion of the support and operative automatically when a carton is on said portion to advance the carton ahead of its pusher finger to the second location to the end that it remains momentarily stationary at said second location, and a movable cover closing member mounted on the frame structure adjacent the second location on the support, connected for actuation by said prime mover, and operative automatically when a carton remains stationary at said second location completely to close the cover and simultaneously effect insertion of the tongue on the cover between the upper margin of the front wall of the carton proper and the adjacent portion of the front wall of the liner.

17. A machine adapted automatically to close cartons of the type that embodies a box-like carton proper with upstanding flaps on its end walls and an upstanding cover hinged to its back wall and provided at its upper margin with a substantially coplanar tongue, and a cup-shaped liner fitting within the carton proper and having the upper parts of its front, end and back walls extending upwards beyond the upper margins of the front, end and back walls of the carton proper, said machine comprising a frame structure with a substantially horizontal support mounted thereon, a prime mover in associated relation with the frame structure, an endless conveyor provided with means for driving said conveyor continuously in one direction and provided with pusher fingers projecting above the support and spaced apart a greater distance than the length of a carton, power driven mechanism for feeding the cartons to be closed one at a time to the support into a location wherein each carton is disposed ahead of the next following pusher finger to the end that each carton first remains stationary at said location on the support for a limited period of time, then travels endwise over the support to a second location on the support and then remains stationary at said second location for a limited period of time, a movably mounted side tucker mounted on the frame structure adjacent the first location on the support, connected for actuation by the prime mover in timed relation with the feed mechanism, and operative automatically when a carton remains stationary at the first location on the support to fold inwards and downwards the upper part of the front wall of the liner of the carton, means embodying a stationary element and a coacting element mounted to move conjointly with the side tucker, located adjacent the first location on the support and operative automatically when a carton remains stationary on the first location to bend or fold the tongue downwards at substantially right angles to the cover, a movably mounted end tucker mounted on the frame structure adjacent the first location, connected for actuation by the prime mover in timed relation with said feed mechanism and the side tucker, and operative when a carton remains stationary at said first location and after operation of the side tucker and said folding means to fold inwards and downwards the flap on the trailing end wall of the carton proper and the upper part of the adjacent end wall of the liner, a stationary end tucker mounted on the frame structure above the support and in opposed relation with the movable end tucker and arranged and adapted in connection with initial travel of a carton from said first location to fold inwards and downwards the flap on the leading end wall of the carton proper and the upper part of the adjacent end wall of the carton liner, a pair of laterally spaced members mounted in a fixed position over, and extending lengthwise of, the portion of the support that is between the stationary end tucker and the second location and arranged and adapted so to coact with one another that they serve in connection with travel of a carton between said stationary end tucker and said second location partially to swing downwards the cover with its folded tongue, a prime mover actuated carton advancer adjacent a portion of the support and operative automatically when a carton is on said portion to advance the carton ahead of its pusher finger to the second location to the end that it remains momentarily stationary at said second location, and a movable cover closing member mounted on the frame structure adjacent the second location on the support, connected for actuation by said prime mover, and operative automatically when a carton remains stationary at said second location completely to close the cover and simultaneously effect insertion of the tongue on the cover between the upper margin of the front wall of the carton proper and the adjacent portion of the front wall of the liner.

18. A machine adapted automatically to close cartons of the type that embodies a box-like carton proper with upstanding flaps on its end walls and a hinged upstanding tongue equipped cover on its back wall, and a cup-shaped liner fitting within the carton proper and having the upper parts of its front, end and back walls extending upwards beyond the upper margins of the front, end and back walls of the carton

proper, and comprising a frame structure having a flat elongated top with a longitudinal channel therein, a prime mover mounted on the frame structure beneath the top thereof, an endless conveyor having a horizontal upper reach disposed within, and extending lengthwise of, the channel in the top, connected to be driven continuously by the prime mover in such manner that said upper reach travels from one end of the channel to the other end, and provided with a series of pusher fingers spaced equidistantly apart and a greater distance than the length of a carton and arranged so that when they travel in said upper reach they project upwards above the top and are adapted to push in an endwise fashion cartons that are disposed in front of them, power driven means for feeding the cartons to be closed one at a time into such position on the top of the frame structure that each carton is located in parallel relation with, and at one side of said one end of, the channel and has the back wall of its carton proper facing the channel, a movably mounted pusher head mounted on the frame structure so that it is positioned normally outwards of the aforementioned carton position on the top, connected for actuation by the prime mover and operative automatically when a carton is fed by said power driven feed means to said position to shift the carton laterally over said one end of the channel and in front of one of the pusher fingers to the end that it momentarily remains stationary on said receiving end of the upper reach of the conveyor, a movably mounted side tucker mounted on the frame structure over the pusher head connected for actuation by the prime mover in timed relation with said pusher head, and operative automatically after pushing of a carton by the pusher head over said one end of the channel while said carton momentarily remains stationary to fold inwards and downwards the upper part of the front wall of the liner of the carton, an end tucker mounted on the frame structure adjacent said one end of the channel and to move in parallel relation with, and to and from, the channel, connected for actuation by the prime mover and operative after operation of the side tucker on a carton to fold inwards and downwards the flap on the trailing end wall of the carton proper and the adjacent part of the adjacent end wall of the liner, a second end tucker mounted on the frame structure in opposed relation with the first mentioned end tucker and arranged and adapted after operation of said first mentioned end tucker on a carton to fold inwards and downwards the flap on the leading end wall of the carton proper and the upper part of the adjacent end wall of the liner of the carton, and means mounted on the frame structure rearwards of said second end tucker and operative automatically to close the cover of a carton after it has been operated on by said second end tucker and at the same time to effect insertion of the tongue of the cover between the upper margin of the front wall of the carton proper and the adjacent portion of the front wall of the carton liner.

19. A machine adapted automatically to close cartons of the type that embodies a box-like carton proper with upstanding flaps on its end walls, and comprising a frame structure, a prime mover associated with the frame structure, an endless conveyor mounted on the frame structure in such manner that it has a substantially horizontal upper reach, connected to be driven continuously in one direction by the prime mover, and provided with a series of pusher fingers spaced equidistantly apart and a greater distance than the length of a carton and arranged so that when they travel in said upper reach they project upwards and are adapted to push in an endwise fashion cartons that are disposed in front of them, power driven means for feeding the cartons to be closed one at a time over the receiving end of the upper reach of the conveyor into a position wherein each carton is disposed ahead of the next following pusher finger to the end that it momentarily remains stationary on said receiving end of the upper reach of the conveyor, a movably mounted end tucker mounted on the frame structure adjacent said receiving end, connected for actuation by the prime mover in timed relation with said pusher head and operative automatically when a carton is momentarily at rest over said receiving end of the conveyor to fold inwards and downwards the flap on the trailing end wall of the carton proper, and a stationary end tucker mounted on the frame structure over the central portion of the upper reach of the conveyor and in opposed relation with the movable end tucker and arranged and adapted in connection with initial pushing of a carton by the following pusher finger on the endless conveyor and after operation of said movable end tucker to fold inwards and downwards the flap on the leading end wall of the carton proper.

20. A machine adapted automatically to close cartons of the type that embodies a box-like carton proper with upstanding flaps on its end walls, and comprising a frame structure, a prime mover associated with the frame structure, an endless conveyor mounted on the frame structure so that it has a substantially horizontal upper reach, connected to be driven continuously in one direction by the prime mover, and provided with a series of pusher fingers spaced equidistantly apart and a greater distance than the length of a carton and arranged so that when they travel in said upper reach they project upwards and are adapted to push in an endwise fashion cartons that are disposed in front of them, power driven means for feeding the cartons to be closed one at a time and in endwise fashion to a location wherein they are positioned in parallel relation with, and at one side of the receiving end of, the conveyor, a movable pusher head mounted on the frame structure adjacent said location, connected to be actuated by the prime mover in timed relation with the endless conveyor, and operative automatically when a carton is fed by the power driven means to said location on the top to shift the carton laterally in such manner that it is positioned over the receiving end of the conveyor ahead of the next following pusher finger to the end that it momentarily remains stationary on said receiving end, a movably mounted end tucker mounted on the frame structure adjacent said receiving end of the conveyor, connected for actuation by the prime mover in timed relation with said pusher head and operative automatically when a carton is momentarily at rest over said receiving end of the conveyor to fold inwards and downwards the flap on the trailing end wall of the carton proper, and a stationary end tucker mounted on the frame structure over the channel and in opposed relation with the movable end tucker and arranged and adapted in connection with initial pushing of a carton by the following pusher finger on the endless conveyor and after operation of said movable end tucker to fold inwards and downwards the flap on the leading end wall of the carton proper.

21. A machine adapted automatically to close cartons of the type that embodies a box-like carton proper with upstanding flaps on its end walls, and comprising a frame structure having a flat elongated top with a longitudinal channel therein, a prime mover mounted on the frame structure beneath the top thereof, an endless conveyor having a horizontal upper reach disposed within, and extending lengthwise of, the channel in the top, connected to be driven continuously by the prime mover in such manner that said upper reach travels from one end of the channel to the other end, and provided with a series of pusher fingers spaced equidistantly apart and a greater distance than the length of a carton and arranged so that when they travel in said upper reach they project upwards above the top and are adapted to push in an endwise fashion cartons that are disposed in front of them, power driven means for feeding the cartons to be closed one at a time and in endwise fashion to a location on the top wherein they are positioned in parallel relation with, and at one side of said one end of, the channel, a movable pusher head mounted on the frame structure adjacent said location on the top, connected to be actuated by the prime mover in timed relation with the endless conveyor, and operative automatically when a carton is fed by the power driven means to said location on the top to shift the carton laterally in such manner that it is positioned over said one end of the channel ahead of the next following pusher finger to the end that it momentarily remains stationary on said one end of the channel, a movably mounted end tucker mounted on the frame structure adjacent said one end of the channel, connected for actuation by the prime mover in timed relation with said pusher head and operative automatically when a carton is momentarily at rest over said one end of the channel to fold inwards and downwards the flap on the trailing end wall of the carton proper, and a stationary end tucker mounted on the frame structure over the channel and in opposed relation with the movable end tucker and arranged and adapted in connection with initial pushing of a carton by the following pusher finger on the endless conveyor and after operation of said movable end tucker to fold inwards and downwards the flap on the leading end wall of the carton proper.

22. A machine adapted automatically to close cartons of the type that embodies a box-like carton proper with upstanding flaps on its end walls and a hinged upstanding tongue equipped cover on its back wall, and a cup-shaped liner fitting within the carton proper and having the upper parts of its front, end and back walls extending upwards beyond the upper margins of the front, end and back walls of the carton proper, and comprising a frame structure having a flat elongated top with a longitudinal channel therein, a prime mover mounted on the frame structure beneath the top thereof, an endless conveyor having a horizontal upper reach disposed within, and extending lengthwise of, the channel in the top, connected to be driven continuously by the prime mover in such manner that said upper reach travels from one end of the channel to the other end, and provided with a series of pusher fingers spaced equidistantly apart and a greater distance than the length of a carton and arranged so that when they travel in said upper reach they project upwards above the top and are adapted to push in an endwise fashion cartons that are disposed in front of them, power driven means for feeding the cartons to be closed one at a time and in endwise fashion to a location on the top wherein they are positioned in parallel relation with, and at one side of said one end of, the channel and the back walls of their carton propers face the channel, a movable pusher head mounted on the frame structure adjacent said location on the top, connected to be actuated by the prime mover in timed relation with the endless conveyor, and operative automatically when a carton is fed by the power driven means to said location on the top to shift the carton laterally in such manner that it is positioned over said one end of the channel ahead of the next following pusher finger to the end that it momentarily remains stationary on said one end of the channel, a movably mounted side tucker mounted on the frame structure over the pusher head, connected for actuation by the prime mover in timed relation with said pusher head and operative automatically when a carton is momentarily at rest over said one end of the channel to fold inwards and downwards the upper part of the front wall of the liner of the carton, a movably mounted end tucker mounted on the frame structure adjacent said one end of the channel, connected for actuation by the prime mover in timed relation with said pusher head and side tucker and operative automatically directly after operation of the side tucker on a carton and while the carton is momentarily at rest over said one end of the channel to fold inwards and downwards the flap on the trailing end wall of the carton proper and the upper part of the adjacent end wall of the liner, a stationary end tucker mounted on the frame structure over the channel and in opposed relation with the movable end tucker and arranged and adapted in connection with initial pushing of a carton by the following pusher finger on the endless conveyor and after operation of the side tucker and movable end tucker to fold inwards and downwards the flap on the leading end of the carton proper and the upper part of the adjacent end wall of the carton liner, and a movable cover closing member mounted on the frame structure behind the stationary end tucker, connected for actuation by said prime mover, and operative automatically after operation of said stationary end tucker on a carton to close the cover of the carton proper and effect insertion of the tongue on the cover between the upper margin of the front wall of the carton proper and the adjacent portion of the front wall of the carton liner.

23. A machine adapted automatically to close cartons of the type that embodies a box-like carton proper with upstanding flaps on its end walls, and comprising a frame structure having a flat elongated top with a longitudinal channel therein, a prime mover in associated relation with the frame structure, an endless conveyor having a horizontal upper reach disposed within, and extending lengthwise of, the channel in the top, connected to be driven continuously by the prime mover in such manner that said upper reach travels from one end of the channel to the other end, and provided with a series of pusher fingers spaced equidistantly apart and a greater distance than the length of the carton and arranged so that when they travel in said upper reach they project upwards above the top and are adapted to push in an endwise fashion cartons that are disposed in front of them, power driven means for feeding the carton to be closed one at a time and

in endwise fashion to a location on the top wherein they are positioned in parallel relation with, and at one side of said one end of, the channel, a movable pusher head mounted on the frame structure adjacent said location on the top, connected to be reciprocated by mechanical means including a rotary cam wheel and said prime mover in timed relation with the endless conveyor, and operative automatically when a carton is fed by the power driven means to said location on the top first to move slowly into engagement with the carton and then to shift the carton laterally at a higher rate of speed so that it is positioned over said one end of the channel ahead of the next following pusher finger to the end that it momentarily remains stationary on said one end of the channel, and a movably mounted end tucker mounted on the frame structure adjacent said one end of the channel, connected for actuation by the prime mover in timed relation with said pusher head and operative automatically after a carton is shifted and is momentarily at rest over said one end of the channel to fold inwards and downwards the flaps on the end walls of the carton proper.

24. A machine adapted automatically to close cartons of the type that embodies a box-like carton proper with upstanding flaps on its end walls, and comprising a frame structure having a flat elongated top with a longitudinal channel therein, a prime mover mounted on the frame structure beneath the top thereof, an endless conveyor having a horizontal upper reach disposed within, and extending lengthwise of, the channel in the top, connected to be driven continuously by the prime mover in such manner that said upper reach travels from one end of the channel to the other end, and provided with a series of pusher fingers spaced equidistantly apart and a greater distance than the length of a carton and arranged so that when they travel in said upper reach they project upwards above the top and are adapted to push in an endwise fashion cartons that are disposed in front of them, power driven means for feeding the cartons to be closed one at a time and in endwise fashion to a location on the top wherein they are positioned in parallel relation with, and at one side of said one end of, the channel, a movable pusher head mounted on the frame structure adjacent said location on the top, connected to be actuated by the prime mover in timed relation with the endless conveyor, and operative automatically when a carton is fed by the power driven means to said location on the top to shift the carton laterally in such manner that it is positioned over said one end of the channel ahead of the next following pusher finger to the end that it momentarily remains stationary on said one end of the channel, a movably mounted end tucker mounted on the frame structure adjacent said one end of the channel, connected for actuation by the prime mover in timed relation with said pusher head and operative automatically directly after operation of the side tucker on a carton and while a carton is momentarily at rest over said one end of the channel to fold inwards and downwards the flap on the trailing end wall of the carton proper, and an end tucker mounted on the frame structure over the channel and in opposed relation with the movable end tucker and arranged and adapted in connection with initial pushing of a carton by the following pusher finger on the endless conveyor and after operation of the side tucker and movable end tucker to fold inwards and downwards the flap on the leading end of the carton proper.

25. A machine adapted automatically to close cartons of the type that embodies a box-like carton proper with upstanding flaps on its end walls and a hinged upstanding cover on its back wall, and comprising a frame structure having a flat elongated top with a longitudinal channel therein, a prime mover mounted on the frame structure beneath the top thereof, an endless conveyor having a horizontal upper reach disposed within, and extending lengthwise of, the channel in the top, connected to be driven continuously by the prime mover in such manner that said upper reach travels from one end of the channel to the other end, and provided with a series of pusher fingers spaced equidistantly apart and a greater distance than the length of a carton and arranged so that when they travel in said upper reach they project upwards above the top and are adapted to push in an endwise fashion cartons that are disposed in front of them, power driven means for feeding the cartons to be closed one at a time and in endwise fashion to a location on the top wherein they are positioned in parallel relation with, and at one side of one end of, the channel and the back walls of their carton propers face the channel, a movable pusher head mounted on the frame structure adjacent said location on the top, connected to be actuated by the prime mover in timed relation with the endless conveyor, and operative automatically when a carton is fed by the power driven means to said location on the top to shift the carton laterally in such manner that it is positioned over said one end of the channel ahead of the next following pusher finger to the end that it momentarily remains stationary on said one end of the channel, a movably mounted end tucker mounted on the frame structure adjacent said one end of the channel, connected for actuation by the prime mover in timed relation with said pusher head and operative automatically while a carton is momentarily at rest over said one end of the channel to fold inwards and downwards the flap on the trailing end wall of the carton proper, a stationary end tucker mounted on the frame structure over the channel and in opposed relation with the movable end tucker and arranged and adapted in connection with initial pushing of a carton by the following pusher finger on the endless conveyor and after operation of the movable end tucker to fold inwards and downwards the flap on the leading end of the carton proper, and means mounted on the frame structure behind the stationary end tucker and operative after pushing of a carton past said stationary end tucker to swing the cover of the carton proper downwards.

26. A machine adapted automatically to close cartons of the type that embodies a box-like carton proper with upstanding flaps on its end walls and a hinged upstanding tongue equipped cover on its back wall, and a cup-shaped liner fitting within the carton proper and having the upper parts of its front, end and back walls extending upwards beyond the upper margins of the front, end and back walls of the carton proper, and comprising a frame structure having a flat elongated top with a longitudinal channel therein, a prime mover mounted on the frame structure beneath the top thereof, an endless conveyor having a horizontal upper reach disposed within, and extending lengthwise of, the channel in the top, connected to be driven continuously

by the prime mover in such manner that said upper reach travels from one end of the channel to the other end, and provided with a series of pusher fingers spaced equidistantly apart and a greater distance than the length of a carton and arranged so that when they travel in said upper reach they project upwards above the top and are adapted to push in an endwise fashion cartons that are disposed in front of them, power driven means for feeding the cartons to be closed one at a time and in endwise fashion to a location on the top wherein they are positioned in parallel relation with, and at one side of said one end of, the channel and the back walls of their carton propers face the channel, a movable pusher head mounted on the frame structure adjacent said location on the top, connected to be actuated by the prime mover in timed relation with the endless conveyor, and operative automatically when a carton is fed by the power driven means to said location on the top to shift the carton laterally in such manner that it is positioned over said one end of the channel ahead of the next following pusher finger to the end that it momentarily remains stationary on said one end of the channel, a side tucker mounted to move conjointly with, but at a higher rate of speed than, the pusher head and operative in connection with shift of a carton over said one end of the channel to fold inwards and downwards the upper part of the front wall of the carton liner, a movably mounted end tucker mounted on the frame structure adjacent said one end of the channel, connected for actuation by the prime mover in timed relation with said pusher head and side tucker and operative automatically directly after operation of the side tucker on a carton and while the carton is momentarily at rest over said one end of the channel to fold inwards and downwards the flap on the trailing end wall of the carton proper and the upper part of the adjacent end wall of the liner, a stationary end tucker mounted on the frame structure over the channel and in opposed relation with the movable end tucker and arranged and adapted in connection with initial pushing of a carton by the following pusher finger on the endless conveyor and after operation of the side tucker and movable end tucker to fold inwards and downwards the flap on the leading end of the carton proper and the upper part of the adjacent end wall of the carton liner, and means mounted on the frame structure behind the stationary end tucker and operative after pushing of a carton past said stationary end tucker to swing the cover of the carton proper inwards and downwards and at the same time effect insertion of the tongue on the cover between the upper margin of the front wall of the carton proper and the adjacent portion of the front wall of the liner.

27. A machine adapted automatically to close cartons of the type that embodies a box-like carton proper with upstanding flaps on its end walls and an upstanding cover hingedly connected to its back wall and provided with a coplanar tongue at its upper margin, and comprising a frame structure having a flat elongated top with a longitudinal channel therein, a prime mover mounted on the frame structure beneath the top thereof, an endless conveyor having a horizontal upper reach disposed within, and extending lengthwise of, the channel in the top, connected to be driven continuously by the prime mover in such manner that said upper reach travels from one end of the channel to the other end, and provided with a series of pusher fingers spaced equidistantly apart and a greater distance than the length of a carton and arranged so that when they travel in said upper reach they project upwards above the top and are adapted to push in an endwise fashion cartons that are disposed in front of them, power driven means for feeding the cartons to be closed one at a time and in endwise fashion to a location on the top wherein they are positioned in parallel relation with, and at one side of said one end of, the channel and the back walls of their carton propers face the channel, a movable pusher head mounted on the frame structure adjacent said location on the top, connected to be actuated by the prime mover in timed relation with the endless conveyor, and operative automatically when a carton is fed by the power driven means to said location on the top to shift the carton laterally in such manner that it is positioned over said one end of the channel ahead of the next following pusher finger to the end that it momentarily remains stationary on said one end of the channel, means embodying a stationary element adjacent said one end of the channel and a coacting element mounted for conjoint movement with the pusher head, and operative in connection with operation of said pusher head on a carton to fold the tongue so that it extends at substantially right angles to the cover of the carton, a movably mounted end tucker mounted on the frame structure adjacent said one end of the channel, connected for actuation by the prime mover in timed relation with said pusher head and operative automatically directly after operation of the side tucker on a carton and while the carton is momentarily at rest over said one end of the channel to fold inwards and downwards the flap on the trailing end wall of the carton proper, a stationary end tucker mounted on the frame structure over the channel and in opposed relation with the movable end tucker and arranged and adapted in connection with initial pushing of a carton by the following pusher finger on the endless conveyor and after operation of the movable end tucker to fold inwards and downwards the flap on the leading end of the carton proper, and a movable cover closing member mounted on the frame structure above the channel and behind the stationary end tucker, connected for actuation by said prime mover, and operative automatically after operation on a carton by said stationary end tucker to swing the cover of the carton proper downwards into a closed position and at the same time effect insertion of the tongue on the cover inside of the upper margin of the front wall of the carton proper.

28. A machine adapted automatically to close cartons of the type that embodies a box-like carton proper with upstanding flaps on its end walls and an upstanding cover hingedly connected to its back wall and provided with a coplanar tongue at its upper margin, and a cup-shaped liner fitting within the carton proper and having the upper parts of its front, end and back walls extending upwards beyond the upper margins of the front, end and back walls of the carton proper, said machine comprising a frame structure having a flat elongated top with a longitudinal channel therein, a prime mover mounted on the frame structure beneath the top thereof, an endless conveyor having a horizontal upper reach disposed within, and extending lengthwise of, the channel in the top, connected to be driven continuously by the prime mover in such manner that said upper reach travels from one end of the channel to the other end, and provided with

a series of pusher fingers spaced equidistantly apart and a greater distance than the length of a carton and arranged so that when they travel in said upper reach they project upwards above the top and are adapted to push in an endwise fashion cartons that are disposed in front of them, power driven means for feeding the cartons to be closed one at a time and in endwise fashion to a location on the top wherein they are positioned in parallel relation with, and at one side of said one end of, the channel and the back walls of their carton propers face the channel, a movable pusher head mounted on the frame structure adjacent said location on the top, connected to be actuated by the prime mover in timed relation with the endless conveyor, and operative automatically when a carton is fed by the power driven means to said location on the top to shift the carton laterally in such manner that it is positioned over said one end of the channel ahead of the next following pusher finger to the end that it momentarily remains stationary on said one end of the channel, a side tucker mounted to move conjointly with, but at a higher rate of speed than, the pusher head and operative in connection with shift of a carton over said one end of the channel to fold inwards and downwards the upper part of the front wall of the carton liner, means embodying a stationary element adjacent said one end of the channel and a coacting element mounted for conjoint movement with the side tucker, and operative in connection with operation of the side tucker on a carton to fold the tongue so that it extends at substantially right angles to the cover of the carton, a movably mounted end tucker mounted on the frame structure adjacent said one end of the channel, connected for actuation by the prime mover in timed relation with said pusher head and side tucker and operative automatically directly after operation of the side tucker on a carton and while the carton is momentarily at rest over said one end of the channel to fold inwards and downwards the flap on the trailing end wall of the carton proper and the upper part of the adjacent end wall of the liner, a stationary end tucker mounted on the frame structure over the channel and in opposed relation with the movable end tucker and arranged and adapted in connection with initial pushing of a carton by the following pusher finger on the endless conveyor and after operation of the side tucker and movable end tucker to fold inwards and downwards the flap on the leading end of the carton proper and the upper part of the adjacent end wall of the carton liner, and a movable cover closing member mounted on the frame structure above the channel and behind the stationary end tucker, connected for actuation by said prime mover, and operative automatically after operation on a carton by said stationary end tucker to swing the cover of the carton proper downwards into a closed position and at the same time effect insertion of the tongue on the cover between the upper margin of the front wall of the carton proper and the adjacent portion of the front wall of the carton liner.

29. A machine adapted automatically to close cartons of the type that embodies a box-like carton proper with upstanding flaps on its end walls and a hinged upstanding cover on its back wall, and comprising a frame structure having a flat elongated top with a longitudinal channel therein, a motor mounted on the frame structure beneath the top, an endless conveyor having a horizontal upper reach disposed within, and extending lengthwise of, the channel in the top, connected to be driven continuously by the motor in such manner that said upper reach travels from one end of the channel to the other end, and provided with a series of pusher fingers spaced equidistantly apart and a greater distance than the length of a carton and arranged so that when they travel in said upper reach they project upwards above the top and are adapted to push in an endwise fashion cartons that are disposed in front of them, power driven conveyor means for feeding the cartons to be closed one at a time and in an endwise fashion to a location on the top wherein they are disposed in parallel relation with, and at one side of said one end of, the channel, means operative automatically when a carton reaches said location to shift the carton laterally over said one end of the channel and in front of one of the pusher fingers so that it remains momentarily stationary and embodying a rock shaft disposed under and longitudinally of the top and operatively connected to the motor so that it is rocked back and forth during drive of said motor, an upstanding arm having its lower end connected to the rock shaft in such manner that it swings transversely of the top during rocking of the rock shaft, and a carton engaging pusher head connected to the upper end of the arm, a movably mounted end tucker mounted on the frame structure adjacent said one end of the channel, connected for actuation by the motor, and operative immediately after shift of a carton over said one end of the channel by the pusher head and while said carton is momentarily stationary to fold inwards and downwards the flap on the trailing end wall of the carton proper, a second end tucker mounted on the frame structure in opposed relation with the movable end tucker and arranged and adapted after operation of said movable end tucker on a carton to fold inwards and downwards the flap on the leading end wall of the carton proper and the upper part of the adjacent end wall of the liner of the carton, and means mounted on the frame structure rearwards of the second end tucker and operative automatically after a carton has been pushed by the endless conveyor past said second end tucker to close the cover.

30. A machine adapted automatically to close cartons of the type that embodies a box-like carton proper with upstanding flaps on its end walls and a hinged upstanding tongue equipped cover on its back wall, and a cup shaped liner fitting within the carton proper and having the upper parts of its front, end and back walls extending upwards beyond the upper margins of the front, end and back walls of the carton proper, and comprising a frame structure having a flat elongated top with a longitudinal channel therein, a motor mounted on the frame structure beneath the top, an endless conveyor having a horizontal upper reach disposed within, and extending lengthwise of, the channel in the top, connected to be driven continuously by the motor in such manner that said upper reach travels from one end of the channel to the other end, and provided with a series of pusher fingers spaced equidistantly apart and arranged so that when they travel in said upper reach they project upwards above the top and are adapted to push in an endwise fashion cartons that are disposed in front of them, power driven conveyor means for feeding the cartons to be closed one at a time and in an endwise fashion to a location on the top wherein they are disposed in parallel relation

with, and at one side of said one end of, the channel and the back walls of the cartons proper face the channel, means operative automatically when a carton reaches said location to shift the carton laterally over said one end of the channel and in front of one of the pusher fingers so that it is subject to being pushed by the finger and embodying a rock shaft disposed under and longitudinally of the top and operatively connected to the motor so that it is rocked back and forth during drive of said motor, an upstanding arm having its lower end pivoted and connected to the rock shaft in such manner that it swings transversely of the top during rocking of the rock shaft, and a carton engaging pusher head connected to the upper end of the arm, means operative automatically after a carton is shifted by the pusher head over said one end of the channel to fold inwards and downwards the upper part of the front wall of the liner of the carton and embodying an upstanding arm positioned adjacent the first mentioned arm, having the lower end thereof pivotally supported at a point above the lower end of said first mentioned arm and so that the arm is capable of swinging transversely of the top, and having the portion thereof above its pivoted lower end pivotally connected to the central portion of said first mentioned arm, and a side tucker connected fixedly to the upper end of the second mentioned arm and overlying the pusher head, a movably mounted end tucker mounted on the frame structure adjacent said one end of the channel, connected for actuation by the motor, and operative immediately after operation of the side tucker on a carton over said one end of the channel to fold inwards and downwards the flap on the trailing end wall of the carton proper and the upper part of the adjacent end wall of the liner, a second end tucker mounted on the frame structure in opposed relation with the movable end tucker and arranged and adapted after operation of said movable end tucker on a carton to fold inwards and downwards the flap on the leading end wall of the carton proper and the upper part of the adjacent end wall of the liner of the carton, and means mounted on the frame structure rearwards of the second end tucker and operative automatically after a carton has been pushed by the endless conveyor past said second end tucker to close the cover of the carton and effect insertion of the tongue of the cover between the upper margin of the front wall of the carton proper and the adjacent portion of the front wall of the carton liner.

31. A machine adapted automatically to close cartons of the type that embodies a box-like carton proper with upstanding flaps on its end walls and a hinged upstanding tongue equipped cover on its back wall, and a cup shaped liner fitting within the carton proper and having the upper parts of its front, end and back walls extending upwards beyond the upper margins of the front, end and back walls of the carton proper, and comprising a frame structure having a flat elongated top with a longitudinal channel therein, a motor mounted on the frame structure beneath the top, an endless conveyor having a horizontal upper reach disposed within, and extending lengthwise of, the channel in the top, connected to be driven continuously by the motor in such manner that said upper reach travels from one end of the channel to the other end, and provided with a series of pusher fingers spaced equidistantly apart and arranged so that when they travel in said upper reach they project upwards above the top and are adapted to push in an endwise fashion cartons that are disposed in front of them, power driven conveyor means for feeding the cartons to be closed one at a time and in an endwise fashion to a location on the top wherein they are disposed in parallel relation with, and at one side of said one end of, the channel and the back walls of the cartons proper face the channel, means operative automatically when a carton reaches said location to shift the carton laterally over said one end of the channel and in front of one of the pusher fingers so that it is subject to being pushed by the finger and embodying a rock shaft disposed under and longitudinally of the top and operatively connected to the motor so that it is rocked back and forth during drive of said motor, an upstanding arm having its lower end pivoted and connected to the rock shaft in such manner that it swings transversely of the top during rocking of the rock shaft, and a carton engaging pusher head connected to the upper end of the arm, means operative automatically after a carton is shifted by the pusher head over said one end of the channel to fold inwards and downwards the upper part of the front wall of the liner of the carton and embodying an upstanding arm positioned adjacent the first mentioned arm, having the lower end thereof pivotally supported at a point above the lower end of said first mentioned arm and so that the arm is capable of swinging transversely of the top, and having the portion thereof above its pivoted lower end pivotally connected to the central portion of said first mentioned arm, and a side tucker connected fixedly to the upper end of the second mentioned arm and overlying the pusher head, means operative in connection with operation of the side tucker on a carton to fold the tongue on the carton cover so that it extends at substantially right angles to the cover and consisting of a stationary element mounted on the top adjacent said one end of the channel and a coacting element fixedly mounted on the upper end of the second mentioned arm and disposed above said side tucker, a movably mounted end tucker mounted on the frame structure adjacent said one end of the channel, connected for actuation by the prime mover, and operative immediately after operation of the side tucker on a carton over said one end of the channel to fold inwards and downwards the flap on the trailing end wall of the carton proper and the upper part of the adjacent end wall of the liner, a second end tucker mounted on the frame structure in opposed relation with the movable end tucker and arranged and adapted after operation of said end tucker on a carton to fold inwards and downwards the flap on the leading end wall of the carton proper and the upper part of the adjacent end wall of the liner of the carton, and means mounted on the frame structure rearwards of the second end tucker and operative automatically after a carton has been pushed by the endless conveyor past said second end tucker to close the cover of the carton and effect insertion of the tongue of the cover between the upper margin of the front wall of the carton proper and the adjacent portion of the front wall of the carton liner.

32. A machine adapted automatically to close cartons of the type that embodies a box-like carton proper with an upstanding cover hinged to its back wall and provided with a coplanar tongue at its upper margin, and comprising a frame structure, a prime mover in associated

relation with the frame structure, an endless conveyor mounted on the frame structure so that it has a substantially horizontal upper reach, connected to be driven continuously in one direction by the prime mover, and provided with a series of pusher fingers spaced equidistantly apart and arranged so that when they travel in said upper reach they project upwards and are adapted to push in an endwise fashion cartons that are disposed in front of them, power driven means for feeding the cartons to be closed, one at a time into such a position on the frame structure that each carton is located in parallel relation with, and at one side of the receiving end of the upper reach of, the conveyor, a movably mounted pusher head mounted on the frame structure so that it is positioned normally outwards of the aforementioned carton position, connected for operation by the prime mover and operative automatically when a carton is fed by said power driven means to said position to shift the carton laterally over said receiving end of the conveyor and in front of one of the pusher fingers, means embodying a stationary element adjacent said receiving end and a coacting element mounted for conjoint movement with the pusher head, and operative in connection with operation of said pusher head on a carton to fold the tongue so that it extends at substantial right angles to the cover of the carton, and a movable cover closing member mounted on the frame structure rearwards of said receiving end of the conveyor, connected for actuation by said prime mover and operative automatically after propulsion of a carton by said endless conveyor from the receiving end to swing the cover of the carton proper downwards into a closed position and at the same time effect insertion of the tongue on the cover inside of the upper margin of the front wall of the carton proper.

33. A machine adapted automatically to close cartons of the type that embodies a box-like carton proper with an upstanding cover hinged to its back wall and provided with a coplanar tongue at its upper margin, and comprising a frame structure having a flat elongated top with a longitudinal channel therein, a prime mover in associated relation with the frame structure, an endless conveyor having a horizontal upper reach disposed within, and extending lengthwise of, the channel in the top, connected to be driven continuously by the prime mover in such manner that said upper reach travels from one end of the channel to the other end, and provided with a series of pusher fingers spaced equidistantly apart and arranged so that when they travel in said upper reach they project above the top and are adapted to push in an endwise fashion cartons that are disposed in front of them, power driven means for feeding the cartons to be closed, one at a time into such position on the top of the frame structure that each carton is located in parallel relation with, and at one side of said one end of, the channel, a movably mounted pusher head mounted on the frame structure so that it is positioned normally outwards of the aforementioned carton position on the top, connected for operation by the prime mover and operative automatically when a carton is fed by said power driven means to said position to shift the carton laterally over said one end of the channel and in front of one of the pusher fingers, means embodying a stationary element adjacent said one end of the channel and a coacting element mounted for conjoint movement with the pusher head, and operative in connection with operation of said pusher head on a carton to fold the tongue so that it extends at substantial right angles to the cover of the carton, and a movable cover closing member mounted on the frame structure above, and rearwards of said one end of, the channel, connected for actuation by said prime mover and operative automatically after propulsion of a carton by said endless conveyor from said one end of the channel to swing the cover of the carton proper downwards into a closed position and at the same time effect insertion of the tongue on the cover inside of the upper margin of the front wall of the carton proper.

34. A machine adapted automatically to close cartons of the type that embodies a box-like carton proper with an upstanding cover hinged to its back wall and provided with a coplanar tongue at its upper margin, and comprising a frame structure having a flat elongated top with a longitudinal channel therein, a prime mover in associated relation with the frame structure, an endless conveyor having a horizontal upper reach disposed within, and extending lengthwise of, the channel in the top, connected to be driven continuously by the prime mover in such manner that said upper reach travels from one end of the channel to the other end, provided with a series of pusher fingers spaced equidistantly apart and arranged so that when they travel in said upper reach they project upwards above the top and are adapted to push in an endwise fashion cartons that are disposed in front of them, power driven means for feeding the cartons to be closed, one at a time into said position on the top of the frame structure so that each carton is located in parallel relation with, and at one side of said one end of, the channel, and has the back wall of its carton proper facing the channel, a movably mounted pusher head mounted on the frame structure so that it is positioned normally outwards of the aforementioned carton position on the top, connected for actuation by the prime mover and operative automatically when a carton is fed by said power driven means to said position to shift the carton laterally over said one end of the channel and in front of one of the pusher fingers, means embodying a stationary element adjacent said one end of the channel and a coacting element mounted for conjoint movement with, but at a higher rate of speed than, the pusher head, and operative in connection with operation of said pusher head on a carton to fold the tongue so that it extends at substantially right angles to the cover of the carton, and means mounted on the frame structure above the top at a point rearwards of said one end of the channel and operative automatically after propulsion of a carton over said one end of the channel to swing the cover of the carton proper downwards into a closed position and at the same time effect insertion of the tongue on the cover inside of the upper margin of the front wall of the carton proper.

35. A machine adapted automatically to close cartons of the type that embodies a box-like carton proper with a hinged upstanding tongue equipped cover on its back wall, and comprising a horizontally elongated frame structure, a motor associated with the frame structure, an endless conveyor mounted on the frame structure so that it extends lengthwise thereof and has a substantially horizontal upper reach, connected to be driven continuously in one direction by the motor, and provided with a series of pusher fingers spaced equidistantly apart and arranged so

that when they travel in said upper reach they project upwards and are adapted to push in an endwise fashion cartons that are disposed in front of them, power driven conveyor means for feeding the cartons to be closed one at a time and in an endwise fashion to a location on the frame structure wherein they are disposed in parallel relation with, and at one side of the receiving end of the upper reach of, the conveyor, means operative automatically when a carton reaches said location to shift the carton laterally over said receiving end of the conveyor and in front of one of the pusher fingers so that it is subject to being pushed by the one finger, and embodying a horizontal rock shaft mounted on, and extending lengthwise of, the frame structure and operative connected to the motor so that it is rocked back and forth during drive of said motor, a first upstanding arm connected fixedly to one end of the rock shaft, a second upstanding arm projecting a material distance above the first arm, having the lower end thereof pivoted in order that it is capable of swinging transversely of the frame structure, and having its central portion connected to the upper end of the first arm by a yielding spring type connection in order that it is capable of swinging conjointly with the first arm and also remaining stationary during swing of said first arm, and a pusher head connected fixedly to the upper end of the second arm, a latch device operative to hold the second arm in its retracted position until a carton is fed to said location, and a cover closing member mounted movably on the frame structure rearwards of said receiving end of the conveyor, connected for actuation by the prime mover and operative automatically after a carton has been pushed by the endless conveyor to close the cover.

36. A machine adapted automatically to close cartons of the type that embodies a box-like carton proper with a hinged upstanding tongue equipped cover on its back wall, and comprising a frame structure having a flat elongated top with a longitudinal channel therein, a motor mounted on the frame structure beneath the top, an endless conveyor having a horizontal upper reach disposed within, and extending lengthwise of, the channel in the top, connected to be driven continuously by the motor in such manner that said upper reach travels from one end of the channel to the other end, and provided with a series of pusher fingers spaced equidistantly apart and arranged so that when they travel in said upper reach they project upwards above the top and are adapted to push in an endwise fashion cartons that are disposed in front of them, power driven conveyor means for feeding the cartons to be closed one at a time and in an endwise fashion to a location on the top wherein they are disposed in parallel relation with, and at one side of said one end of, the channel and the back walls of the cartons proper face the channel, means operative automatically when a carton reaches said location to shift the carton laterally over said one end of the channel and in front of one of the pusher fingers so that it is subject to being pushed by the one finger and embodying a horizontal rock shaft disposed under and lengthwise of the top of the frame structure and operatively connected to the motor so that it is rocked back and forth during drive of said motor, a first upstanding arm connected fixedly to one end of the rock shaft, a second upstanding arm projecting a material distance above the first arm, having the lower end thereof pivoted in order that it is capable of swinging transversely of the top, and having its central portion connected to the upper end of the first arm by a yielding spring type connection in order that it is capable of swinging conjointly with the first arm and also remaining stationary during swing of said first arm, and a pusher head connected fixedly to the upper end of the second arm, a latch device operative to hold the second arm in its retracted position until a carton is fed to said location, and a cover closing member mounted movably on the frame structure rearwards of said one end of the channel, connected for actuation by the prime mover and operative automatically after a carton has been pushed by the endless conveyor to close the cover.

37. A machine adapted automatically to close cartons of the type that embodies a box-like carton proper with upstanding flaps on its end walls and a hinged upstanding cover on its back wall, and comprising a horizontally elongated frame structure, a motor on the frame structure, an endless conveyor mounted on the frame structure so that it extends longitudinally thereof and has a horizontal upper reach, connected to be driven continuously in one direction by the motor, and provided with a series of pusher fingers spaced equidistantly apart and arranged so that when they travel in said upper reach they project upwards and are adapted to push in an endwise fashion cartons that are disposed in front of them, power driven conveyor means for feeding the cartons to be closed one at a time and in an endwise fashion to a location on the frame structure wherein they are disposed in parallel relation with, and at one side of the receiving end of the upper reach of, the conveyor, means operative automatically when a carton reaches said location to shift the carton laterally over said receiving end and in front of one of the pusher fingers so that it is subject to being pushed by the one finger, and embodying a horizontal rock shaft disposed lengthwise of the frame structure and operatively connected to the motor so that it is rocked back and forth during drive of said motor, a first upstanding arm connected fixedly to one end of the rock shaft, a second upstanding arm projecting a material distance above the first arm, having the lower end thereof pivoted in order that it is capable of swinging transversely of said frame structure, and having its central portion connected to the upper end of the first arm by a yielding spring type connection in order that it is capable of swinging conjointly with the first arm and also remaining stationary during swing of said first arm, and a pusher head connected fixedly to the upper end of the second arm, a latch device operative to hold the second arm in its retracted position until a carton is fed to said location, a movably mounted end tucker mounted on the frame structure adjacent the receiving end of the conveyor, connected for actuation by the motor, and operative immediately after shift of a carton over said receiving end by the pusher head to fold inwards and downwards the flap on the trailing end wall of the carton proper, a second end tucker mounted on the frame structure in opposed relation with the movable end tucker and arranged and adapted after operation of said end tucker on a carton to fold inwards and downwards the flap on the leading end wall of the carton proper, and means mounted on the frame structure rearwards of the second end tucker and operative automatically after a carton has been

pushed by the endless conveyor past said second end tucker to close the cover.

38. A machine adapted automatically to close cartons of the type that embodies a box-like carton proper with upstanding flaps on its end walls and a hinged upstanding cover on its back wall, and comprising a frame structure having a flat elongated top with a longitudinal channel therein, a motor mounted on the frame structure beneath the top, an endless conveyor having a horizontal upper reach disposed within, and extending lengthwise of, the channel in the top, connected to be driven continuously by the motor in such manner that said upper reach travels from one end of the channel to the other end, and provided with a series of pusher fingers spaced equidistantly apart and arranged so that when they travel in said upper reach they project upwards above the top and are adapted to push in an endwise fashion cartons that are disposed in front of them, power driven conveyor means for feeding the cartons to be closed one at a time and in an endwise fashion to a location on the top wherein they are disposed in parallel relation with, and at one side of said one end of, the channel, means operative automatically when a carton reaches said location to shift the carton laterally over said one end of the channel and in front of one of the pusher fingers so that it is subject to being pushed by the one finger and embodying a horizontal rock shaft disposed under and lengthwise of the top of the frame structure and operatively connected to the motor so that it is rocked back and forth during drive of said motor, a first upstanding arm connected fixedly to one end of the rock shaft, a second upstanding arm projecting a material distance above the first arm, having the lower end thereof pivoted in order that it is capable of swinging transversely of the top, and having its central portion connected to the upper end of the first arm by a yielding spring type connection in order that it is capable of swinging conjointly with the first arm and also remaining stationary during swing of said first arm, and a pusher head connected fixedly to the upper end of the second arm, a latch device operative to hold the second arm in its retracted position until a carton is fed to said location, a movably mounted end tucker mounted on the frame structure adjacent said one end of the channel, connected for actuation by the motor, and operative immediately after shift of a carton over said one end of the channel by the pusher head to fold inwards and downwards the flap on the trailing end wall of the carton proper, a second end tucker mounted on the frame structure in opposed relation with the movable end tucker and arranged and adapted after operation of said end tucker on a carton to fold inwards and downwards the flap on the leading end wall of the carton proper, and means mounted on the frame structure rearwards of the second end tucker and operative automatically after a carton has been pushed by the endless conveyor past said second end tucker to close the cover.

39. A machine adapted automatically to close cartons of the type that embodies a box-like carton proper with upstanding flaps on its end walls and a hinged upstanding tongue equipped cover on its back wall, and a cup shaped liner fitting within the carton proper and having the upper parts of its front, end and back walls extending upwards beyond the upper margins of the front, end and back walls of the carton proper, and comprising a frame structure having a flat elongated top with a longitudinal channel therein, a motor mounted on the frame structure beneath the top, an endless conveyor having a horizontal upper reach disposed within, and extending lengthwise of, the channel in the top, connected to be driven continuously by the motor in such manner that said upper reach travels from one end of the channel to the other end, and provided with a series of pusher fingers spaced equidistantly apart and arranged so that when they travel in said upper reach they project upwards above the top and are adapted to push in an endwise fashion cartons that are disposed in front of them, power driven conveyor means for feeding the cartons to be closed one at a time and in an endwise fashion to a location on the top wherein they are disposed in parallel relation with, and at one side of said one end of, the channel and the back walls of the cartons proper face the channel, means operative automatically when a carton reaches said location to shift the carton laterally over said one end of the channel and in front of one of the pusher fingers so that it is subject to being pushed by the one finger and embodying a horizontal rock shaft disposed under and lengthwise of the top of the frame structure and operatively connected to the motor so that it is rocked back and forth during drive of said motor, a first upstanding arm connected fixedly to one end of the rock shaft, a second upstanding arm projecting a material distance above the first arm, having the lower end thereof pivoted in order that it is capable of swinging transversely of the top, and having its central portion connected to the upper end of the first arm by a yielding spring type connection in order that it is capable of swinging conjointly with the first arm and also remaining stationary during swing of said first arm, and a pusher head connected fixedly to the upper end of the second arm, a latch device operative to hold the second arm in its retracted position until a carton is fed to said location, a side tucker mounted to swing conjointly with the pusher head and operative in connection with shift of a carton over said one end of the channel to fold inwards and downwards the upper part of the front wall of the liner of the carton proper, a movably mounted end tucker mounted on the frame structure adjacent said one end of the channel, connected for actuation by the motor, and operative immediately after operation of the side tucker on a carton over said one end of the channel to fold inwards and downwards the flap on the trailing end wall of the carton proper and the upper part of the adjacent end wall of the liner, a second end tucker mounted on the frame structure in opposed relation with the movable end tucker and arranged and adapted after operation of said end tucker on a carton to fold inwards and downwards the flap on the leading end wall of the carton proper and the upper part of the adjacent end wall of the liner of the carton, and means mounted on the frame structure rearwards of the second end tucker and operative automatically after a carton has been pushed by the endless conveyor past said second end tucker to close the cover of the carton and effect insertion of the tongue of the cover between the upper margin of the front wall of the carton proper and the adjacent portion of the front wall of the carton liner.

40. A machine adapted automatically to close cartons of the type that embodies a box-like car-

ton proper with upstanding flaps on its end walls and a hinged upstanding tongue equipped cover on its back wall, and a cup-shaped liner fitting within the carton proper and having the upper parts of its front, end and back walls extending upwards beyond the upper margins of the front, end and back walls of the carton proper, and comprising a frame structure having a flat elongated top with a longitudinal channel therein, a motor mounted on the frame structure beneath the top, an endless conveyor having a horizontal upper reach disposed within, and extending lengthwise of, the channel in the top, connected to be driven continuously by the motor in such manner that said upper reach travels from one end of the channel to the other end, and provided with a series of pusher fingers spaced equidistantly apart and arranged so that when they travel in said upper reach they project upwards above the top and are adapted to push in an endwise fashion cartons that are disposed in front of them, power driven conveyor means for feeding the cartons to be closed one at a time and in an endwise fashion to a location on the top wherein they are disposed in parallel relation with, and at one side of said one end of, the channel and the back walls of the cartons proper face the channel, means operative automatically when a carton reaches said location to shift the carton laterally over said one end of the channel and in front of one of the pusher fingers so that it is subject to being pushed by the one finger and embodying a horizontal rock shaft disposed under and lengthwise of the top of the frame structure and operatively connected to the motor so that it is rocked back and forth during drive of said motor, a first upstanding arm connected fixedly to one end of the rock shaft, a second upstanding arm projecting a material distance above the first arm, having the lower end thereof pivoted in order that it is capable of swinging transversely of the top, and having its central portion connected to the upper end of the first arm by a yielding spring type connection in order that it is capable of swinging conjointly with the first arm and also remaining stationary during swing of said first arm, and a pusher head connected fixedly to the upper end of the second arm, means operative automatically in connection with shift of a carton over said one end of the channel by the pusher head to fold inwards and downwards the upper part of the front wall of the carton liner and embodying a third upstanding arm positioned adjacent the second arm, having its lower end pivotally mounted at a point above the pivoted lower end of said second arm and so that the third arm is capable of swinging transversely of the top, and having the portion thereof above its lower pivoted end pivotally connected to the central portion of the second arm so as to swing conjointly therewith but at a faster rate of speed, and a side tucker mounted on the upper end of the third arm, a latch device embodying coacting latch members on the third arm and the top of the frame structure and operative automatically to hold the second and third arms in their retracted position until a carton is fed by the power driven conveyor means onto said location, a movably mounted end tucker mounted on the frame structure adjacent said one end of the channel, connected for actuation by the motor, and operative immediately after operation of the side tucker on a carton over said one end of the channel to fold inwards and downwards the flap on the trailing end wall of the carton proper and the upper part of the adjacent end wall of the liner, a second end tucker mounted on the frame structure in opposed relation with the movable end tucker and arranged and adapted after operation of said end tucker on a carton to fold inwards and downwards the flap on the leading end wall of the carton proper and the upper part of the adjacent end wall of the liner of the carton, and means mounted on the frame structure rearwards of the second end tucker and operative automatically after a carton has been pushed by the endless conveyor past said second end tucker to close the cover of the carton and effect insertion of the tongue of the cover between the upper margin of the front wall of the carton proper and the adjacent portion of the front wall of the carton liner.

41. A machine adapted to close cartons of the type that embodies a box-like carton proper with upstanding flaps on its end walls and a hinged upstanding tongue equipped cover on its back wall, and comprising a frame structure, a prime mover associated with the frame structure, an endless conveyor having a substantially horizontal upper reach, connected for continuous drive in one direction by the prime mover, with a series of pusher fingers spaced equidistantly apart and a greater distance than the length of a carton and arranged so that when they travel in said upper reach they project upwards and are adapted to push in an endwise fashion cartons that are disposed in front of them, power driven means for feeding the cartons to be closed, one at a time over the receiving end of the upper reach of the conveyor into a position wherein they are subject to lengthwise propulsion by the pusher fingers, means disposed adjacent said receiving end of the upper reach of the conveyor and operative automatically when a carton is on said receiving end to fold inwards and downwards the flaps on the end walls of the carton, a prime mover actuated carton advancer device positioned adjacent the central portion of the upper reach of the conveyor and operative automatically after a carton passes the flap folding means to push the carton ahead of its pusher finger to the end that it remains momentarily stationary at a point over said upper reach of the conveyor, and a movable cover closing member mounted on the frame structure above said point, connected for actuation by said prime mover and operative automatically after a carton is brought momentarily to rest at said point as a result of the action of said advancer device to bring the cover of said carton downwards into a closed position.

42. A machine adapted automatically to close cartons of the type that embodies a box-like carton proper with a hinged upstanding tongue equipped cover on its back wall, and comprising a frame structure, a prime mover associated with said frame structure, an endless conveyor supported on said frame structure so that it has a substantially horizontal upper reach, connected for continuous drive in one direction by the prime mover, and provided with a series of pusher fingers spaced equidistantly apart and a greater distance than the length of a carton and arranged so that when they travel in said upper reach they project upwards and are adapted to push in an endwise fashion cartons that are disposed in front of them, power driven means for feeding the cartons to be closed, one at a time over the receiving end of the upper

reach of the conveyor into a position wherein they are subject to lengthwise propulsion by the pusher fingers, a prime mover actuated carton advancer device position adjacent the central portion of the upper reach of the conveyor and operative automatically when a carton is on said central portion of the conveyor to advance the carton ahead of its pusher finger to the end that it remains momentarily stationary at a particular point over said upper reach of the conveyor, and a movable cover closing member mounted on the frame structure above said point, connected for actuation by said prime mover and operative automatically after a carton is brought momentarily to rest at said point as the result of the action of the advancer device to swing the cover of the carton proper downwards into a closed position and at the same time effect insertion of the tongue on the cover inside of the upper margin of the front wall of the carton proper.

43. A machine adapted automatically to close cartons of the type that embodies a box-like carton proper with upstanding flaps on its end walls and a hinged upstanding cover on its back wall, and comprising a frame structure having a flat elongated top with a longitudinal channel therein, a prime mover mounted on the frame structure beneath the top, an endless conveyor having a horizontal upper reach disposed within, and extending lengthwise of, the channel in the top, connected to be driven continuously by the prime mover in such manner that said upper reach travels from one end of the channel to the other end, and provided with a series of pusher fingers spaced equidistantly apart and a greater distance than the length of a carton and arranged so that when they travel in said upper reach they project upwards above the top and are adapted to push in an endwise fashion cartons that are disposed in front of them, power driven means for feeding the cartons to be closed one at a time and in endwise fashion to a location on the top wherein they are positioned in parallel relation with, and at one side of said one end of, the channel and the back walls of their cartons proper face the channel, a movable pusher head mounted on the frame structure adjacent said location on the top, connected to be actuated by the prime mover in timed relation with the endless conveyor, and operative automatically when a carton is fed by the power driven means to said location on the top to shift the carton laterally ahead of the next following pusher finger, a movably mounted end tucker mounted on the frame structure and adjacent said one end of the tucker, connected for actuation by the prime mover in timed relation with said pusher head and operative automatically while a carton is over said one end of the channel to fold inwards and downwards the flap on the trailing end wall of the carton proper and the upper part of the adjacent end wall of the liner, a second end tucker mounted on the frame structure over the channel and in opposed relation with the movable end tucker and arranged and adapted after operation of said movable end tucker on a carton to fold inwards and downwards the flap on the leading end wall of the carton, a prime mover actuated carton advancer device positioned adjacent the central portion of the channel and behind the second end tucker and operative automatically after a carton passes said second end tucker to push the carton ahead of its pusher finger to the end that it remains momentarily stationary at a particular point over the channel, and a movable cover closing member mounted on the frame structure above said point, connected for actuation by said prime mover and operative automatically after a carton is brought momentarily to rest at said point as a result of the action of the advancer device to swing the cover of the carton proper downwards into a closed position and at the same time to effect insertion of the tongue on the cover between the upper margin of the front wall of the carton proper and the adjacent portion of the front wall of the carton liner.

44. A machine adapted automatically to close cartons of the type that embodies a box-like carton proper with upstanding flaps on its end walls and a hinged upstanding cover on its back wall, and comprising a frame structure having a flat elongated top with a longitudinal channel therein, a prime mover mounted on the frame structure beneath the top, an endless conveyor having a horizontal upper reach disposed within, and extending lengthwise of, the channel in the top, connected to be driven continuously by the prime mover in such manner that said upper reach travels from one end of the channel to the other end, and provided with a series of pusher fingers spaced equidistantly apart and a greater distance than the length of a carton and arranged so that when they travel in said upper reach they project upwards above the top and are adapted to push in an endwise fashion cartons that are disposed in front of them, power driven means for feeding the cartons to be closed one at a time and in endwise fashion to a location on the top wherein they are positioned in parallel relation with, and at one side of said one end of, the channel, a movable pusher head mounted on the frame structure adjacent said location on the top, connected to be actuated by the prime mover in timed relation with the endless conveyor, and operative automatically when a carton is fed by the power driven means to said location on the top to shift the carton laterally in such manner that it is positioned over said one end of the channel ahead of the next following pusher finger to the end that it momentarily remains stationary on said one end of the channel, a movably mounted end tucker mounted on the frame structure adjacent said one end of the tucker, connected for actuation by the prime mover in timed relation with said pusher head and operative automatically while a carton is momentarily at rest over said one end of the channel to fold inwards and downwards the flap on the trailing end wall of the carton proper, a stationary end tucker mounted on the frame structure over the channel and in opposed relation with the movable end tucker and arranged and adapted in connection with initial pushing of a carton by the following pusher finger on the endless conveyor and after operation of said movable end tucker to fold inwards and downwards the flap on the leading end wall of the carton proper, a prime mover actuated carton advancer device positioned adjacent the central portion of the channel and behind the stationary end tucker and operative automatically after a carton passes said stationary end tucker to push the carton ahead of its pusher finger to the end that it remains momentarily stationary at a particular point over the channel, and a movable cover closing member mounted on the

frame structure above said point, connected for actuation by said prime mover and operative automatically after a carton is brought momentarily to rest at said point as a result of the action of the advancer device to swing the cover of thhe carton proper downwards into a closed position.

45. A machine adapted automatically to close cartons of the type that embodies a box-like carton proper with upstanding flaps on its end walls and a hinged upstanding tongue equipped cover on its back wall, and a cup shaped liner fitting within the carton proper and having the upper parts of its front, end and back walls extending upwards beyond the upper margins of the front, end and back walls of the carton proper, and comprising a frame structure having a flat elongated top with a longitudinal channel therein, a prime mover mounted on the frame structure beneath the top, an endless conveyor having a horizontal upper reach disposed within, and extending lengthwise of, the channel in the top, connected to be driven continuously by the prime mover in such manner that said upper reach travels from one end of the channel to the other end, and provided with a series of pusher fingers spaced equidistantly apart and a greater distance than the length of a carton and arranged so that when they travel in said upper reach they project upwards above the top and are adapted to push in an endwise fashion cartons that are disposed in front of them, power driven means for feeding the cartons to be closed one at a time and in endwise fashion to a location on the top wherein they are positioned in parallel relation with, and at one side of said one end of, the channel and the back walls of their cartons proper face the channel, a movable pusher head mounted on the frame structure adjacent said location on the top, connected to be actuated by the prime mover in timed relation with the endless conveyor, and operative automatically when a carton is fed by the power driven means to said location on the top to shift the carton laterally in such manner that it is positioned over said one end of the channel ahead of the next following pusher finger to the end that it momentarily remains stationary on said one end of the channel, a side tucker mounted to move conjointly with the pusher head and operative in connection with shift of a carton over said one end of the channel to fold inwards and downwards the upper part of the front wall of the carton liner, a movably mounted end tucker mounted on the frame structure and adjacent said one end of the tucker, connected for actuation by the prime mover in timed relation with said pusher head and side tucker and operative automatically directly after operation of the side tucker on a carton and while the carton is momentarily at rest over said one end of the channel to fold inwards and downwards the flap on the trailing end wall of the carton proper and the upper part of the adjacent end wall of the liner, a stationary end tucker mounted on the frame structure over the channel and in opposed relation with the movable end tucker and arranged and adapted in connection with initial pushing of a carton by the following pusher finger on the endless conveyor and after operation of said movable end tucker to fold inwards and downwards the flap on the leading end wall of the carton proper and the upper part of the adjacent end wall of the carton liner, a prime mover actuated carton advancer device positioned adjacent the central portion of the channel and behind the stationary end tucker and operative automatically after a carton passes said stationary end tucker to push the carton ahead of its pusher finger to the end that it remains momentarily stationary at a particular point over the channel, and a movable cover closing member mounted on the frame structure above said point, connected for actuation by said prime mover and operative automatically after a carton is brought momentarily to rest at said point as a result of the action of the advancer device to swing the cover of the carton proper downwards into a closed position and at the same time to effect insertion of the tongue on the cover between the upper margin of the front wall of the carton proper and the adjacent portion of the front wall of the carton liner.

46. A machine adapted automatically to close cartons of the type that embodies a box-like carton proper with upstanding flaps on its end walls and a hinged upstanding cover on its back wall, and comprising a frame structure having a flat elongated top with a longitudinal channel therein, a prime mover mounted on the frame structure beneath the top, an endless conveyor having a horizontal upper reach disposed within, and extending lengthwise of, the channel in the top, connected to be driven continuously by the prime mover in such manner that said upper reach travels from one end of the channel to the other end, and provided with a series of pusher fingers spaced equidistantly apart and a greater distance than the length of a carton and arranged so that when they travel in said upper reach they project upwards above the top and are adapted to push in an endwise fashion cartons that are disposed in front of them, power driven means for feeding the cartons to be closed one at a time and in endwise fashion to a location on the top wherein they are positioned in parallel relation with, and at one side of said one end of, the channel, a movable pusher head mounted on the frame structure adjacent said location on the top, connected to be actuated by the prime mover in timed relation with the endless conveyor, and operative automatically when a carton is fed by the power driven means to said location on the top to shift the carton laterally ahead of the next following pusher finger, a movably mounted end tucker mounted on the frame structure adjacent one end of the channel and connected to be moved back and forth by the prime mover through the medium of mechanism including a rotary cam wheel, and operative automatically while a carton is over said one end of the channel to fold inwards and downwards the flap on the trailing end wall of the carton proper, a stationary end tucker mounted on the frame structure over the channel and in opposed relation with the movable end tucker and arranged and adapted in connection with initial pushing of a carton by the following pusher finger on the endless conveyor and after operation of said movable end tucker to fold inwards and downwards the flap on the leading end wall of the carton proper, a reciprocatory carton advancer device positioned adjacent the central portion of the channel and behind the stationary end tucker, connected to be reciprocated by mechanical means including said rotary cam wheel, and operative automatically after a carton passes said stationary end tucker to push the carton ahead of its pusher finger to the end that it remains momentarily stationary at a particular point over the channel, and a movable cover closing member

mounted on the frame structure above said point connected for actuation by said prime mover and operative automatically after a carton is brought momentarily to rest at said point as a result of the action of the advancer device to swing the cover of the carton proper downwards into a closed position.

47. A machine adapted automatically to close cartons of the type that embodies a box-like carton proper with upstanding flaps on its end walls and a hinged upstanding tongue equipped cover on its back wall, and a cup-shaped liner fitting within the carton proper and having the upper parts of its front, end and back walls extending upwards beyond the upper margins of the front, end and back walls of the carton proper, and comprising a frame structure having a flat elongated top with a longitudinal channel therein, a prime mover mounted on the frame structure beneath the top, an endless conveyor having a horizontal upper reach disposed within, and extending lengthwise of, the channel in the top, connected to be driven continuously by the prime mover in such manner that said upper reach travels from one end of the channel to the other end, and provided with a series of pusher fingers spaced equidistantly apart and a greater distance than the length of a carton and arranged so that when they travel in said upper reach they project upwards above the top and are adapted to push in an endwise fashion cartons that are disposed in front of them, power driven means for feeding the cartons to be closed one at a time and in endwise fashion to a location on the top wherein they are positioned in parallel relation with, and at one side of said one end of, the channel and the back walls of their cartons proper face the channel, a movable pusher head mounted on the frame structure adjacent said location on the top, connected to be actuated by the prime mover in timed relation with the endless conveyor, and operative automatically when a carton is fed by the power driven means to said location on the top to shift the carton laterally in such manner that it is positioned over said one end of the channel ahead of the next following pusher finger to the end that it momentarily remains stationary on said one end of the channel, a side tucker mounted to move conjointly with the pusher head and operative in connection with shift of a carton over said one end of the channel to fold inwards and downwards the upper part of the front wall of the carton liner, a movably mounted end tucker mounted on the frame structure adjacent one end of the channel and connected to be moved back and forth by the prime mover through the medium of mechanism including a rotary cam wheel, and operative automatically directly after operation of the side tucker on a carton and while the carton is momentarily at rest over said one end of the channel to fold inwards and downwards the flap on the trailing end wall of the carton proper and the upper part of the adjacent end wall of the liner, a stationary end tucker mounted on the frame structure over the channel and in opposed relation with the movable end tucker and arranged and adapted in connection with initial pushing of a carton by the following pusher finger on the endless conveyor and after operation of said movable end tucker to fold inwards and downwards the flap on the leading end wall of the carton proper and the upper part of the adjacent end wall of the carton liner, a reciprocatory carton advancer device positioned adjacent the central portion of the channel and behind the stationary end tucker, connected to be reciprocated by mechanical means including said rotary cam wheel, and operative automatically after a carton passes said stationary end tucker to push the carton ahead of its pusher finger to the end that it remains momentarily stationary at a particular point over the channel, and a movable cover closing member mounted on the frame structure above said point connected for actuation by said prime mover and operative automatically after a carton is brought momentarily to rest at said point as a result of the action of the advancer device to swing the cover of the carton proper downwards into a closed position and at the same time to effect insertion of the tongue on the cover between the upper margin of the front wall of the carton proper and the adjacent portion of the front wall of the carton liner.

48. A machine adapted automatically to close cartons of the type that embodies a box-like carton proper with a hinged upstanding cover on its back wall, and comprising a frame structure, a prime mover associated with said frame structure, an endless conveyor supported on said frame structure so that it has a substantially horizontal upper reach, connected for continuous drive in one direction by the prime mover, and provided with a series of pusher fingers spaced equidistantly apart and a greater distance than the length of a carton and arranged so that when they travel in said upper reach they project upwards and are adapted to push in an endwise fashion cartons that are disposed in front of them, power driven means for feeding the cartons to be closed, one at a time over the receiving end of the upper reach of the conveyor into a position wherein they are subject to lengthwise propulsion by the pusher fingers, a prime mover actuated advancer device positioned adjacent the central portion of the upper reach of the conveyor, operative automatically to push a carton ahead of its pusher finger to the end that it remains momentarily stationary at a particular point over said upper reach of the conveyor and arranged and adapted in connection with a carton pushing operation to push the carton first at a slow rate of speed, then at a high rate of speed, and finally at a low rate of speed, and a movable cover closing member mounted on the frame structure above said point, connected for actuation by said prime mover in timed relation with the advancer device and operative automatically after a carton is brought momentarily to rest at said point as the result of the action of said advancer device to swing the cover of the carton proper downwards into a closed position.

49. A machine adapted automatically to close cartons of the type that embodies a box-like carton proper with a hinged upstanding tongue equipped cover on its back wall, and comprising a frame structure with a substantially horizontal support thereon, a prime mover in associated relation with the frame structure, mechanism on the frame structure connected for actuation by the prime mover and operative automatically to feed the cartons to be closed in series form and in such manner that each carton travels endwise over the support from a first location on the support to a second location on the support and then remains stationary at said second location for a limited period of time, means mounted on the supporting structure adjacent said second location and arranged and adapted when a carton is fed to said location to support the carton only

adjacent the back wall of the carton proper and in a slightly elevated position to the end that the substance within the carton tends to bulge outwards the front wall of the carton proper, and a movably mounted closing member mounted on the frame structure adjacent said second location on the support, connected for actuation by said prime mover and operative automatically when a carton remains stationary at said second location and is supported by the supporting means to close the cover and effect insertion of the tongue on the cover inside of the upper margin of the front wall of the carton proper.

50. A machine adapted automatically to close cartons of the type that embodies a box-like carton proper with upstanding flaps on its end walls and a hinged upstanding tongue equipped cover on its back wall, and a cup-shaped substance containing liner fitting within the carton proper and having the upper parts of its front, end and back walls extending upwards beyond the upper margins of the front, end and back walls of the carton proper, and comprising a frame structure with a substantially horizontal support thereon, a prime mover in associated relation with the frame structure, mechanism on the frame structure connected for actuation by the prime mover and operative automatically to feed the cartons to be closed in series form and in such manner that each carton travels endwise over the support from a first location on the support to a second location on the support and then remains stationary at said second location for a limited period of time, a movably mounted side tucker mounted on the frame structure adjacent the first location on the support connected for actuation by the prime mover in timed relation with the feed mechanism, and operative automatically when a carton is at said first location to fold inwards and downwards the upper part of the front wall of the liner of the carton, a movably mounted end tucker mounted on the frame structure adjacent the first location, connected for actuation by the prime mover in timed relation with said feed mechanism and the side tucker, and operative after a carton is operated upon by the side tucker and while the carton is at said first location to fold inwards and downwards the flap on the trailing end wall of the carton proper and the upper part of the adjacent end wall of the liner, a second end tucker mounted on the frame structure in opposed relation with the movable end tucker and arranged and adapted after operation of said movable end tucker on a carton and before the carton reaches said second location on the support to fold inwards and downwards the flap on the leading end wall of the carton proper and the upper part of the adjacent end wall of the carton liner, means mounted on the supporting structure adjacent said second location and arranged and adapted when a carton is fed to said location to support the carton only adjacent the back wall of the carton proper and in a slightly elevated position to the end that the substance within the carton liner tends to bulge outwards the front wall of the carton proper, and a movably mounted closing member mounted on the frame structure adjacent said second location on the support, connected for actuation by said prime mover and operative automatically when a carton remains stationary at said second location and is supported by the supporting means to close the cover and effect insertion of the tongue on the cover between the upper margin of the front wall of the carton proper and the adjacent portion of the front wall of the carton liner.

51. A machine adapted automatically to close cartons of the type that embodies a box-like carton proper with an upstanding cover hinged to said back wall and provided at its upper margin with a substantially coplanar tongue, and comprising a frame structure with a substantially horizontal support thereon, a prime mover in associated relation with the frame structure, mechanism on the frame structure connected for actuation by the prime mover and operative automatically to feed the cartons to be closed in series form and in such manner that each carton first remains stationary at a first location on the support for a limited period of time, then travels endwise over the support to a second location on the support and then remains stationary at said second location for a limited period of time, means embodying a stationary element and a coacting movably mounted prime mover actuated element, located adjacent the first location on the support and operative automatically when a carton remains stationary on the first location to bend or fold the tongue downwards at substantially right angles to the cover, means mounted on the supporting structure adjacent said second location and arranged and adapted when a carton is fed to said location to support the carton only adjacent the back wall of the carton proper and in a slightly elevated position to the end that the substance within the carton tends to bulge outwards the front wall of the carton proper, and a movably mounted closing member mounted on the frame structure adjacent said second location on the support, connected for actuation by said prime mover and operative automatically when a carton remains stationary at said second location and is supported by the supporting means to close the cover and effect insertion of the tongue on the cover inside of the upper margin of the front wall of the carton proper.

52. A machine adapted automatically to close cartons of the type that embodies a box-like carton proper with an upstanding cover hinged to its back wall and provided at its upper margin with a substantially coplanar tongue, and comprising a frame structure with a substantially horizontal support thereon, a prime mover associated with the frame structure, mechanism on the frame structure connected for actuation by the prime mover and operative automatically to feed the cartons to be closed in series form and in such manner that each carton first remains stationary at a first location on the support for a limited period of time, then travels endwise over the support to a second location on the support and then remains stationary at said second location for a limited period of time, means embodying a stationary element and a coacting movably mounted prime mover actuated element, located adjacent the first location on the support and operative automatically when a carton remains stationary on said first location to bend or fold the tongue downwards at substantially right angles to the cover, means mounted on the frame structure over the portion of the support that is between the first and second locations and adapted in connection with travel of a carton to said second location partially to swing inwards and downwards the cover with its folded tongue, means mounted on the supporting structure adjacent said second location and arranged and adapted when a carton is fed to said location to support the carton only adjacent the back

wall of the carton proper and in a slightly elevated position to the end that the substance within the carton tends to bulge outwards the front wall of the carton proper and a movable cover closing member mounted on the frame structure adjacent said second location, connected for actuation by said prime mover in timed relation with the carton feeding mechanism, and operative automatically when a carton remains stationary at said second location and is supported by said supporting means completely to close the cover and simultaneously effect insertion of the tongue on the cover inside of the upper margin of the front wall of the carton proper.

53. A machine adapted automatically to close cartons of the type that embodies a box-like carton proper with upstanding flaps on its end walls, and an upstanding cover hinged to its back wall and provided at its upper margin with a substantially coplanar tongue, and comprising a frame structure with a substantially horizontal support thereon, a prime mover associated with the frame structure, mechanism on the frame structure connected for actuation by the prime mover and operative automatically to feed the cartons to be closed in series form and in such manner that each carton first remains stationary at a first location on the support for a limited period of time, then travels endwise over the support to a second location on the support and then remains stationary at said second location for a limited period of time, means embodying a stationary element and a coacting movably mounted prime mover actuated element, located adjacent the first location on the support and operative automatically when a carton remains stationary on the first location to bend or fold the tongue downwards at substantially right angles to the cover, a movably mounted end tucker mounted on the frame structure adjacent the first location, connected for actuation by the prime mover, and operative when a carton remains stationary at said first location and after operation of the folding means to fold inwards and downwards the flap on the trailing end wall of the carton proper, a stationary end tucker mounted on the frame structure above the support and in opposed relation with the movable end tucker and arranged and adapted in connection with initial travel of a carton from said first location to fold inwards and downwards the flap on the leading end wall of the carton proper, a pair of laterally spaced members mounted in a fixed position over, and extending lengthwise of, the portion of the support that is between the stationary end tucker and the second location and arranged and adapted so to coact with one another that they serve in connection with travel of a carton between said stationary end tucker and said second location partially to swing downwards the cover while at the same time maintaining the tongue on the cover in its folded position, means mounted on the supporting structure adjacent said second location and arranged and adapted when a carton is fed to said location to support the carton only adjacent the back wall of the carton proper and in a slightly elevated position to the end that the substance within the carton tends to bulge outwards the front wall of the carton proper and a movable cover closing member mounted on the frame structure adjacent said second location, connected for actuation by said prime mover in timed relation with the carton feeding mechanism, and operative automatically when a carton remains stationary at said second location and is supported by said supporting means completely to close the cover and simultaneously effect insertion of the tongue on the cover inside of the upper margin of the front wall of the carton proper.

54. In a machine adapted automatically to close cartons, the combination of an endless conveyor connected to be driven continuously in one direction by a prime mover and provided with pusher fingers spaced apart a greater distance than the length of a carton, power driven means for feeding the cartons to be closed one at a time to the conveyor into a position wherein each carton is disposed ahead of the next following pusher finger to the end that it momentarily remains stationary on said conveyor, and a movably mounted end tucker connected for actuation by the prime mover in timed relation with said power driven means and operative automatically when a carton is momentarily at rest on said conveyor to fold inwards and downwards the flap on the end wall of said carton.

55. In a machine adapted automatically to close cartons having walls and flaps extending thereabove, the combination of an endless conveyor connected to be driven continuously in one direction by a prime mover and provided with pusher fingers spaced apart a materially greater distance than the length of a carton and adapted to engage and move cartons fed onto said conveyor, power driven means for feeding the cartons to be closed one at a time to the conveyor into a position located at an appreciable distance ahead of the next following pusher finger to the end that it momentarily remains stationary at said position on said conveyor, and a movably mounted tucker adjacent said position connected for actuation by the prime mover in timed relation with said power driven means and operative automatically when a carton is momentarily at rest on said conveyor at said position to fold inwards and downwards a flap at the wall of said carton.

56. In a machine adapted automatically to close cartons of a type having an upstanding cover provided with a coplanar tongue, the combination of an endless conveyor connected to be driven continuously in one direction by a prime mover and provided with pusher fingers spaced apart a distance about one-third greater than the length of a carton and adapted to engage and move cartons fed onto said conveyor, power driven means for feeding the cartons to be closed one at a time to the conveyor into a position located appreciably ahead of the next following pusher finger to the end that it momentarily remains stationary at said position on said conveyor, and a tongue folder embodying a stationary element adjacent said position and a coacting element mounted for conjoint movement with said power driven means and operative in connection with operation of said means to contact and fold the tongue so that it extends substantially at right angles to said cover.

57. In a machine adapted automatically to close cartons of the type that embodies a box-like carton with upstanding flaps on its end walls, the combination of an endless conveyor connected to be driven continuously in one direction by a prime mover and provided with pusher fingers spaced apart a materially greater distance than the length of a carton and adapted to engage and move cartons fed onto said conveyor, power driven

means for feeding the cartons to be closed one at a time to the conveyor into a position located at a distance appreciably ahead of the next following pusher finger to the end that it momentarily remains stationary at said position on said conveyor, a movably mounted end tucker connected for actuation by the prime mover in timed relation with said power driven means and operative automatically when a carton is momentarily at rest on said conveyor at said position to fold inwards and downwards the flap on the end wall of said carton, and a stationary end tucker adjacent said position and in opposed relation with the movable end tucker and arranged and adapted in connection with initial movement of a carton from said position to fold inwards and downwards the flap on the leading end wall of the carton.

58. In a machine having a substantially horizontal support and adapted automatically to close cartons of the type that embodies a box-like substance-containing carton with a hinged upstanding tongue equipped cover on its back wall, an elevating rail mounted along said support and an extension finger in spaced and substantially parallel relation above said rail, said rail and finger being arranged and adapted when a carton is positioned therebetween to support the carton only adjacent the back wall of the carton and in a position elevated with respect to said horizontal support to the end that the substance within the carton tends to bulge outwards the front wall of the carton.

59. In a machine adapted automatically to close a carton having a cover, said machine having an endless conveyor supported so that said conveyor has a substantially horizontal upper reach, connected for continuous drive in one direction by a prime mover and provided with a series of pusher fingers spaced equidistantly apart and at a greater distance than the length of a carton and arranged so that when they travel in said upper reach they project upwards and are adapted to push in an endwise fashion cartons that are disposed in front of them, a prime mover actuated carton advancer positioned adjacent the central portion of the upper reach of the conveyor and operative automatically when a carton is on said central portion of the conveyor to advance the carton ahead of its pusher finger to the end that it remains momentarily stationary at a particular point over said upper reach of the conveyor.

60. The combination as in claim 59 including a movable cover closing member adjacent said point, connected for actuation by said prime mover, and operative automatically when a carton remains stationary at said point to close the cover.

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