May 7, 1963 J. H. WALTER ETAL 3,088,433

GLUING MECHANISM FOR A CARTON CLOSING MACHINE

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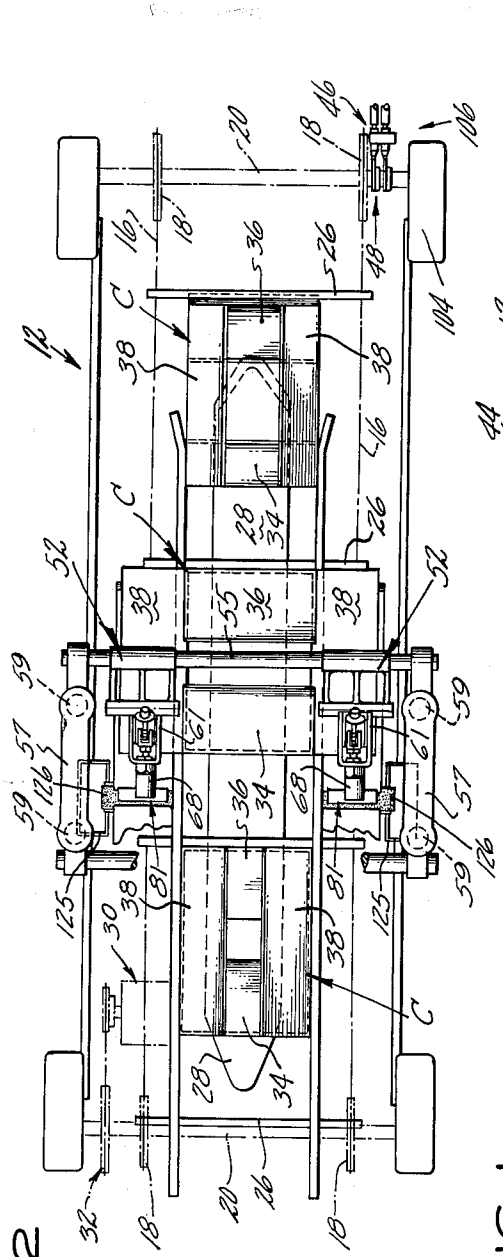


FIG. 2

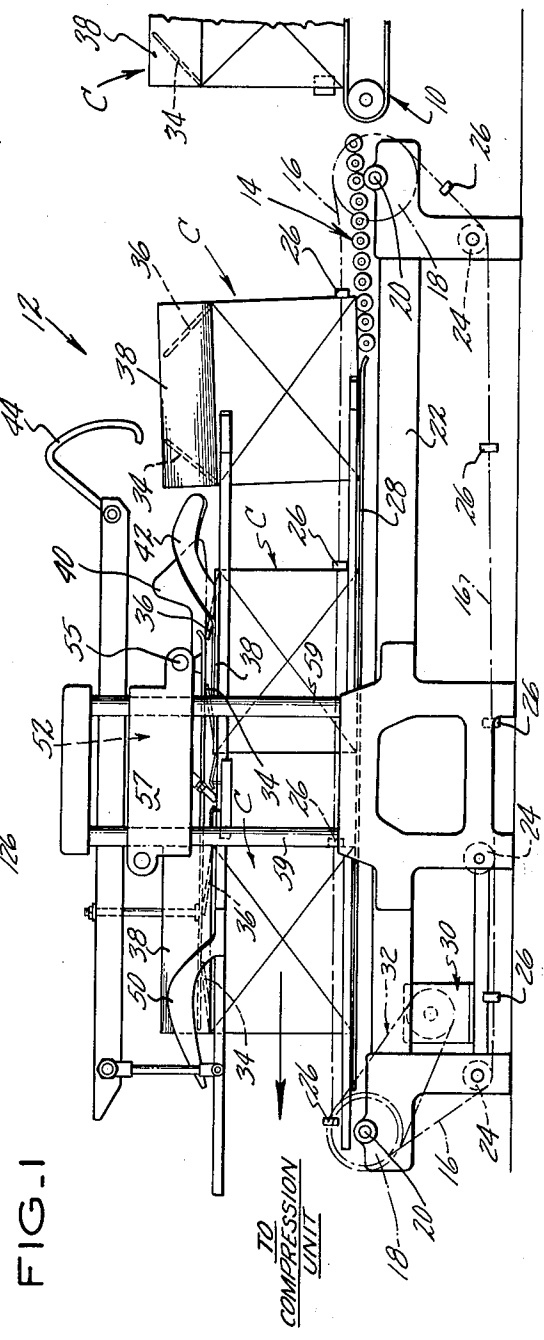


FIG. 1

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FIG. 3

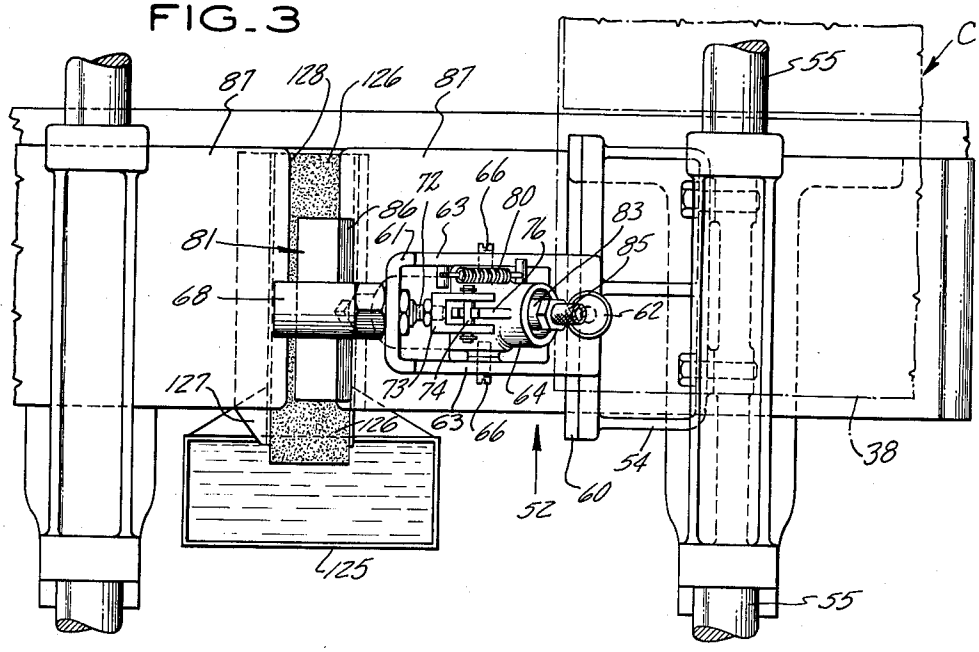


FIG. 4

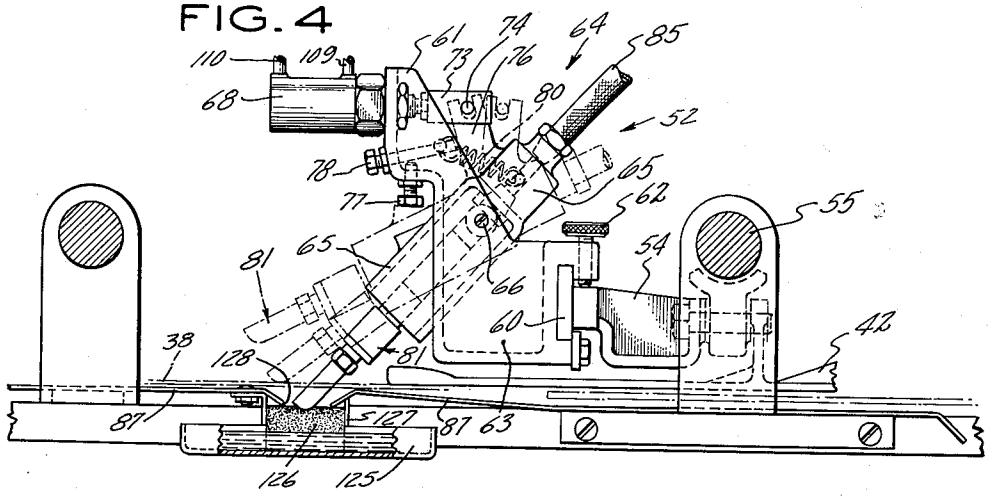


FIG. 6

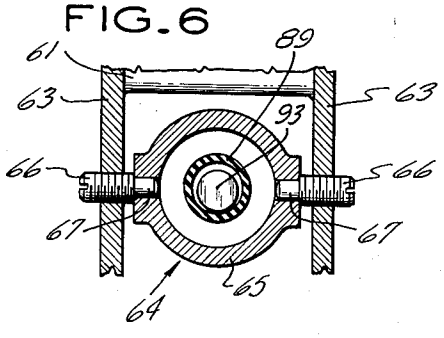
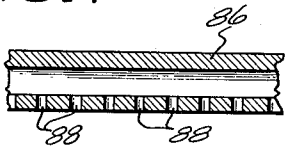


FIG. 7



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FIG. 5

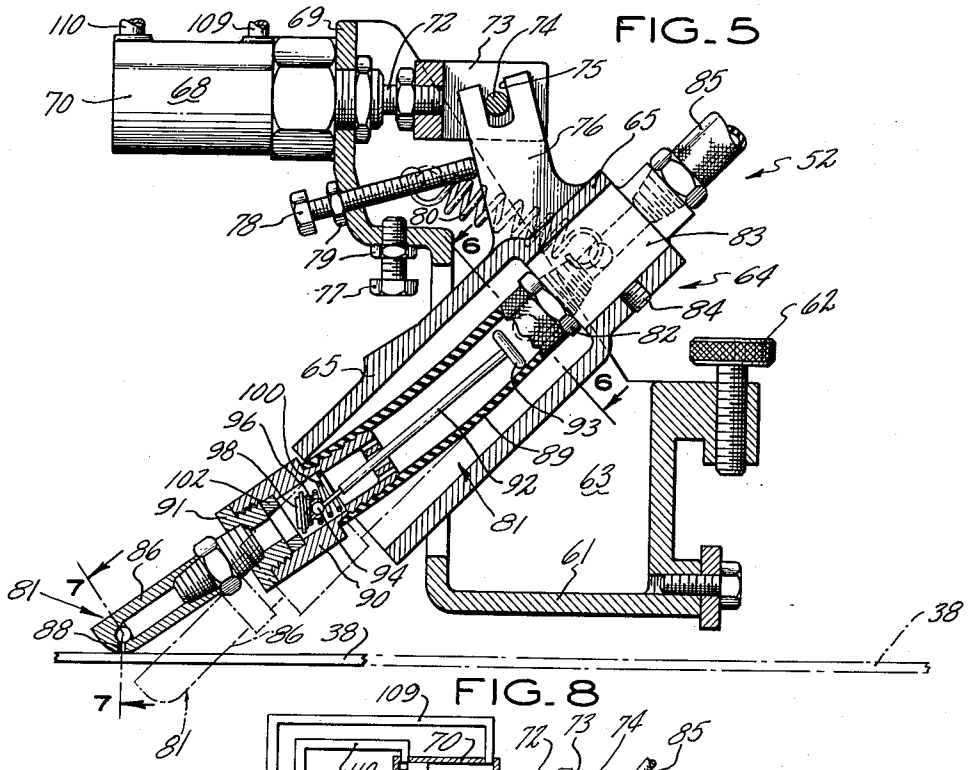
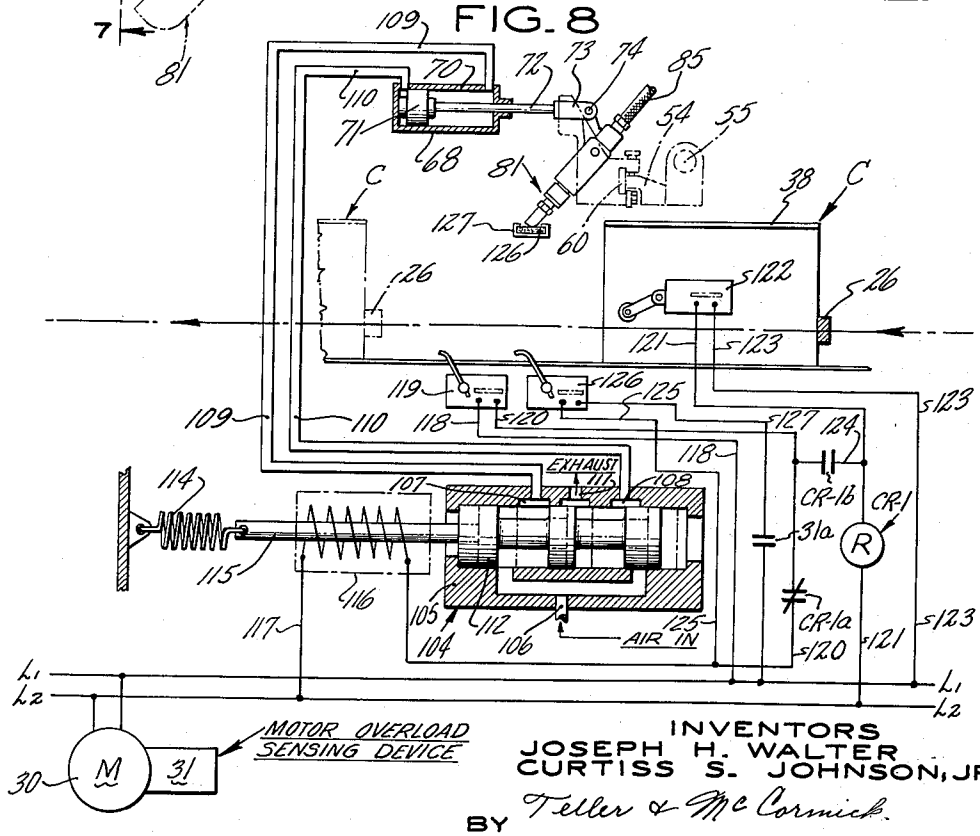


FIG. 8



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GLUING MECHANISM FOR A CARTON CLOSING MACHINE

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Filed Feb. 16, 1960, Ser. No. 9,009
7 Claims. (Cl. 118—1)

This invention relates to an improvement in a carton or case closing machine and more particularly to a mechanism for applying glue where needed to the carton flaps in such machine, the gluing mechanism being such that it can be incorporated in the initial construction of the machine or it can be applied with little difficulty to an existing machine.

An object of the invention is to provide a gluing mechanism which operates automatically to apply glue to the flaps of a carton to be closed but only where the glue is needed.

A further object is to provide a gluing mechanism of the type mentioned which is capable of precise control so that glue can be applied to carton flaps over substantially the entire area of the flaps if desired or just over portions thereof as desired.

A further object of the invention is to provide a gluing mechanism which will not become clogged with hardened glue built up during periods when no carton is in the gluing station.

A further object of the invention is to provide a gluing mechanism which operates automatically to stop the flow of glue in the event the movement of cartons through the mechanism is stopped with a carton in the gluing station.

A still further object of the invention is to provide a gluing mechanism having the characteristics set forth above and which is simple and economical in construction and requires little if any maintenance.

The drawings show a preferred embodiment of the invention and such embodiment will be described, but it will be understood that various changes may be made from the construction disclosed, and that the drawings and description are not to be construed as defining or limiting the scope of the invention, the claims forming a part of this specification being relied upon for that purpose.

Of the drawings:

FIG. 1 is a schematic side elevational view of a carton or case closing machine and which includes the gluing mechanism of the present invention, with parts of the machine being deleted to clarify the disclosure of the gluing mechanism;

FIG. 2 is a top plan view of the machine as shown in FIG. 1, with additional parts of the machine omitted to reveal more of the gluing mechanism;

FIG. 3 is an enlarged plan view of one glue applying head forming a part of the gluing mechanism of the present invention;

FIG. 4 is a side elevational view of the glue applicator head shown in FIG. 3;

FIG. 5 is a vertical cross-sectional view, still further enlarged, of the glue applicator head shown in FIG. 3 and taken on a plane through the longitudinal axis of the nozzle;

FIG. 6 is a cross-sectional view of the glue applicator nozzle taken as indicated by the line 6—6 of FIG. 5;

FIG. 7 is a cross-sectional view of the glue applicator nozzle taken as indicated by the line 7—7 of FIG. 5; and

FIG. 8 is a diagrammatic view showing the control system employed to effect automatic operation of the gluing mechanism.

Carton or case closing machines such as that shown

schematically in FIGS. 1 and 2 are generally associated with case loading or packing machines which are operated to place the articles within the cartons or cases. The case loading and case closing machines may comprise units of a composite machine or they may be independent machines. Except for the gluing mechanism which will be described in detail, the case closing machine may be considered to be conventional.

As shown in the drawings, the case closing machine is an independent unit which is positioned to receive cases to be closed after the cases have been filled at a case loading machine. The filled cases C, C are advanced in a line by a conveyor indicated generally by the reference numeral **10** toward the receiving end of the case closing machine which is indicated generally by the reference numeral **12**. A roller conveyor shown at **14** may be provided at the receiving end (right-hand end) of the case closing machine to receive the cases C, C in line and one at a time from the conveyor **10**. The roller conveyor **14** is not driven and is utilized merely to receive the cases and to position them so that they can be advanced by driven conveyor means and thus moved from right to left through the machine.

The driven conveyor may comprise a pair of parallel, spaced apart endless chains **16**, **16** which are entrained on sprockets **18**, **18** keyed to shaft **20**, **20** which are journaled at opposite ends of the machine **12**. It will be observed that said shafts and sprockets are arranged so that the upper runs of the parallel conveyor chains **16**, **16** are in a horizontal plane above the bed portion **22** of the machine frame and above the roller conveyor **14** at the right-hand end of the machine. The lower or return runs of the parallel conveyor chains are also in a generally horizontal plane but below the machine bed **22**, the said conveyor chains passing over idler sprockets **24**, **24** which support the said chains below the machine bed. Attached to the conveyor chains **16**, **16** are a plurality of flight bars **26**, **26** which extend transversely between the two chains and which are located at equally spaced locations along the length thereof. These flight bars are arranged to engage the cartons in order on the roller conveyor **14** and to push them from right to left through the case closing machine **12**, the cartons or cases C, C being supported on and slid along a plate **28** extending longitudinally of the machine slightly above the bed **22** of the frame thereof. The conveyor chains **16**, **16** are driven by an electric motor **30** which effects a driving engagement with one of the conveyor shafts **20**, **20** as by a chain and sprocket unit **32**. Thus, the cases C, C are moved in timed relationship through the case closing machine **12**.

The cases when advanced to closing machines may be closed at the bottom with only their top flaps open, or they may be open at the top and bottom. For purposes of illustration, this case closing and gluing machine has been shown as adapted to close and glue only the top flaps. The said cases are rectangular in form and have four top flaps, these including a front inner flap **34** and a rear inner flap **36** which fold about edges of the carton extending transversely of the conveyor. There are also a pair of side or outer flaps **38**, **38** which fold on the longitudinal side edges of each case over the inner flaps **34**, **36**.

As each case C is moved from the receiving end of the machine longitudinally thereof toward the left along the plate or platform **28**, the front inner flap **34** is engaged and folded inwardly by a camming device **40** commonly referred to as a plow. The side flaps are engaged and spread outwardly by a pair of camming devices **42** commonly referred to as horns. The horns **42** hold the flaps spread outwardly in substantially horizontal planes as each carton is moved to the gluing station of the

machine where the glue is applied to the side flaps **38**, **38** as will hereinafter be described. The rear inner flap **36** is folded inwardly by a tucker arm **44** which is pivotally supported over the conveyor and the platform **28** and over the cases moving therealong. The tucker or kicker arm **44** is oscillated in timed relationship to movement of the cases, this being provided by a plurality of valves indicated generally by the reference numeral **46** (FIG. 2) which are acted upon by a plurality of cams **48** secured to and rotated with a conveyor chain sprocket shaft **20**.

Thus, when glue is applied to the spread outer flaps **38**, **38** on each carton in the machine, the inner flaps **34** and **36** have been folded inwardly by the plow **40** and kicker arm **44**. After the glue has been applied to the outer flaps or side flaps **38**, **38** they are folded back inwardly on top of the inner flaps **34**, **36** by a second pair of horns or plows **50**, **50** near the left-hand end of the machine and the cartons are then moved onto a compression unit which applies pressure to the carton flaps to be sure that they remain closed and glued.

Turning now to the gluing mechanism, attention is directed to FIGS. 2, 3, 4 and 5 illustrating the glue applicator heads. As shown in FIG. 2, there are two glue applicator heads indicated generally by the reference numerals **52**, **52**, there being one head for each outer flap or side flap of the cartons or cases C, C being worked upon. Since the glue applicator heads **52**, **52** are similar, except that one is right-hand and the other left-hand when viewed longitudinally of the machine, it will only be necessary to describe one in detail.

With reference to the left-hand applicator head **52** shown in FIGS. 3, 4 and 5 and which is the lowermost applicator head in FIG. 2, it will be observed that this head includes a mounting bracket **54** which may be secured to the frame of the machine in any manner described to support it above the cases passing therethrough but spaced outwardly from the left-hand side thereof. Preferably, the bracket **54** is supported on a rod **55** carried transversely of the machine in a horizontal plane by a pair of vertically adjustable members **57**, **57** mounted on frame posts **59**, **59** located at the sides of the machine. The rod **55** may also be used to vertically adjustably support the horns **42**, **42** over the conveyor and travelling cases.

The forward portion of the mounting bracket **54**, as shown in FIG. 3, is elongated transversely of the gluing mechanism and includes a guide **60**. A boxlike nozzle supporting frame **61** is slidably received by guide **60** and adjustably secured thereto by a thumb screw **62**. The frame **61** includes two opposed side walls **63**, **63** between which is mounted the nozzle unit referred to in general by the reference numeral **64**. As best seen in FIGS. 5 and 6, the nozzle unit **64** includes a hollow housing **65** pivotally supported between the side walls **63**, **63** by two screws **66**, **66** having journal portions **67**, **67** on their inner ends which engage openings in the nozzle housing **65**. The nozzle housing is pivotally moved about these journal portions **67**, **67** by a pneumatic motor **68** mounted to the upper forward wall **69** of the frame **61**.

The motor **68**, as shown schematically in FIG. 8, is of the conventional double acting type including a cylinder **70**, a piston **71** and a piston rod **72** extending from one end of the cylinder. On the outer end of the piston rod **72** is a clevis **73** provided with a pin **74** which extends through the arms of the clevis and a slot **75** in the upper end of an arm **76** on the nozzle housing **65**. From FIG. 5, it will be evident that movement of the piston rod **72** to the right will pivot the lower end of the nozzle housing **65** upwardly while movement of the rod to the left will pivot the same downwardly. The end limits of this pivotal movement are determined by two bolts **77** and **78** threaded into the forward wall **69** of the frame, as shown in FIG. 5, the head of the bolt **77** engaging the nozzle housing to limit its upward movement and the inner end of the bolt **78** engaging the arm **76** to limit the downward movement. Both of the bolts **77** and **78** are locked to the frame by nuts **79**, **79** and may be threaded into or out of the frame to various positions to adjust the end limits of the nozzle housing movement.

To hold the nozzle housing in its lowered position in the event of air failure, a tension spring **80** may be connected between the nozzle housing **65** and the frame **61**, as indicated in FIG. 5. This spring will aid the motor **68** when the piston is moved to lower the lower end of the nozzle housing and will oppose its movement when raising the lower end of the nozzle housing.

Within the nozzle housing **65** is a nozzle, indicated generally by the reference character **81**, which extends beyond the lower end of the housing **65** and into the path of the moving flaps when the housing is in the lower position shown in FIG. 5 and by the solid lines of FIG. 4. The upper end **82** of the nozzle is threaded into a connector **83** secured to the housing by a set screw **84**. The upper end of the connector **83** receives a flexible glue feed conduit **85** for supplying glue under pressure from a source of glue (not shown).

In applying glue to the side flaps **38**, **38** it is desirable to apply it only to the front portions thereof which engage the front inner flap **34** and to the rear portions thereof which engage the rear inner flap **36** leaving the intermediate portions of the side or inner flaps without glue so that the contents of the case will not come in contact with glue. In accordance with the present invention, when the nozzle **81** is in its lower position (the full line position of FIG. 4), it is ready to apply glue and when it is in its uppermost broken line position it cannot apply glue to the side flap. In further accord with the invention, the nozzle **81** is normally held down to apply glue to the front portion of the side flap and then elevated by the motor **68** to skip the central portion of the side flap and then pivoted downwardly by the motor **68** to apply glue to the rear portion of the side flap and to the front portion of the next case in line. Only when the opposed edges of the inner flaps **34** and **36** abut each other when closed should glue be applied to the entire surface of the side flap.

As will be observed by reference to FIG. 3, the nozzle **81** includes an elongated tip **86** which extends transversely of the machine to engage the side flap **38** over a substantial portion of its width. It will also be observed with reference to FIG. 4 that the side flap **38** is held spread outwardly by the plow or horn **42** so that the nozzle **81** can engage it while it is so spread. As the case advances, the left-hand side flap **38** moves from beneath the plow **42** and over generally horizontally disposed guide plates **87**, **87** to the broken line position shown in FIG. 4. In so doing, the side flap **38** engages the nozzle **81** in its full line position, as shown in FIG. 4, and thrusts it upwardly a slight amount by flexing it, as hereinafter described, to the lowermost broken line position thereof. In so doing, a flow valve is opened, as will be described, to cause glue to flow through the nozzle. The glue flowing through the nozzle is spread on the flap **38** in a plurality of parallel longitudinally extending lines because the glue flows through a plurality of spaced apertures or orifices **88**, **88** (FIGS. 5 and 7), which are spaced along the length of the transversely extending nozzle tip **86**. The glue, of course, flows into the nozzle from the feed conduit **85** through the connector **83** and the body of the nozzle to the tip **86**.

Turning now to the structure of the nozzle **81** and to the valve incorporated therein, attention is directed to FIG. 5. As shown, the nozzle and the valve are substantially of the type illustrated in the Warren Patents 2,694,211 and 2,877,480 to which reference may be had to supplement the present brief description thereof. A nozzle of this type includes a resiliently flexible and tubular body member **89** which, in the present case, is located within the nozzle housing **65**.

The valve assembly includes a rigid tubular housing **90**

which is threaded at one end to receive a fitting **91**, which receives the nozzle tip **86**, and connected at its other end to the lower end of the flexible body **89**. A valve operating rod **92** having a head **93** at one end and a spherical tip **94** at the other end projects from the flexible body **89** into the housing **90**. The spherical end **94** of the valve operating rod is seated in the corresponding end of a socket provided on an extension **96** of an annular valve member **98** which is biased by a spring **100** toward a seated position on an annular valve seat **102** secured within the valve housing **90** adjacent the inner end of the bored fitting **91**.

When the resilient body **89** is not flexed, the valve operating rod **92** is disposed substantially coincident with the axis thereof and the valve **98** is seated or closed. However, when the body **89** is flexed, as shown by the solid lines of FIG. 5, the head **93** on the valve operating rod **92** engages the inner wall of the body **89** to displace and open the valve member **98**.

This flexing of the body **89** is caused in the gluing mechanism of this invention, as mentioned above, by a carton side flap **38** engaging the nozzle tip as the carton or case reaches the glue section of the machine. That is, when the nozzle **81** is thrust downwardly, by pivotal movement of its housing **65** to the full line position shown in FIG. 4, the flow valve **98** is closed because the body **89** is unflexed. Then when a side flap **38** engages the nozzle in the advancement of its carton the nozzle is thrust upwardly to the lowermost broken line position shown in FIG. 4, and in so doing the nozzle body **89** is bent or flexed to open the valve **98** for the flow of glue to the nozzle tip **86**. Glue will continue to flow through the valve and the nozzle tip onto the side flap as long as there is a side flap positioned beneath the nozzle unless the motor **68** is operated to pivot the nozzle and nozzle housing upwardly to the uppermost broken line position of FIG. 4. This upward pivoting movement of the nozzle by the motor **68** is effected automatically by means which will now be described in order to avoid the application of glue to the central portion of the side flap.

Associated with the pneumatic motor **68**, as shown schematically in FIG. 8, is a directional valve **104** having a body **105** with an inlet port **106** connected to a suitable source of pressurized air (not shown), two outlet ports **107** and **108** connected by lines **109** and **110** to the head and base ends of the motor cylinder **70**, respectively, and an exhaust port **111**. Within the body **105** of the valve **104** is a valve spool **112** shiftable between two positions at which the lines **109** and **110** are alternately placed in communication with the exhaust port **111** and the inlet port **106**. That is, with the spool **112** moved to the left-hand position, shown by the full lines of FIG. 8, the line **109** is in communication with the inlet port **106** and the line **110** with the exhaust port **111**, whereby the head end of the motor cylinder **70** is pressurized and the base end vented causing the piston **71** to move to the left and pivoting the nozzle housing **65** downwardly toward the moving flaps **38**. Likewise, when the spool **112** is moved to the right-hand position shown by the broken lines of FIG. 8, the line **110** is placed in communication with the fluid pressure source and the line **109** is vented through the exhaust port **111**. This, in turn, causes the base end of the cylinder **70** to be pressurized and the head end to be vented so that the piston will move to the right and raise the nozzle out of the path of the moving flaps.

The spool **112** is biased towards the position corresponding to the lowered position of the nozzle **81**, as by a tension spring **114** connected to a spool extension **115**, and is moved to the position corresponding to the raised position of the nozzle by energization of a solenoid such as the solenoid **116** surrounding the spool extension **115**. The solenoid **116** is connected directly to the electrical supply line L_2 by the line **117** and to the supply line L_1 by two separate control circuits.

The first of these two control circuits provides for energization and de-energization of the solenoid **116** in timed relationship to the movement of the cases C, C through the gluting mechanism to cause movement of the nozzle out of the path of the flaps of the moving cases and back again so as to skip the application of glue over a portion of each flap moving along such path. As shown schematically by FIG. 8, this circuit includes the line **118**, the normally open switch **119** and the line **120** which contains a pair of normally closed contacts CR–1*a*. The circuit also includes the line **121**, the normally open switch **122** and the line **123**, the lines **121** and **123** being connected to the supply lines L_2 and L_1, respectively, with the line **121** also containing the control relay CR–1. The lines **120** and **121** are connected by an additional line **124** which contains a pair of normally open contacts CR–1*b*, both the contacts CR–1*a* and CR–1*b* being operated by the relay CR–1. The switch **119**, as indicated schematically by FIG. 8, is located forwardly in the direction of case movement from the nozzle **81** and is actuated or closed by engagement with each case advancing past its location, while the switch **122** is located rearwardly of the nozzle and adapted to be actuated or closed by engagement with the flight bars **26**.

Considering the functioning of this first control circuit in conjunction with a case C moving through the gluing mechanism, it will be understood by reference to FIG. 8 that as a case is advanced by one of the flight bars **26** each outwardly spread flap **38** thereof will engage the associated lowered nozzle **81** and flex it upwardly to initiate the application of glue to the leading portion of the flap. As the case is advanced further it strikes the switch **119**, closing the same and completing a circuit through the normally closed contact CR–1*a* to the solenoid **116**. The solenoid is thus energized causing the valve **112** and motor **68** to operate and pivot the nozzle upwardly away from the flap **38**, thus interrupting the application of glue thereto. At this time the nozzle assumes its normal unflexed condition so that no glue flows therefrom.

After still further movement of the case through the machine, the flight bar **26** associated therewith will strike and close the switch **122** and complete a circuit through the control relay CR–1, causing the contacts CR–1*a* to be opened and the contacts CR–1*b* to be closed. The opening of the contacts CR–1*a* breaks the circuit to the solenoid **116** and thus causes the nozzle to be brought back into engagement with the flap to resume the application of glue thereto. The closing of the contacts CR–1*b* completes a holding circuit to the relay CR–1. So long as the switch **119** remains actuated by a case travelling thereover the holding circuit will remain completed and the contacts CR–1*a* will remain open, de-energizing the solenoid **116** and thereby keeping the nozzle in its lowered position. When the case passes the location of the switch **119**, the switch opens and breaks the circuit to the control relay CR–1 which returns the contacts CR–1*a* to their normal closed position and the contacts CR–1*b* to their normal open position. The closing of the contacts CR–1*a*, however, does not energize the solenoid **116** due to the fact that the switch **119** is now open. The nozzle **81** will therefore remain in its lowered position in anticipation of the next succeeding case flap.

The second control circuit for connecting the solenoid **116** to the supply line L_1 operates to raise the nozzle **81**, and to thereby shut off the flow of glue to prevent spillage, if the movement of the cases is stopped while the nozzle is in engagement with a flap. Referring to FIG. 8, this circuit consists of the line **125**, the normally open switch **126**, and the line **127** which contains a pair of normally open contacts **31***a*. The contacts **31***a* are operated by a current overload relay **31** operatively associated with the

drive motor **30** to close the contacts **31***a* when an excessive current is drawn by the motor, the contacts **31***a* remaining open during normal operation of the gluing mechanism when normal current is drawn by the motor. The switch **126**, on the other hand, is adapted to be actuated or closed by engagement with a case C moving through the machine and is located directly in line with the glue nozzle **81** so as to be closed whenever any part of a case flap is in gluing position with respect to the nozzle. That is, whenever the nozzle is in engagement with a case flap, and thereby flexed to permit the flow of glue therefrom, the switch **126** is closed to condition the solenoid **116** for immediate operation when the contacts **31***a* are subsequently closed by actuation of the overload relay **31**. Actuation of the relay **31** occurs whenever the motor **30** is stalled and caused to draw heavy current by a stoppage in the movement of the cases C, C through the gluing mechanism. Therefore, if the movement of the cases stops while one of the case flaps is in position for gluing, the solenoid **116** will be actuated and the nozzle raised to its elevated position to terminate the flow of glue.

If the movement of the cases is stopped while no flap is in engagement with the nozzle, the switch **126** will not be actuated and the nozzle will not be raised. Under this condition, however, no glue will flow from the nozzle since it is not bent or flexed from its normal condition as required for flow. Of course, if the case movement is stopped while the nozzle is in its raised position for skipping the application of glue to a portion of a flap, both of the solenoid control circuits will be completed when the stoppage occurs and will remain completed to hold the nozzle elevated until the case movement is resumed.

Although in FIG. 8 the control system has been shown in associated with only one of the nozzles **81**, it will be understood that only one such control circuit is required for both of the glue heads. The lines **109** and **110** actually are connected to both of the pneumatic motors **68**, with the motors in parallel, so that the right and left-hand nozzles are moved similarly and simultaneously in response to the operation of the valve **104** by the solenoid **116**.

In further accord with the present invention, means are also provided to prevent "freeze-up" or clogging of the nozzles due to hardening of the glue during periods of non-use. This means includes a well **125** (FIGS. 3 and 4) positioned adjacent each glue applicator head to carry a supply of water or other liquid which wets a wick **126** engaged by the associated nozzle **81** when the nozzle is in its normal unflexed position in the path of movement of the flaps of the advancing cases, as shown by the full lines of FIG. 4. More specifically, the well **125** is positioned at the outer side of the glue applicator head and the wick **126** extends upwardly therefrom and then horizontally in a tray **127** which is supported transversely of the machine below the spaced apart portion **128** of the guide plates **87**, **87**, as shown in FIG. 4. The tray and wick are supported so that the nozzle orifices **88**, **88** will engage the wick and remain moist to prevent the setting of glue thereon when the nozzle is in its lower position and out of engagement with a case flap.

While it is believed that the operation of the glue mechanism will be apparent from the foregoing description of the construction thereof, the said operation may be briefly summarized as follows:

When a carton or case C reaches the roller conveyor **14** on the carton closing machine **12**, it is placed in position to be engaged by a flight bar **26** carried by the driven conveyor chains **16**, **16**. The flight bar then propels the case through the machine in timed relation to the rotation of the sprocket shaft **20**. When the case reaches the gluing station its forward end and its spread flaps **38**, **38** simultaneously engage the switch **126** and the lowered nozzles **81**, **81**. Operation of the switch **126**, however, has no effect at this time because of the open contacts **31***a* in the second control circuit. Engagement of the flaps **38**, **38** with the nozzles **81**, **81**, on the other hand, thrusts the nozzles upwardly and opens the valves therein, initiating the application of glue to the leading portions of the flaps with the glue flowing through the orifices **88** in the nozzle tips **86**. As the case continues its movement through the gluing station the application of glue will continue until the case strikes the switch **119** and thereby energizes the solenoid **116** to operate the directional valve **104**, and consequently the motors **68**, **68** to raise both of the nozzles above the flaps **38**, **38**. The nozzles then assume their normal unflexed condition, closing the valves therein and terminating the flow of glue from the nozzle orifices. Preferably the switch **119** is so located along the path of movement of the cases that the nozzles are raised after glue has been spread on approximately the first third of the flaps **38**, **38**; that is, the portions of the flaps which engage the front inner flap **34** when the flaps are sealed.

The nozzles **81**, **81** remain in their raised, non-gluing position until the case C is moved a further distance through the gluing station and until the flight bar **26** associated with the case strikes the switch **122**. This breaks the circuit to the solenoid **116** and causes operation of the valve **104** and motors **68** to return the nozzles to their lowered positions in engagement with the trailing portions of the flaps **38**, **38**. The length of time that the nozzles remain in their elevated positions is preferably such that no glue is applied to the middle portions of the flaps **38**, **38** which are associated with the space between the inner flaps **34** and **36** when the case is closed. After the trailing edges of the flaps **38**, **38** pass beyond the nozzles, the nozzles remain in their lowered positions but, being out of engagement with the flaps, flex downward to their normal unbent condition and shut off the flow of glue through the orifices. As the nozzles return to their unbent condition, the nozzle tips **86** thereof come in contact with the wicks **126**, **126** which maintain the same in a moist condition to prevent the setting of glue thereon during periods of non-use when no flaps are in the gluing section.

Of course, when cases are being handled in which no space occurs between the opposed edges of the inner flaps **34** and **36**, the switch **122** may be omitted or removed from the path of the flight bars **126** so that the nozzles will not be raised during normal movement of the cases through the machine. As a result, glue will be spread over the entire length of the flaps **38**, **38**, as is desirable in this situation.

Should the movement of the cases through the machine be stopped while a case is in the gluing station with the nozzles **81**, **81** flexed for the application of glue, the consequent stalling of the motor **30** will cause the current overload relay **31** to close the contacts **31***a* in the second solenoid control circuit. Since the switch **126** is already closed by the presence of a case in the gluing station, the solenoid **116** will be energized to raise the nozzles and to thereby prevent the further flow of glue therefrom.

The invention claimed is:

1. Gluing mechanism for a case closing machine which handles a succession of moving cases each having at least one flap disposed for the application of glue thereto, said mechanism comprising a glue applicator nozzle connectible with a source of glue under pressure and which nozzle includes a valve which permits glue to flow therefrom only when the nozzle is engaged by a flap of a moving case, movable means for supporting said nozzle in a position in the path of movement of the flaps of the moving cases to be engaged and operated thereby and in a position out of the said path of movement, and means operatively associated with said nozzle support means to place the nozzle selectively in each of its two said positions and including control means normally holding said nozzle in the said path of movement but being operable

in response to the movement of a case past the location of said nozzle to move the nozzle out of the said path and to return it to its normal position whereby to skip the application of glue over a portion of each flap moving along the said path.

2. Gluing mechanism as set forth in claim 1 and wherein means is provided to maintain the nozzle in a moist condition to prevent glue from setting thereon during non-use thereof, said means being supported for engagement by the nozzle while in its normal position in the said path of movement and out of engagement with a flap.

3. Gluing mechanism for a case closing machine which handles a succession of moving cases each having at least one flap disposed for the application of glue thereto, said mechanism comprising a glue applicator nozzle connectible with a source of glue under pressure and which nozzle includes a valve which permits glue to flow therefrom only when the nozzle is engaged by a flap of a moving case, movable means for supporting said nozzle in a position in the path of movement of the flaps of the moving cases to be engaged and operated thereby and in a position out of the said path of movement, fluid pressure means operatively associated with said nozzle support means to place the nozzle selectively in each of its two positions, a source of fluid pressure for said fluid pressure means, and valve means interposed between the pressure responsive means and its fluid pressure source operable in timed relationship to the movement of each case past the location of said nozzle to cause said nozzle to move out of the said path and to return to position in the said path whereby to skip the application of glue over a portion of each flap moving along the said path.

4. Gluing mechanism for a case closing machine which handles a succession of moving cases each having at least one flap disposed for the application of glue thereto, said mechanism comprising a glue applicator nozzle connectible with a source of glue under pressure and which nozzle includes a valve which permits glue to flow therefrom only when the nozzle is engaged by a flap of a moving case, movable means for supporting said nozzle in a position in the path of movement of the flaps of the moving cases to be engaged and operated thereby and in a position out of the said path of movement, fluid pressure means operatively associated with said nozzle support means to place the nozzle selectively in each of its two positions, a fluid pressure source for said fluid pressure means, and valve means interposed between the fluid pressure means and its fluid pressure source operable in response to the movement of a case past the location of said nozzle to cause said nozzle to move out of the said path and to return to position in the said path whereby to skip the application of glue over a portion of each flap moving along the said path.

5. Gluing mechanism as set forth in claim 4 and wherein means is provided to maintain the nozzle in a moist condition to prevent glue from setting thereon during non-use thereof, the said means being supported for engagement by the nozzle when the latter is positioned in the said path of movement and out of engagement with a flap.

6. Gluing mechanism as defined in claim 4 further characterized by means responsive to movement of the cases for operating said valve means to cause said nozzle to move out of the said path when the movement of the cases is stopped with a flap in engagement with said nozzle.

7. Gluing mechanism for a case closing machine which handles a succession of moving cases each having at least one flap disposed for the application of glue thereto, said mechanism comprising a glue applicator nozzle connectible with a source of glue under pressure and which nozzle includes a valve which permits glue to flow therefrom only when the nozzle is engaged by a flap of a moving case, means for supporting said nozzle for limited movement between two end positions located, respectively, in and out of the path of movement of the flaps of the moving cases, means for adjusting each of said two end positions of said nozzle movement, fluid pressure means operatively associated with said nozzle support means to place the nozzle selectively in each of its two end positions, a source of fluid pressure for said fluid pressure means, and valve means interposed between said fluid pressure means and its fluid pressure source normally positioned to hold said nozzle in the said path for engagement and operation by a flap of a moving case but being operable in timed relationship to the movement of each case past the location of said nozzle to cause movement of the said nozzle out of the said path and then back into the said path whereby to skip the application of glue over a portion of each flap moving along the said path.

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