Sept. 21, 1965 S. F. ANDERSON ETAL 3,206,915

PACKAGING APPARATUS

Filed Oct. 30, 1961

5 Sheets-Sheet 1

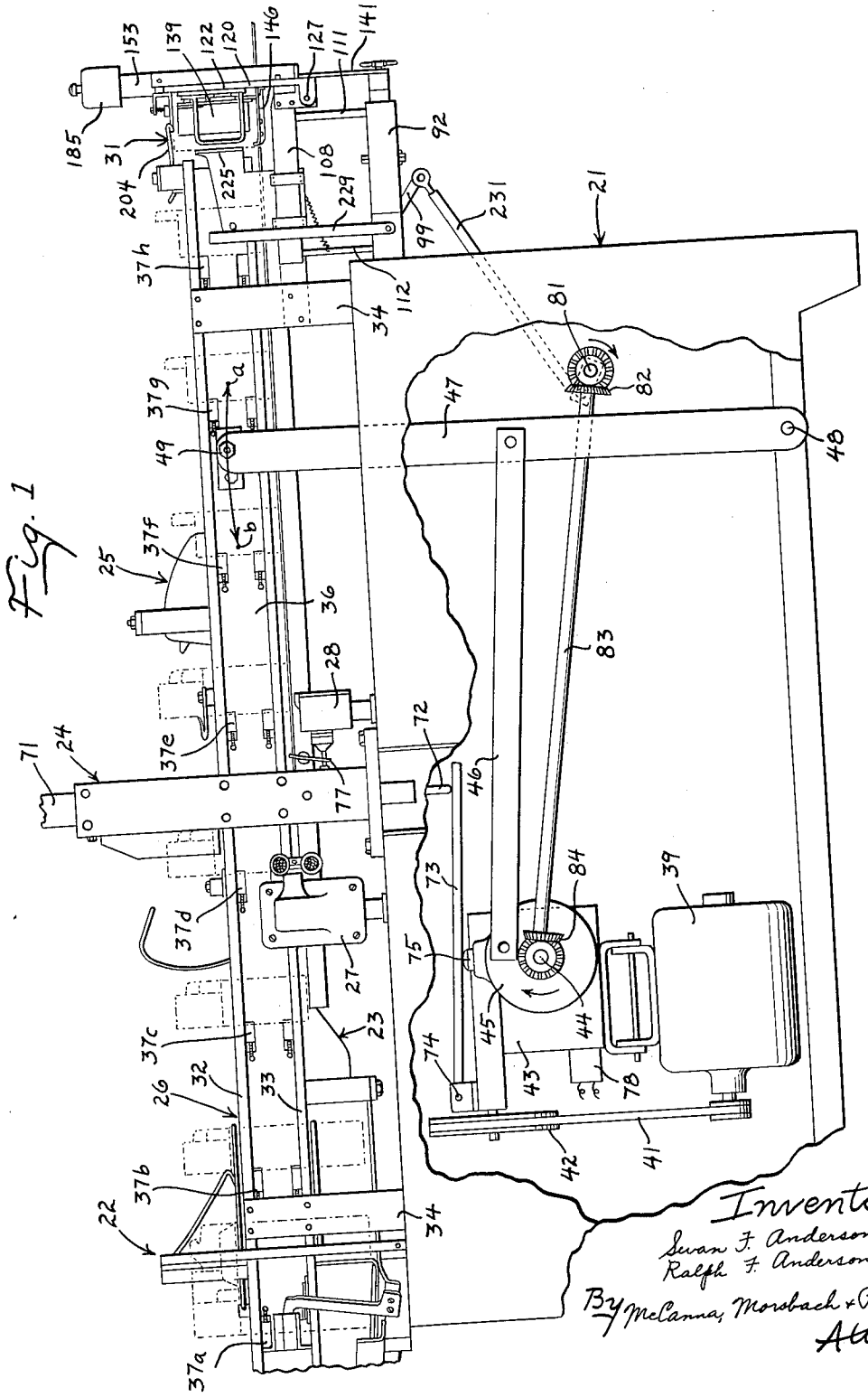


Fig. 1

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Filed Oct. 30, 1961 5 Sheets-Sheet 2

Fig. 2

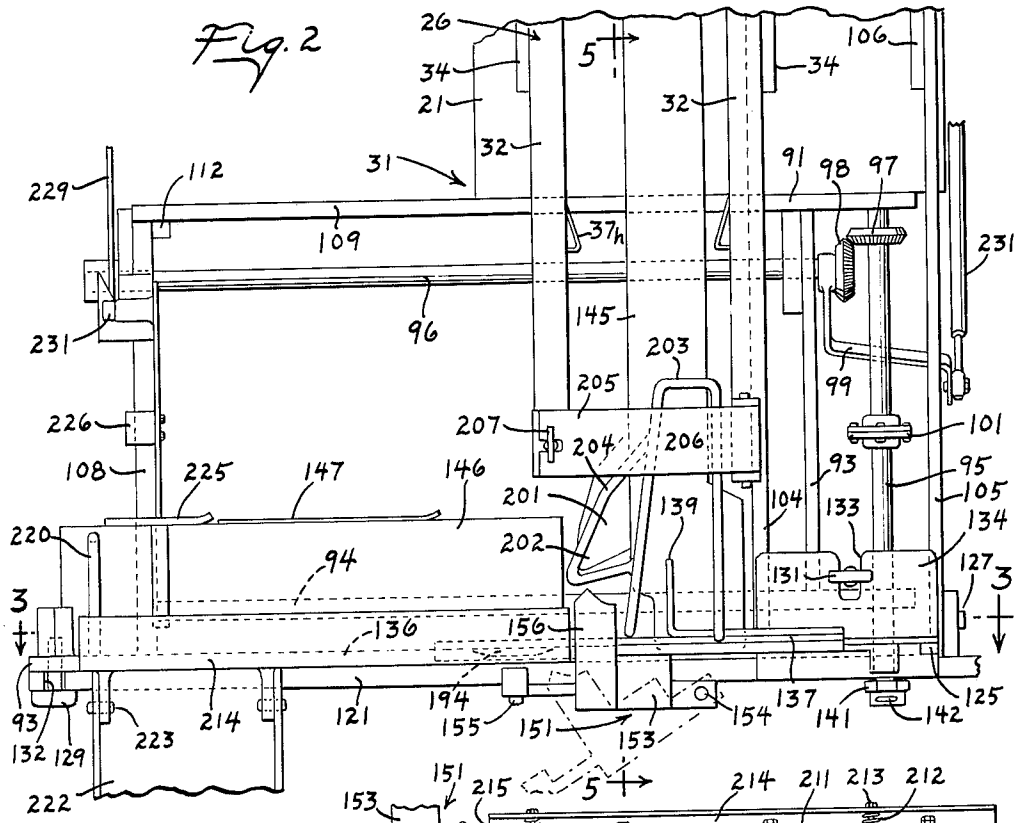
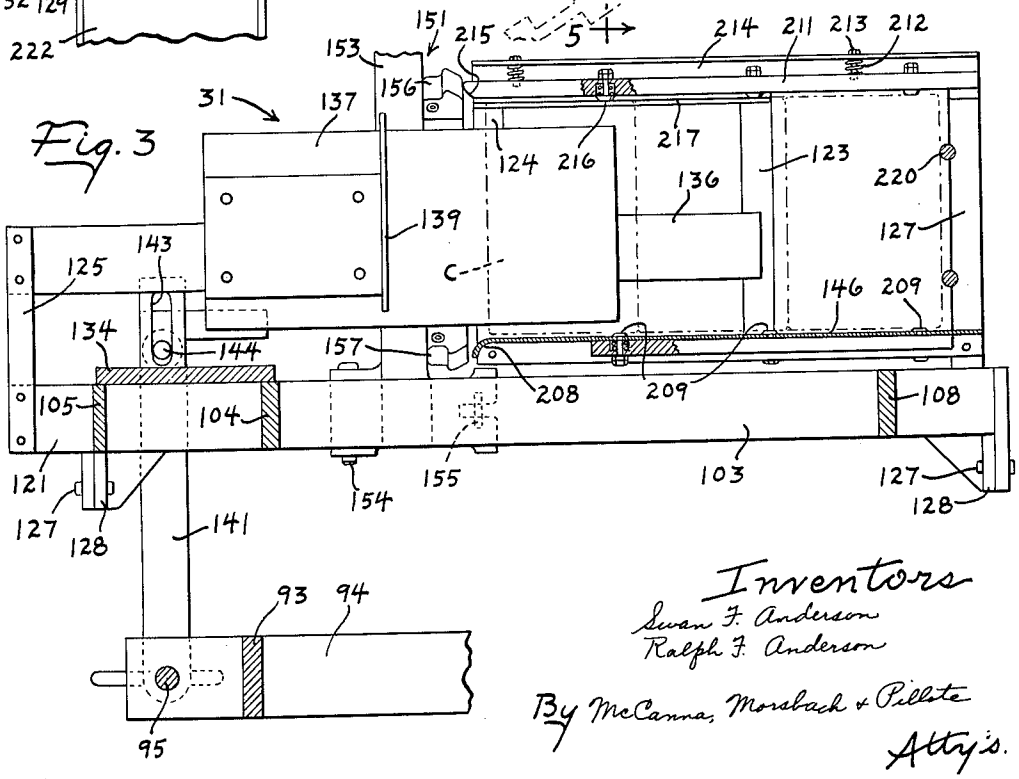


Fig. 3



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Filed Oct. 30, 1961 5 Sheets-Sheet 3

Fig. 4

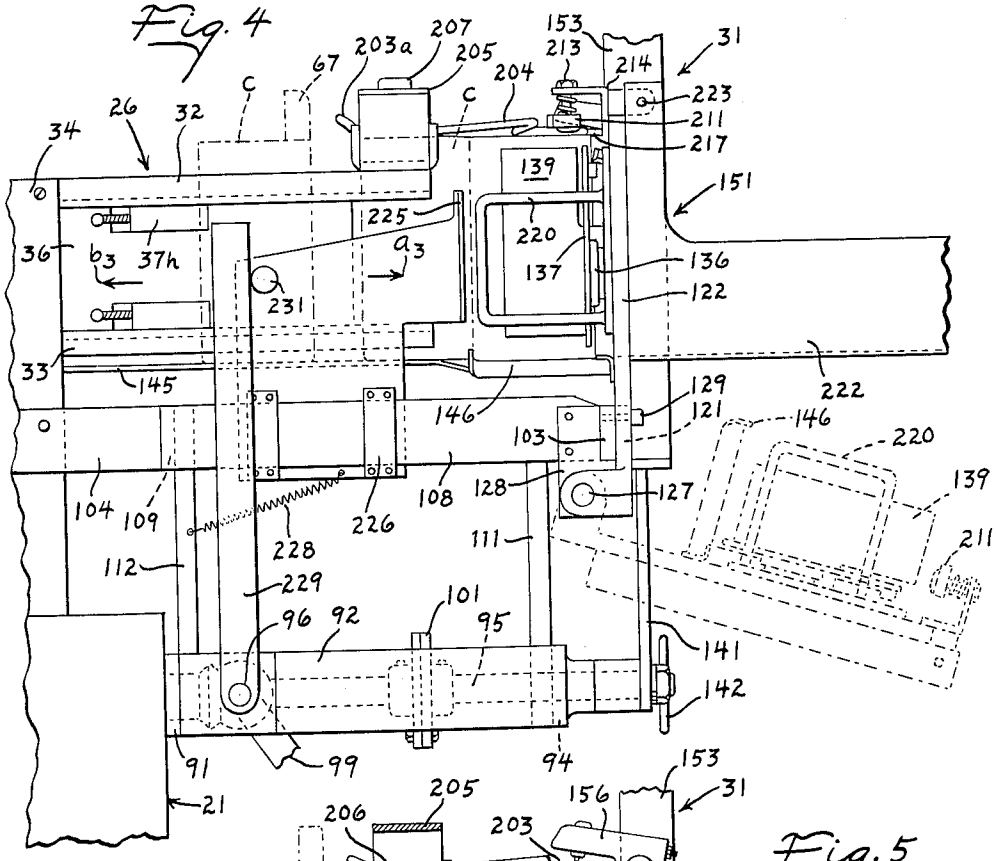
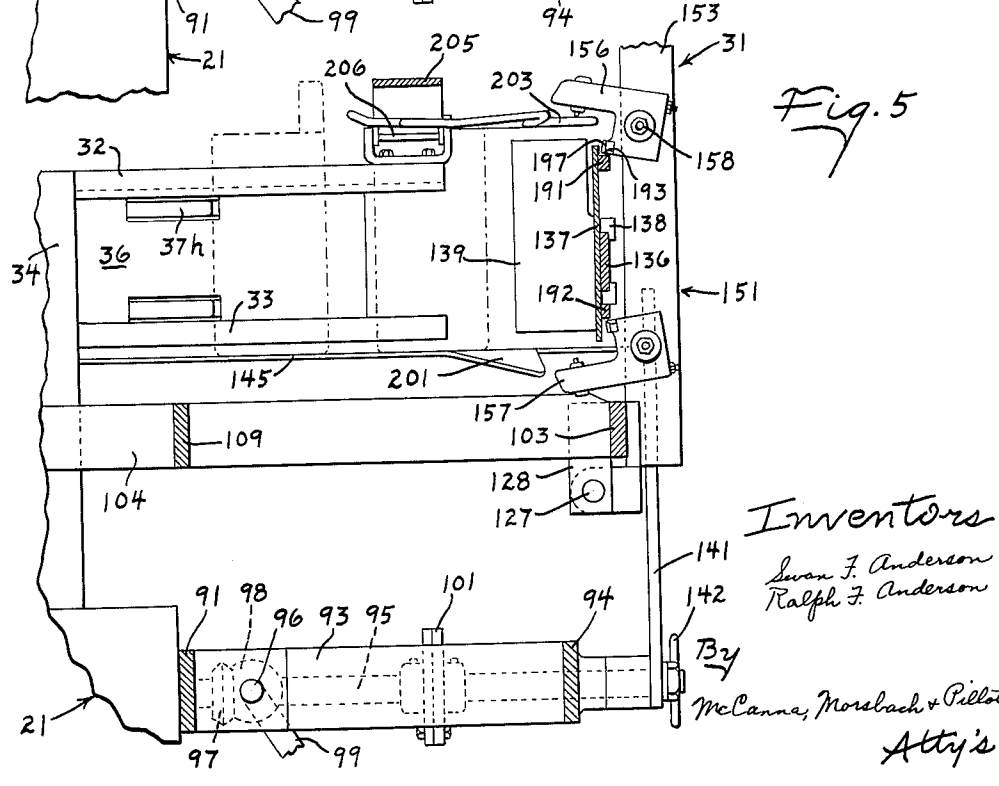


Fig. 5



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Sept. 21, 1965 S. F. ANDERSON ETAL 3,206,915

PACKAGING APPARATUS

Filed Oct. 30, 1961 5 Sheets-Sheet 4

Fig. 6

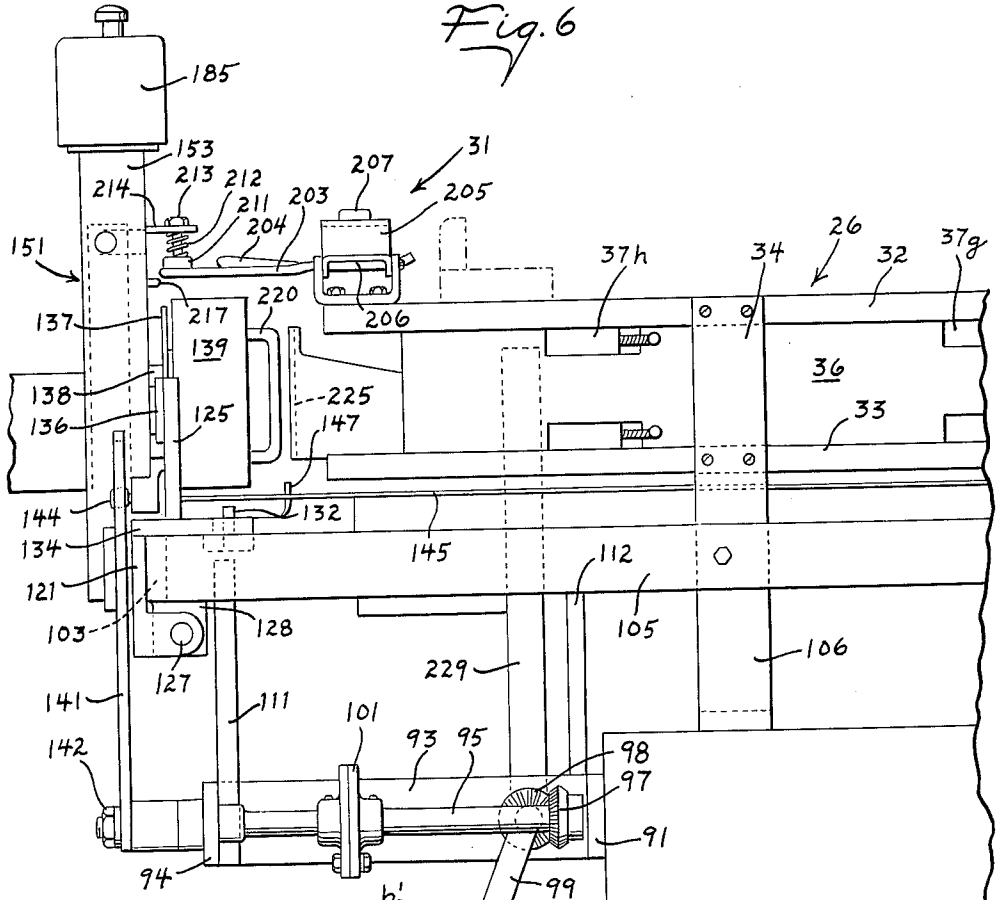


Fig. 8

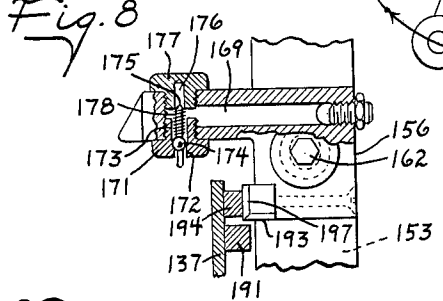
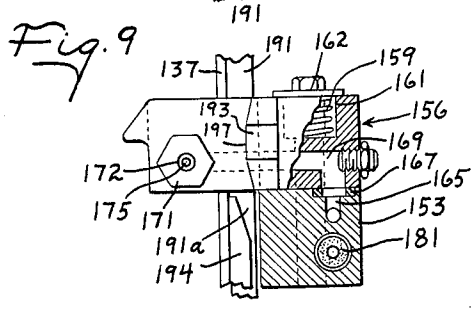
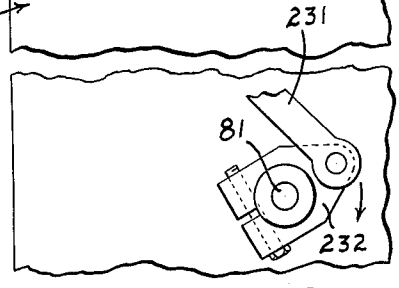


Fig. 9





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Sept. 21, 1965 S. F. ANDERSON ETAL 3,206,915

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Filed Oct. 30, 1961 5 Sheets-Sheet 5

Fig. 7

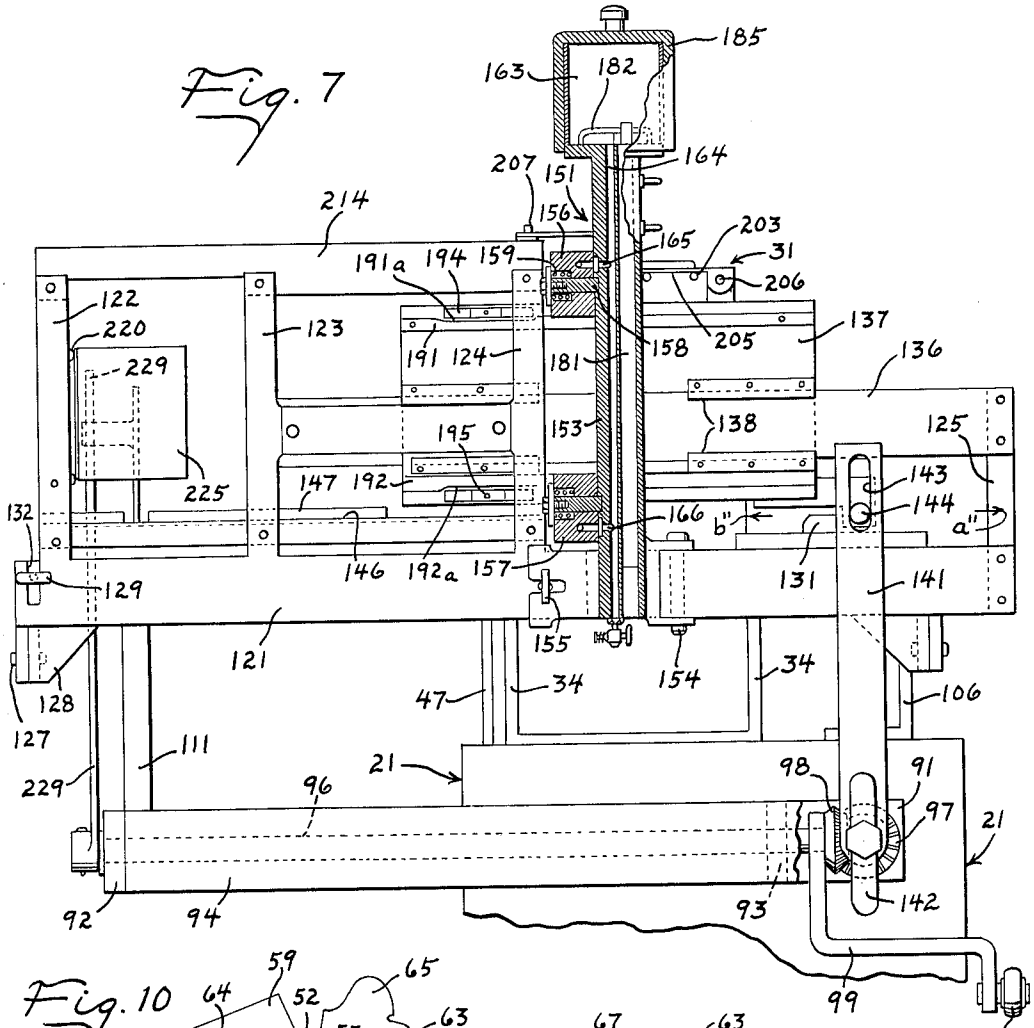


Fig. 10

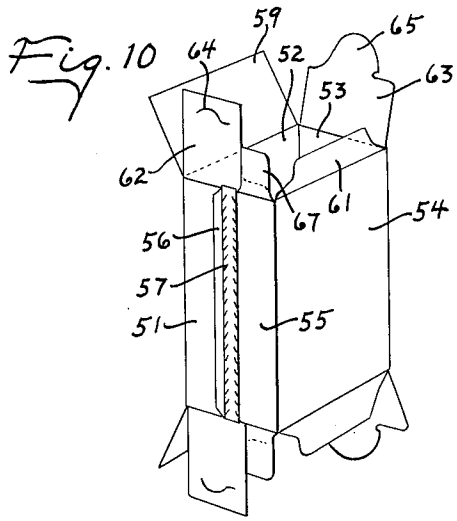
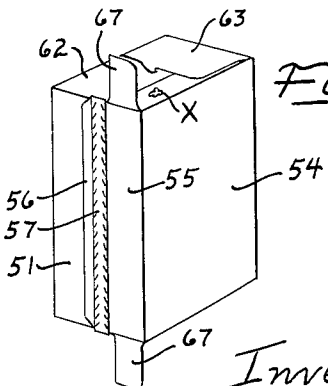


Fig. 11



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United States Patent Office 3,206,915 Patented Sept. 21, 1965

3,206,915

PACKAGING APPARATUS

Swan F. Anderson and Ralph F. Anderson, both of Rockford, Ill.; said Swan F. Anderson assignor of one-fourth to said Ralph F. Anderson and one-fourth to Vera Spencer, Rockford, Ill.

Filed Oct. 30, 1961, Ser. No. 148,337
15 Claims. (Cl. 53—374)

This invention relates to packaging apparatus and particularly to an improved apparatus for sealing fiber cartons.

It is a general object of this invention to provide a gluing apparatus for use with a carton erecting, filling and closing machine, and which gluing apparatus is operative in timed relation with the filling machine to apply adhesive to the cartons and to close and seal the carton flaps.

A more particular object of this invention is to provide a gluing apparatus for use with a carton filling machine of the type having a conveyor for advancing cartons through the filling machine, and which gluing apparatus includes a transfer mechanism for moving the cartons crosswise of the filler machine conveyor onto a stacking platform, a glue applicator operated in timed relation with the transfer mechanism for applying adhesive to the ends of the carton, and mechanism for folding the carton flaps onto the glued area as the cartons are advanced by the transfer mechanism.

Still another object of this invention is to provide a gluing apparatus in accordance with the foregoing object in which the gluing apparatus can be readily moved out of the path of advance of the cartons on the filler machine conveyor to facilitate cleaning of the apparatus and to also enable use of the filling machine independent of the gluing attachment.

A further object of this invention is to provide an improved glue applicator which is operated in timed relation with the movement of the cartons to apply a controlled quantity of adhesive to a selected spot on the carton.

Still another object of this invention is to provide a glue applicator for applying heat softened adhesives to cartons, and which apparatus has an improved arrangement for heating the glue reservoir and the passages leading from the reservoir to the adhesive applicator to maintain the adhesive in a fluid condition.

These, together with various ancillary objects and advantages of this invention will be more readily appreciated as the same becomes better understood by reference to the following detailed description when taken in connection with the accompanying drawings wherein:

FIG. 1 is a side elevational view of a carton erecting, filling and folding machine having the gluing apparatus of the present invention applied thereto;

FIG. 2 is a fragmentary planned view of the gluing apparatus;

FIG. 3 is a transverse sectional view through the gluing apparatus taken on the plane 3—3 of FIG. 2;

FIG. 4 is an elevational view showing one side of the gluing apparatus;

FIG. 5 is a longitudinal sectional view through the gluing apparatus taken on the plane 5—5 of FIG. 2;

FIG. 6 is an elevational view showing the other side of the gluing apparatus;

FIG. 7 is a rear elevational view of the gluing apparatus with the parts broken away and shown in section to illustrate details of construction;

FIG. 8 is a fragmentary sectional view through one of the glue applicators;

FIG. 9 is a fragmentary sectional view taken on the plane 9—9 of FIG. 8;

FIG. 10 is a perspective view of a carton of the type adapted to be filled, closed by the filling machine and sealed by the gluing apparatus; and

FIG. 11 is a perspective view of the carton illustrating the same with the end flaps closed and prior to sealing the glue flaps.

The gluing apparatus of the present invention is specifically designed for use in conjunction with a carton erecting, filling and closing machine of the type shown in the patent to Swan F. Anderson, No. 2,612,016, dated September 30, 1952, and is herein described in conjunction with such a filling machine. It is to be understood, however, that the gluing apparatus can be adapted for use with other carton filling machines and that certain features of the gluing apparatus are of general utility for sealing cartons.

Carton erecting, filling and closing machine

The carton filling and closing machine illustrated in FIG. 1 of the drawings is more specifically disclosed in the aforementioned Patent No. 2,612,016, and reference is hereby made to that patent for a more complete description of the construction and operation of the filling machine. In general, the machine includes a base **21**, a carton feeding and erecting apparatus **22**, a lower flap folding apparatus **23**, a filling mechanism **24**, an upper carton flap folding mechanism **25** and a conveyor means **26** for intermittently advancing the cartons from the feeding and erecting mechanism **22** past the folding and filling apparatus. A manually operable main switch **27** is provided for starting the machine and an automatically operable switch means **28** is adapted to initiate operation of the driving mechanism designated generally by the numeral **29**. The gluing apparatus **31** is provided at the discharge end of the conveyor **26** and is arranged to glue and seal the flaps on the cartons, in timed relation with the operation of the filler mechanism.

The conveyor **26** includes laterally spaced pairs of upper and lower rails **32** and **33** which are supported on the base as by uprights **34**. The upper and lower rails form guideways therebetween for slidably supporting an elongated slide member **36**. In the embodiment illustrated, the slide members have a plurality of sets of carton engaging dogs or pawls designated **37***a*–**37***h* at spaced points therealong, and which carton engaging pawls project into the space between the slides to engage the carton therebetween to advance the carton when the slide members move forwardly (to the right as viewed in FIG. 1). The pawls are shaped so as to automatically retract when the slide members move rearwardly to pass around the cartons and behind the next preceding carton. The slide member is reciprocated by the drive mechanism **29** and, as shown, the drive mechanism includes a motor **39** which is connected through a belt **41** and pulley **42** to a one-revolution clutch **43**. The one-revolution clutch has an output shaft **44** which is driven through one revolution each time the clutch is operated. The shaft **44** is connected through an eccentric **45** and a link **46** to a lever **47** having one end **48** pivotally attached to the base **21** and the other end operatively connected to the slide member **36** to extend and retract the same.

The cartons to be erected, filled and closed by the filling machine, and to be glued and sealed by the gluing attachment **31** are best shown in FIGS. 10 and 11 and designated generally by the letter C. The cartons are conveniently formed of single blank of material and include a side wall **51**, a bottom wall **52**, side wall **53** and a top wall or cover **54** having a flange **55** articulated thereto and overlapping a portion of the side wall **51**. The flange **55** on the cover has the lip portion **56** thereof secured as by an adhesive to the side wall **51**, and a tear strip **57** is formed between the lip portion **56** and the

flange 55 to enable separation of the flange. Similarly shaped closure flaps are provided at opposite ends of the carton and include a main closure flap 59 on the bottom wall 52; a relatively narrow cover flap 61 on the cover 54 which is adapted to overlie the main closure flap when the latter is closed, and interlocking flaps 62 and 63 on the ends of the side walls 51 and 53 respectively. The flaps 62 and 63 are conveniently formed with an interlocking slot 64 and tongue 65 to enable mechanical closing of the ends of the cartons. As will be noted, the flap 62 is relatively narrower than the side wall 51 and a short glue flap or tab 67 is formed on the end of the cover flange 55 and is adapted to be adhesively secured in a manner described hereinafter to the cover flap 61. This arrangement provides a carton which can be opened by removal of the tear strip 57 and which provides a cover articulated to side wall 53 and having a depending flange formed by the flange 55, flap 61 and glue flaps 67.

As disclosed more fully in the aforementioned patent, the cartons are fed to the inlet end of the conveyor 26 in a flat condition and are fed by the pawls 37*a* forwardly past the carton erecting mechanism 22. The erecting mechanism operates to open or erect the carton and, on the succeeding reciprocation of the slide member 36, the second set of pawls 37*b* engage the opened carton and advance it past the lower carton flap folding mechanism 23 which operates to sequentially fold the flaps 59 and 61 on the lower end of the carton inwardly and to fold and interlock the flaps 62 and 63 to close the lower end of the carton. The cartons are then advanced in step fashion by the pawls 37*c* and 37*d* to the filling mechanism 24. This mechanism is conveniently of the type including a nozzle 71 which discharges a continuous stream of material downwardly into the carton and a lifting mechanism (not shown) having an operating rod 72 is provided for elevating the carton into a position around the nozzle. As diagrammatically shown, the lifting mechanism is operated by an arm 73 which is pivotally mounted at 74 and which is operated by a reciprocable pin 75 from a cam (not shown) on the shaft 44 of the one-revolution clutch. The lifting mechanism is thus operated in timed relation with the movement of the conveyor 26. As the filled cartons move downwardly, a finger 77 on the lifting mechanism engages the switch 28 to close the same. The switch is connected to a solenoid 78 or the like on the one-revolution clutch 43 to operate the clutch and drive the conveyor and lifting mechanism through a succeeding cycle. The pawls 37*d* which push the carton to a position below the nozzle operate to push the preceding filled carton away from the lifting apparatus and the filled carton is advanced by pawls 37*e* and 37*f* past the upper flap closing mechanism 25 which sequentially folds the flaps 59 and 61 on the upper end of the carton inwardly and then folds the flaps 62 and 63 inwardly and interlocks the same to close the upper end of the carton.

From the foregoing, it will be seen that the cartons are erected and filled and the ends of the carton are closed as the cartons are advanced through the filling machine. The glue flaps 67 are located at one corner of the carton adjacent the lead face thereof and the gluing apparatus 31 is arranged to apply a quantity of glue to a spot on the cover flaps 61 and thereafter fold the glue flaps 67 downwardly onto the cover flaps 61 to seal the same and form a flanged cover. The gluing apparatus is operated in timed relation with the filling machine and is arranged to be operated from a one-revolution shaft 81, which shaft is conveniently driven by the same clutch 43 which operates the filling machin. As shown, the one-revolution shaft 81 is connected through bevel gearing 82, shaft 83 and bevel gearing 84 to the shaft 44 of the one-revolution clutch, the gearing being so arranged as to rotate the shaft 81 through one complete revolution when the shaft 44 is turned through one revolution.

In the embodiment illustrated, the clutch shaft 44 rotates in a clockwise direction as viewed in FIG. 1, and turns the shaft 81 in a counter clockwise direction as viewed in FIG. 1.

Glue applying apparatus

The glue apparatus 31 is mounted on a support conveniently attached to the base 21 of the filling machine adjacent the outlet end of the conveyor 26. The support may be of any suitable form and, as shown herein, comprises a lower support section having a bar 91 affixed to the base 21', front and rear longitudinal rails 92 and 93 secured to the bar 91 and a cross bar 94 extending across the outer end of the rails 92 and 93. The support section is arranged to support the drive mechanism for the gluing apparatus and, as best shown in FIG. 2, a longitudinally extending shaft 95 is rotatably supported in the bars 91 and 94, and a cross shaft 96 is rotatably supported in the rails 92 and 93. The shafts 95 and 96 are drivingly interconnected by bevelled gears 97 and 98, and the shafts are turned by means of a crank 99 herein shown attached to the shaft 96. For reasons set forth hereinafter, the shaft 95 is conveniently formed in two sections which are connected by a coupling 101 so arranged as to enable angular adjustment of the sections relative to each other for timing of the operating mechanism to be described hereinafter. The support for the gluing apparatus also includes an upper support section for supporting the operating mechanism of the gluing apparatus. As best shown in FIG. 2, this upper support section has spaced cross bars 103 and 109 and a plurality of longitudinally extending rails 104, 105 and 108. The rails 104 and 105 are conveniently mounted on the filling machine base as by one of the uprights 34 and a bracket 106. The front rail 108 is supported by front and rear posts 111 and 112 on the lower support section.

In accordance with the present invention, the operating mechanism for the gluing apparatus is mounted on the upper support section in a manner to enable the operating mechanism to be readily moved out of the path of movement of the cartons on the conveyor 26 to facilitate cleaning of the apparatus and to also enable use of the filling machine without passing the filled carton through the gluing apparatus. For this purpose, there is provided a generally upright frame best shown in FIG. 7 and which includes a lower frame member 121 extending alongside the bar 103 and a plurality of spaced uprights 122 and 123, 124 and 125 which extend upwardly from the lower frame member. The lower frame member is swingably mounted for movement about an axis extending crosswise of the filling machine conveyor 26 by means of pins 127 carried by ears 128 at opposite ends of the bar 103 on the upper support section to enable the frame to be swung from its upright position shown in solid lines in FIG. 4 to a position such as shown in dotted lines in FIG. 4. A plate 134 is attached to the frame member 121 adjacent one end and overlies the top of the bar 103 and the support rails 104 and 105 of the upper support section to support the frame in its upright position. A quick release means is provided for releasably latching the frame in its upright position, and, as shown turn bolts 129 and 131 are attached to the upper support section and cooperate with slots 132 and 133 in the frame member 121 and plate 134 to releasably latch the frame in an upright position.

A guide bar 136 is attached to the uprights 123, 124 and 125 of the frame and a transfer mechanism including a slide plate 137 is mounted by guides 138 on the guide bar for movement in a direction crosswise of the end of the filler conveyor 26. The slide plate 137 carries a pusher 139 for advancing the cartons with the pusher plate. The pusher plate is reciprocated in timed relation with the operation of the filler machine and the filler machine conveyor 26 by means of an arm 141 attached to the shaft 95. The arm is non-rotatably connected to the

shaft by a suitable key or spline connection and is detachably retained on the shaft as by a wing nut **142** to enable removal of the arm. As shown in FIG. 7, the arm is formed with a slot **143** at its upper end which engages a follower **144** attached to the slide plate to reciprocate the slide plate in response to angular movement of the arm.

The filled and closed cartons are supported at their underside on a conveyor platform **145** as they are advanced by the filler machine conveyor **26** to the gluing apparatus and the gluing apparatus has a stacking platform **146** for receiving the cartons as they are moved by the pusher **139** off the conveyor platform **145**. The stacking platform is preferably attached to the frame member **121**, has an upwardly extending guide flange **147** adjacent its rear edge for retaining the cartons on the stacking platform.

A glue applicator **151** is also preferably mounted on the frame and is positioned in alignment with the filling machine conveyor. The glue applicator includes a post **153** which is preferably mounted for swinging movement relative to the frame about an upright axis. As shown, the post is mounted as by a pin **154** for movement relative to the frame member **121** and is releasably latched in its closed position shown in FIG. 2 by a quick release latch such as a turn bolt **155**. Upper and lower glue applying arms designated **156** and **157** are mounted for swinging movement toward and away from the upper and lower ends of the cartons respectively. The arms **156** are similarly constructed and mounted and like numerals are used to designate corresponding parts. As best shown in FIGS. 7, 8 and 9, the arms are swingably mounted on pins **158** attached to the post **153** at spaced points therealong and are yieldably urged against the sides of the posts by springs **159**. The springs are conveniently received in recesses **161** at the outer ends of the arms and are retained in position by a washer and cap screw **162**. The glue is stored in a reservoir **163** at the upper end of the post **153** and fed through an upright passage **164** to lateral passages **165** and **166**. The lateral passages are enlarged at the interface with the jaws **156** and **157** and, as best shown in FIG. 9, a resilient gasket **167** is provided around the passages **165** and **166** to form a sliding seal between the post and the respective jaw. Each jaw is formed with a glue passage **169** which is adapted to register with the respective lateral passage **165** or **166**, and which glue passage extends to the outer end of the arm as is clearly shown in FIG. 8. Each arm is formed with a dispensing orifice **172** at the side which engages the carton and a valve mechanism is provided for controlling flow through the orifice. In the embodiment shown, a gland **171** is threaded into the outer end of the arm and has the aforementioned orifice **172** formed therein. The gland is counter-bored as shown in **173** to form a valve seat and a poppet type valve member **174** is disposed in the counterbore for controlling flow through the orifice. The valve **174** includes a ball member loosely disposed in the counterbore and having a stem **175** attached thereto and guided in an opening **176** formed in a second gland **177**. The stem **175** projects through the orifice **172** to engage the end of the carton as the arm is moved against the carton to thereby open the valve. When the valve is open, glue can flow through the orifice. In addition, a spring **178** is provided on the stem **175** to yieldably urge the valve **174** to its closed position and, by reason of the relatively close clearance between the valve and the counterbore **173**, the quantity of glue below the poppet valve is forced through the orifice **172** as the valve member is closed to thereby dispense a controlled quantity of adhesive onto the carton. The glue applicator is preferably arranged to handle "hot" glues and for this purpose a heating element **181**, conveniently of the electrical type is disposed in a longitudinal bore in the post **153** to heat the post and the reservoir **163** at the upper end of the post. The heating element melts the glue in the reservoir and a grid **182** is preferably provided at the lower end of the reservoir to prevent unmelted chunks of glue from passing into the passage **164**. A heat insulating cap **185** is conveniently mounted on the reservoir to confine the heat and to form a protective cover. As will be noted, the arms **156** and **157** have a large area in contact with the post **153** and are in close heat conducting relation therewith so that the arms are heated by the post and to maintain the glue in a fluid condition as it passes through the arms.

The arms are arranged to apply a spot of glue designated X in FIG. 11 to the ends of the cartons at a point which underlies the flap **167** when the latter is folded down and provision is made for operating the arms into and out of engagement with the ends of the carton in timed relation with the movement of the pusher **139**. As shown in FIGS. 5, 7, 8 and 9, the arms are normally urged away from the ends of the carton by means of cam tracks **191** and **192** attached to the pusher plate **137**. The cam tracks engage the face **193** of the cam follower on each of the arms and move the arms away from each other. Each of the tracks **191** and **192** are formed with a recess or well **191***a* and **192***a* respectively, which allows the arms to move downwardly when the pusher reaches a preselected position. Cams **194** and **195** are also provided on the pusher plate adjacent the respective wells **191***a* and **192***a* and engage a second face **197** on the cam followers to positively force the arms downwardly a distance controlled by the shape of the cams **194** and **195**.

Apparatus is provided for erecting the glue flaps **67** on the cartons as the cartons are advanced by the filler machine conveyor **26** to the gluing station. As best shown in FIGS. 2 and 5, a lower carton flap guide **201** is provided on the carton support plate **145**. The guide is formed with an edge that is inclined in the direction of the path of movement of the cartons along the conveyor **26** and is directed downwardly at its outer end **202** to erect the lower glue flap **67**. A similar flap guide is provided at the top of the cartons, and, as shown, comprises a generally U-shaped wire **203** which is turned upwardly at the lead edge **203***a* to guide the cartons therebelow. An upper guide element extends outwardly from one leg of the wire to engage the upper glue flap **67** to erect the same. The upper flap guide is advantageously mounted to enable ready movement of the guide out of overlying relation to the cartons on the conveyor **26**, to facilitate removal of deformed cartons, prior to entrance into the gluing apparatus and, as shown, is swingably mounted by an arm **205** on a pin **206** on one of the conveyor rails **32** and is releasably latched in position by a turn bolt **207** on the other conveyor rail. The ends of the arms **156** and **157** are also preferably bevelled as shown in FIGS. 2, 8 and 9 to facilitate guiding of the glue flaps to one side of the arms.

Provision is made for pressing the glue flaps **67** downwardly onto the ends of the cartons as the cartons are moved by the transfer pusher **139**. As best shown in FIG. 3, the glue flap **67** on the lower end of the carton is folded against the underside of the carton by engagement with the curved end **208** on the stacking platform **146**. A plurality of protuberances or buttons **209** are preferably provided on the stacking platform in a position to engage the glue flap on the carton when the cartons are at rest. An upper presser shoe **211** is resiliently mounted by springs **212** and bolts **213** on an angle iron rail **214** carried by the upper ends of the uprights **122–124**. The shoe **211** has a rounded leading edge **215** (FIG. 3) for guiding the glue flaps downwardly, and a plurality of protuberances or buttons **216** are also conveniently provided on the bar **211** to press the glue flaps againts the ends of the cartons. A carton guide flange **217** is prvoided on the lower edge of the rail **214** to laterally guide the cartons.

Provision is made for moving the sealed cartons off the stacking platform **146** and along a path that parallels the path of movement of the conveyor **26**. For this purpose,

a stop **220** is provided at one end of the stacking platform **146** to engage and stop the cartons, and a discharge chute **222** is attached to the frame to extend parallel to the conveyor **26**. As best shown in FIG. 4, the discharge chute is mounted by pins **223** for swinging movement about a generally horizontal axis to enable folding of the discharge chute upwardly for compact storage of the machine. A second transfer mechanism including a pusher plate **225** is mounted for movement crosswise of the stacking platform to move the cartons onto the discharge chute **222**. As best shown in FIGS. 2 and 4, the outlet pusher **225** is slidably mounted on the rail **108** by means of guides **226**. The outlet pusher is yieldably urged to a retracted position by means of a spring **228** and is extended in timed relation with the operation of the first mentioned transfer mechanism by means of an arm **229** attached to the cross-shaft **96**. The arm **229** engages a follower or roller **231** on the outlet pusher to extend the same when the arm is moved forwardly. Thus, the transfer pusher **139**; the glue applicator arms **156** and **157** and the outlet pusher **225** are all operated in timed relation with each other by the crank **99** and, as best shown in FIG. 6, the crank is driven through link **231** and crank **232** on the shaft **81** in timed relation with the filling machine conveyor **26**.

Operation

The conveyor **26** for intermittently advancing the cartons through the filling and closing machine is shown in FIG. 1 in its rest position and, when the carton at the filling station **24** is filled and moves downwardly to close the switch **28**, the one-revolution clutch **43** is operated to sequentially move the conveyor forwardly to a position indicated by the point *a* in FIG. 1 then rearwardly to point *b* and then forwardly back to its rest position. This advances the cartons engaged by the pawls **37***a*–**37***h* forwardly a selected distance and then retracts the pawls a distance sufficient to pick up the next carton and bring it forwardly with the pawls. The one-revolution clutch **43** also operates to drive the shaft **81** through one revolution and in a clockwise direction as viewed in FIG. 6. The arms **141** and **229** for moving the transfer pushers **139** and **225** are shown in their normal or rest positions in the several views and the crank **232** on the shaft **81** is arranged to oscillate the crank **99** as the shaft **81** rotates through one revolution. The crank **99** is moved from its neutral or rest position shown in FIG. 6 counterclockwise to a point indicated at *a'* and then clockwise past the neutral position to a point *b'* and finally counterclockwise back to its neutral position. This operates to move the arm **141** from its neutral or rest position shown in FIG. 7 clockwise to point *a''* during the time when the cartons are being advanced by the filler conveyor, to thereby retract the pusher plate **137** and the pusher **139**. As the pusher plate **137** is retracted, the cams **194** and **195** operate to move the arms **156** and **157** toward each other as the cams move past the arms. However, at this time, the carton has not yet reached the position below the arms so that no glue is dispensed.

During the portion of the cycle when the filler conveyor **26** is being retracted from point *a* to point *b* to pick up a succeeding container, the arm **141** is moved in a counterclockwise direction back through the neutral position shown in FIG. 7, and the cams **194** and **195** again move the glue applicator arms **156** and **157** toward each other. Since the filling machine conveyor has previously advanced a carton C to the gluing station between the arms, the valves **173** on the arms are opened by engagement with the cartons and dispense a charge of glue onto the ends of the cartons. As the arm **141** is moved further in a counterclockwise direction to point *b''*, the pusher plate is extended further (to the left as viewed in FIG. 7) the cam bars **191** and **192** move the glue applicator arms away from each other and the pusher plate **139** thereafter engages the carton at the gluing station to move the same crosswise of the inlet conveyor and onto the stacking platform **146**. The glued flaps **67** are folded downwardly by engagement with the shoe portions **208** and **215** and are pressed firmly against the cartons by the buttons **209** and **216**.

The initial counterclockwise movement of the crank **99** also operates the shaft **96** and the outlet pusher arm **229** in a clockwise direction as viewed in FIG. 4 from its neutral position to a position designated *a***3** to move the end carton on the stacking platform **146** off the platform and onto the discharge chute **222**. The outlet pusher arm **229** is moved counterclockwise to a position *b***3** during the time the pusher **137** is extended so as to provide clearance for the cartons as they are advanced along the stacking platform, and is thereafter returned to its neutral position as shown in FIG. 7.

Since the glue applicator including the post **153** and the arms **156** and **157** are mounted for swinging movement relative to the frame, the arms can be readily moved to an inoperative position as shown in dotted lines in FIG. 3. Moreover, the transfer mechanism operating arm **141** is removable and the entire frame can be swung downwardly as shown in dotted lines in FIG. 4, upon release of the turnbolts **129** and **131**, so that the filling machine can be used without passing the cartons through the glue applying apparatus.

We claim:

1. An apparatus for gluing flaps on cartons comprising, transfer means for advancing cartons along a path, a post having a glue receptacle thereon, means for heating said post and receptacle to melt the glue in the receptacle, an arm pivotally mounted on said post in heat conducting relation therewith to be heated by said heating means in the post, said arm having a dispensing opening spaced from said post, said post and arm having communicating passages therein extending from said receptacle to said dispensing opening, and means for moving said arm into and out of engagement with the cartons as they are moved by said transfer means.

2. The combination of claim **1** including valve means in said arm controlling the flow of glue to said dispensing opening, and means on said valve means engageable with a carton for opening the valve means when the arm is moved toward the carton.

3. The combination of claim **2** wherein said valve means comprises a poppet-type valve.

4. An apparatus for filling and closing cartons of the type having a plurality of flaps articulated to the walls of the carton at each end and adapted when closed to form end walls, a first of said flaps on one end wall being adapted to overlap a second of said flaps, conveyor means for intermittently advancing the cartons along a path paralleling said one end wall past a filling station, a glue applicator positioned at the outlet end of said conveyor means, said glue applicator including a post having an arm pivotally attached thereto and movable into and out of engagement with the top of a carton at the end of said conveyor means, means on said post defining a glue reservoir, said arm having a dispensing opening therein spaced from said post, said post and arm having interconnected passages therein communicating said reservoir and said dispensing opening in said arm, transfer means engageable with a carton at the end of the conveyor means for moving the same crosswise of the conveyor means, means for moving said arm into and out of engagement with the cartons in timed relation with the operation of said transfer means, and means engageable with said first flap for pressing said first flap down onto said second flap as the carton is moved by said transfer means.

5. The combination of claim **4** including means in said post for heating the post and reservoir, to melt the glue in the reservoir, said arm being disposed in heat conducting relation with said post.

6. The combination of claim 4 including flap guide means disposed above said conveyor means for erecting said first flap as the cartons are advanced to said glue applicator.

7. The combination of claim 4 wherein said flap guide means is mounted for swinging movement into and out of position overlying said conveyor means to facilitate removal of deformed cartons.

8. In combination with a carton filling apparatus having conveyor means for intermittently advancing cartons past a filler, a gluing apparatus comprising a frame, means swingably mounting said frame for movement into and out of a position extending crosswise of one end of said conveyor means, means for releasably latching said frame in position extending crosswise of the end of the conveyor means, a stacking platform on said frame at one side of said conveyor means, transfer means mounted on said frame for moving cartons crosswise of the conveyor means onto said stacking platform, means on said frame for applying glue to the carton, and flap pressing means on said frame for pressing the carton flaps onto the cartons as the cartons are moved by said transfer means, said stacking platform; transfer means; glue applying means; and flap pressing means being swingable with said frame out of said position extending crosswise of said conveyor means.

9. In combination with a carton filling apparatus for filling cartons of the type having foldable closure flaps on at least the upper end, said filling apparatus having conveyor means for intermittently advancing cartons past a filling station, a gluing and sealing apparatus comprising a frame mounted to extend crosswise of said conveyor means for interrupting the advance of cartons along the conveyor means and for guiding cartons during movement crosswise of said conveyor means, means on said frame defining a carton stacking platform extending laterally from one side of said conveyor means, a first reciprocable transfer means mounted on said frame for moving cartons crosswise of said conveyor means onto said stacking platform, means on the frame for applying adhesive to at least one of the carton flaps, flap pressing means overlying said stacking platform for pressing the carton flaps onto the top of the carton as they are moved by the first transfer means, a discharge platform extending laterally of stacking platform adjacent the end of the stacking platform remote from said conveyor means, a second reciprocable transfer means for moving cartons off the stacking platform and along a path generally parallel to the path of said conveyor means, means operated in timed relation with said conveyor means for reciprocating said first and second transfer means to move one carton crosswise of the conveyor means onto the stacking platform and to move a preceding carton along a path paralleling the conveyor means off the stacking platform onto the discharge platform.

10. In combination with a carton filling apparatus for filling cartons of the type having foldable closure flaps on at least the upper end, said filling appartus having conveyor means for intermittently advancing cartons past a filling station, a gluing and sealing apparatus comprising a frame mounted to extend crosswise of said conveyor means for interrupting the advance of cartons along the conveyor means and for guiding cartons during movement crosswise of said conveyor means, means on said frame defining a carton stacking platform extending laterally from one side of said conveyor means, a first reciprocable transfer means mounted on said frame for moving cartons crosswise of said conveyor means onto said stacking platform, means on the frame for applying adhesive to at least one of the carton flaps, flap pressing means overlying said stacking platform for pressing the carton flaps onto the top of the carton as they are moved by the first transfer means, a discharge platform extending laterally of stacking platform adjacent the end of the stacking platform remote from said conveyor means,

a second reciprocable transfer means for moving cartons off the stacking platform and along a path generally parallel to the path of said conveyor means, means for operating said first and second reciprocable transfer means in timed relation with said conveyor means comprising first and second shafts respectively extending parallel to said conveyor means and crosswise of said conveyor means, first and second arms respectively connected to said first and second shafts and to said first and second transfer means for reciprocating said first and second transfer means in response to rotary oscillatory motion of said first and second shafts, and drive means operatively connected to said conveyor means and to said first and second shafts for oscillating said shafts about their respective axes in timed relation with the movement of said conveyor means.

11. In combination with a carton filling apparatus for filling cartons of the type having foldable closure flaps on at least the upper end, said filling apparatus having conveyor means for intermittently advancing cartons past a filling station, a gluing and sealing apparatus comprising a frame mounted to extend crosswise of said conveyor means for interrupting the advance of cartons along the conveyor means and for guiding cartons during movement crosswise of said conveyor means, means on said frame defining a carton stacking platform extending laterally from one side of said conveyor means, a first reciprocable transfer means mounted on said frame for moving cartons crosswise of said conveyor means onto said stacking platform, means on the frame for applying adhesive to at least one of the carton flaps, flap pressing means overlying said stacking platform for pressing the carton flaps onto the top of the carton as they are moved by the first transfer means, a discharge platform extending laterally of stacking platform adjacent the end of the stacking platform remote from said conveyor means, a second reciprocable transfer means for moving cartons off the stacking platform and along a path generally parallel to the path of said conveyor means, means operated in timed relation with said conveyor means for reciprocating said first and second transfer means to move one carton crosswise of the conveyor means onto the stacking platform and to move a preceding carton along a path paralleling the conveyor means off the stacking platform onto the discharge platform, said adhesive applying means including at least one arm mounted on said frame for swinging movement in an upright plane into and out of engagement with a flap on the top of the carton, cam means on said first transfer means for elevating and lowering said arm in timed relation with the reciprocation of said first transfer means, and means on said arm for dispensing adhesive.

12. The combination of claim 11 wherein said arm is positioned in alignment with said conveyor means to apply adhesive to the flap on the top of the carton when the carton is advanced by said conveyor means to said frame.

13. The combination of claim 9 wherein said first transfer means, said support platform and said flap pressing means are mounted on said frame for movement as a unit therewith and wherein said frame is swingably mounted on said filling machine for ready movement into and out of a position extending crosswise of the conveyor means.

14. An apparatus for gluing flaps on cartons comprising, a carton support, a frame structure extending alongside said support for guiding cartons therealong, a slide mounted on said frame structure for reciprocation alongside the support, a carton engaging pusher on said slide for moving cartons along the support, a self-contained glue reservoir and dispenser device detachably mounted on said frame for removal as a unit therefrom, said device including a post having a glue receptacle thereon, means detachably mounting said post on said frame structure,

at least one arm pivotally mounted on said post for swinging movement in an upright plane into and out of engagement with a flap on the top of a carton on said support, said arm having a dispensing opening spaced from said post, said post and arm having communicating passages therein extending from said receptacle to said dispensing opening, and cam means on said arm and slide for moving said arm into and out of engagement with the cartons as they are moved by said carton engaging pusher.

15. The combination of claim **14** including means for heating said post, said arm being mounted in heat conducting relation with said post for dispensing heat softened adhesive.

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UNITED STATES PATENT OFFICE

CERTIFICATE OF CORRECTION

Patent No. 3,206,915 September 21, 1965

Swan F. Anderson et al.

It is hereby certified that error appears in the above numbered patent requiring correction and that the said Letters Patent should read as corrected below.

Column 9, line 5, for the claim reference numeral "4" read -- 6 --.

Signed and sealed this 19th day of April 1966.

(SEAL)
Attest:

ERNEST W. SWIDER
Attesting Officer

EDWARD J. BRENNER
Commissioner of Patents