

W. A. JOPLIN.
 CARTON SEALING MACHINE.
 APPLICATION FILED NOV. 15, 1909.

977,097.

Patented Nov. 29, 1910.

4 SHEETS-SHEET 1.

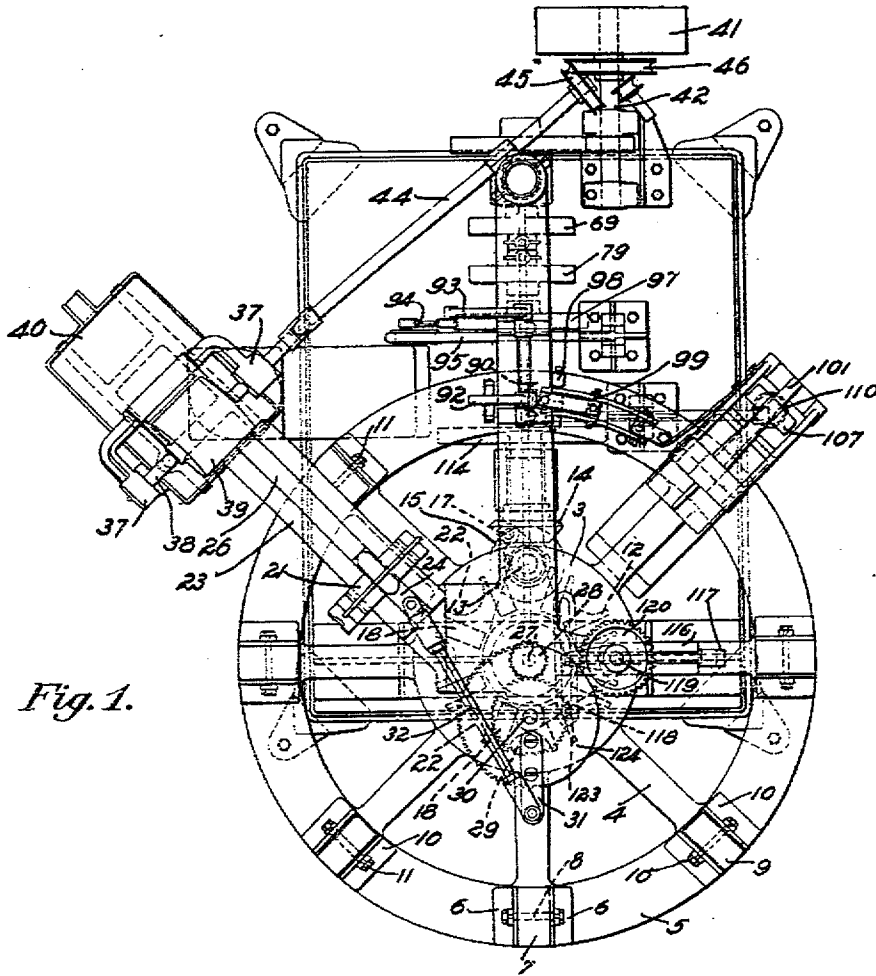


Fig. 1.

Witnesses:

Alvin Tarr
 John H. Parker

Inventor :

William A. Joplin
 by Macleod, Lealman, Copeland & Siler
 Attorneys

977,097.

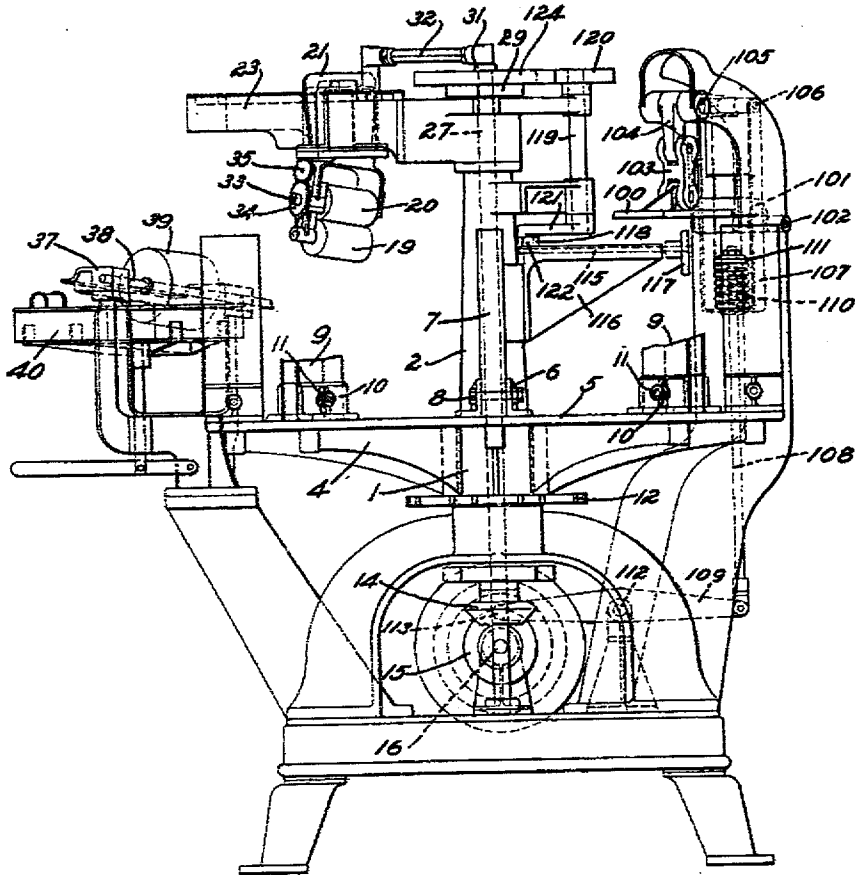


Fig. 2.

Witnesses:

Alvin Tarr
 John H. Parker

Inventor:

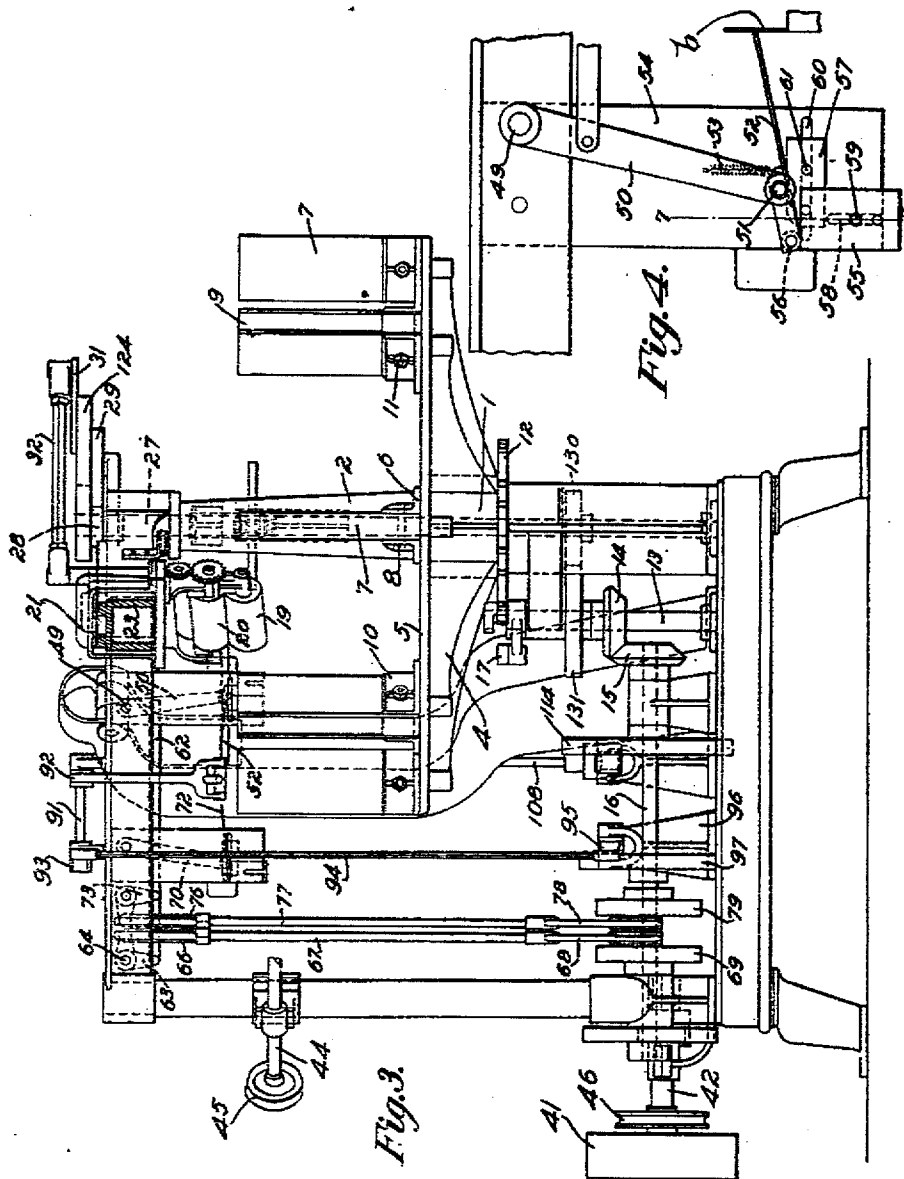
William A. Joplin
 by Maclure, Calver, Leopold & Dike
 Attorneys

977,097.

W. A. JOPLIN.
 CARTON SEALING MACHINE.
 APPLICATION FILED NOV. 16, 1909.

Patented Nov. 29, 1910.

4 SHEETS—SHEET 3.



Witnesses:
 Aline Farr
 John H. Parker

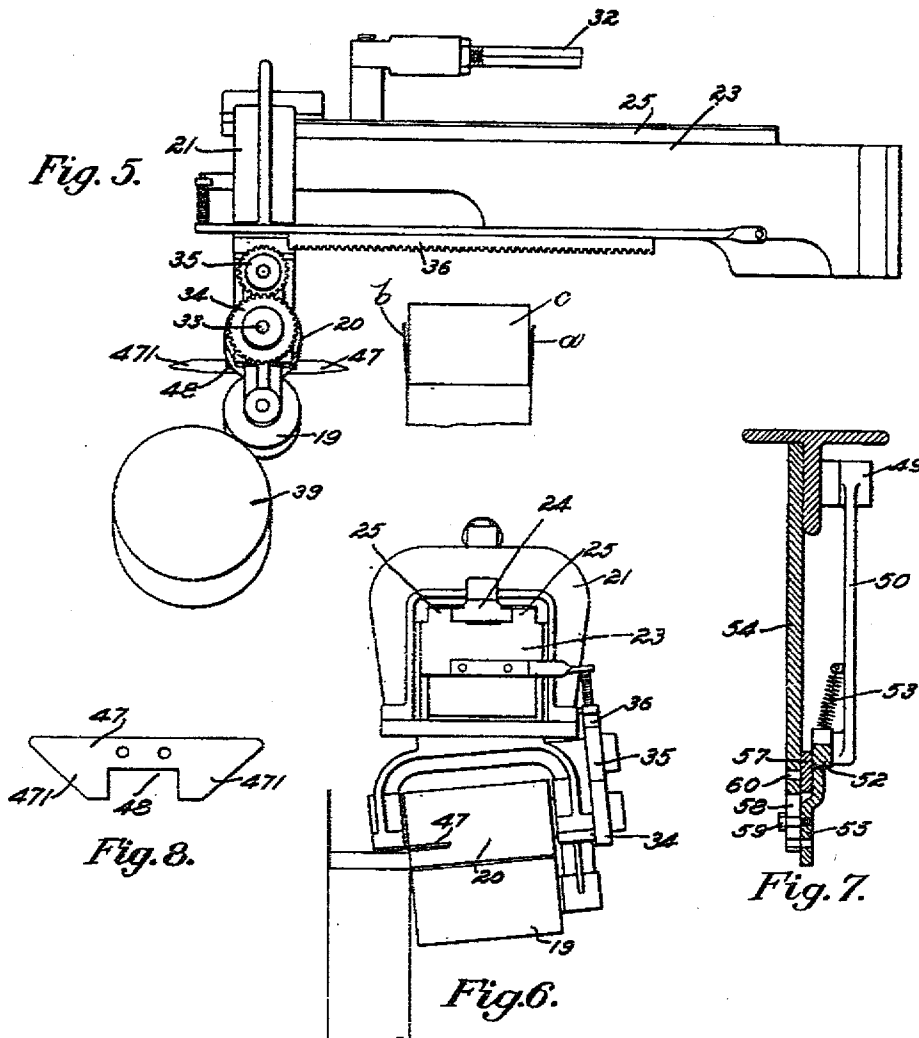
Inventor :
 William A. Joplin
 by Macleod, Colver, Copeland & Pike
 Attorneys

W. A. JOPLIN.
 CARTON SEALING MACHINE.
 APPLICATION FILED NOV. 15, 1909.

977,097.

Patented Nov. 29, 1910.

4 SHEETS—SHEET 4.



Witnesses:
 Alice Farr
 John H. Parker

Inventor:
 William A. Joplin
 by Macdonald, Leavelle, Caspelland & Seiler
 attorneys

UNITED STATES PATENT OFFICE.

WILLIAM A. JOPLIN, OF LAWRENCE, MASSACHUSETTS, ASSIGNOR TO PNEUMATIC SCALE CORPORATION LIMITED, OF QUINCY, MASSACHUSETTS, A CORPORATION OF MAINE.

CARTON-SEALING MACHINE.

977,097.

Specification of Letters Patent. Patented Nov. 29, 1910.

Application filed November 15, 1909. Serial No. 528,028.

To all whom it may concern:

Be it known that I, WILLIAM A. JOPLIN, citizen of the United States, residing at Lawrence, county of Essex, State of Massachusetts, have invented a certain new and useful Improvement in Carton-Sealing Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

10 The cartons in which package goods are put up by machine usually come in knock-down form and have end closing flaps which are intended to be subsequently folded to close both the bottom and the top. The
15 carton has to be opened up and the bottom flaps closed and sealed before the goods are put into the package and after the package is filled the flaps which are to close the top have to be folded and sealed. Heretofore
20 this flap closing operation has sometimes been done by hand and sometimes by machinery. When it has been done by machinery the bottom flaps have usually been closed and sealed upon one machine, the cartons
25 have then been filled and the top closing flaps have then been closed and sealed by another machine especially designed for that purpose.

In some factories the business is not of
30 sufficient magnitude to warrant the employment of independent machines for folding and sealing the bottom flaps and for folding and sealing the top flaps both on account of the expense of the machines and the space
35 occupied by them.

I am aware of an application now pending, Serial No. 520,341 for a combination machine by which both the bottom of the unfilled carton and top of the filled carton
40 may be folded and sealed in one machine.

The object of this invention is to provide an improvement on said other invention.

The invention will be fully understood from the following description taken in connection with the accompanying drawings, and the novel features will be pointed out and clearly defined in the claims at the close of the specification.

In the drawings,—Figure 1 is a top plan
50 of a machine embodying the invention. Fig. 2 is a front end view. Fig. 3 is a side view viewed from the left of Fig. 1, the gluing feed roll mechanism being omitted for the purpose of showing more clearly parts

which would be obstructed by the gluing
55 feed roll. Fig. 4 is an enlarged detail of one of the end flap closing devices. Fig. 5 is a view taken from the same side as Fig. 3 showing the engagement of the glue roll with the glue feed roll. Fig. 6 is an end
60 view of Fig. 5 viewed from the left of Fig. 5. Fig. 7 is a section on line 7—7 of Fig. 4. Fig. 8 is a detail view of the tapered spreader plate which spreads the flaps before
65 gluing.

In carrying out the invention there is provided a step-by-step rotary spider having radiating arms, some of which carry
70 blocks to hold empty cartons in opened out form and to support them during the operation of closing and sealing the bottom flaps, and others of said arms have pockets to hold the filled cartons and to carry them through
75 the mechanism for closing and sealing the top closing flaps, said carton holding blocks and package holding pockets alternating
80 with each other and the same gluing mechanism being used for folding and sealing the flaps of the empty cartons that are used for folding and sealing the top flaps of the filled
85 packages.

Referring now particularly to the drawings,—the spider is formed with a central hub 1 rotatably mounted on the column 2 and having on its upper end a circular disk
85 3 from which radiate a series of arms 4 shown in the drawings as eight in number and connected at their outer ends with an annular plate 5, said hub 1, disk 3, arms 4 and annular plate 5 together making up the
90 spider. The spider or skeleton form is not essential to the invention as the disk 3 might be made of large enough diameter to include the arms 4 and annular plate 5 all as a solid disk but the spider form is preferable for lightness of construction and
95 saving of metal and general convenience in the construction and handling of the machine. Mounted upon the ring 5 at regular intervals apart are a series of holders for
100 the blocks which hold the empty cartons. These block holders consist of a pair of angle plates 6, 6, made fast to the ring 5 either by casting integral therewith or by bolting or any other suitable way and the
105 blocks 7 are secured between the upright portions of the angle plates in any suitable way, as by screw bolts 8 for instance, so

that the blocks may be removed when desired and replaced by others of different sizes. Arranged also upon the ring 5 at equal distances apart from each other and

- 5 midway between the block holders are a series of pockets 9 to hold the filled cartons. These pockets are shown as formed with three walls,—that is,—two side walls and a back wall and being open on the front side.
- 10 Each pocket is fastened between two angle plates 10, 10, made fast to the ring plate 5, the fastening means being such that when desired, the pockets 9 can be removed and others substituted for them. The means
- 15 shown for securing the pockets between the angle plates consist of bolts 11. Any suitable means, however, may be employed.

- The spider is given an intermittent or step-by-step rotary movement in any well
- 20 known manner, as for instance the well known Geneva stop-motion. A detail description of the Geneva stop-motion is deemed unnecessary. In brief the star wheel 12 is formed with a series of slots 18
- 25 and scallops 22, eight in number, corresponding in number with the combined number of carton holding blocks and pockets so that during each revolution of the spider there will be eight periods of rest.
- 30 The star wheel 12 is mounted fast on the hub of the spider or made integral therewith so that the spider will move in unison with the star wheel. The Geneva stop mechanism is driven by a shaft 13 having
- 35 a beveled gear 14 engaging with a beveled gear 15 on the driving shaft 16. An arm on shaft 13 carries a roll 17 which engages with the slots 18 of the star wheel 12.

- Each end of the carton is usually provided with four flaps, the form which is preferred having two opposite flaps which extend only part way across the open end of the cartons so that they do not overlap; but when folded, their ends will meet or
- 45 nearly meet. One of the side flaps folds over onto the first two folded flaps, and the last flap folds over to cover the entire bottom or top as the case may be. It is frequently, and perhaps usually, customary to
- 50 apply glue to at least two of the flaps. In carrying out the present invention glue is applied to only one of the flaps; that is,—the first folded of the side flaps, glue being applied to both faces of said flap, so that the
- 55 inner face will adhere to the inner folded flaps and the outer face will adhere to the outside folded flap, thus making the gluing operation much simpler. Further, this gluing operation is performed by means of
- 60 two movable glue rolls whose peripheries have yielding contact with each other and which are mounted on a reciprocable traveler in such manner that when the traveler moves in one direction, it will carry the glue
- 65 rolls across the path of the carton flap in

such manner as to embrace the flap which is to be glued between them and thereby apply glue to both faces of the flap. For economy of time and other reasons the construction is such that when the traveler reciprocates in one direction, the glue rolls will apply adhesive to both faces of the flap of the top end of the filled carton which is to be sealed, and the return movement of the traveler at the next period of operation will cause the glue rolls to engage the flap of the bottom end of the unfilled carton which will then be in position for gluing.

The mechanism for moving the yoke or traveler which carries the glue rolls is so timed with relation to the movement of the carrier for the cartons, that the forward movement of the glue rolls 19, 20, which apply the glue to one carton occurs at one period of rest of the spider and then the glue rolls remain stationary while the spider moves to bring the next carton into position to be glued and then at the next period of rest of the carton carrier the glue rolls move back to the position for engagement with the glue feed roll 39, and on said return movement they embrace and glue the flap of said second carton. During said forward movement the glue rolls obviously carry more glue than they do on their return movement, because on the forward movement a part of the glue which they carry will be transferred to the carton, and by reason of the glue rolls carrying a thicker film of glue on the forward movement the flap which is glued during said forward movement will receive a thicker film of glue than the one which is glued on the return movement. Now it is found in practice that the empty carton which is mounted on the block and which further on in the travel of the carrier passes under the pressure mechanism does not require so thick a film of glue as is required for the filled carton, because the holder block for the empty carton is solid and the glued flap of the empty carton being pressed between the solid block and the pressure plate the glued flap will be made to adhere to the embracing flaps by the use of a less amount of glue than is required for the filled carton which does not have a solid block against which the flap is pressed, the contents of the filled carton not furnishing as solid a back as the block. For these reasons the mechanism is so arranged and timed that the pocket carrying the filled carton will be brought into position for the carton to be glued during the forward stroke of the glue rolls and the block containing the empty carton will be in position for the carton to be glued on the return stroke of the glue rolls.

The glue rolls 19 and 20 are journaled in a yoke 21 having their peripheries in contact with each other. The yoke 21 is slidably

mounted on a bracket 23. The mechanism for causing the sliding of the yoke and thereby the movement of the glue rolls is as follows: Mounted on a shaft 27 which is
 5 journaled inside of the column 2 is a pinion 28 which meshes with a gear 29 mounted on a stud 30. Said gear 29 is connected by a crank 31 with one end of a connecting rod 32, the other end of said connecting rod being pivoted to the yoke 21 so that at each
 10 rotation of the gear 29 the yoke 21 makes a complete reciprocation both forward and back carrying the glue rolls 19 and 20 with them. The pinion 28 is one-half the diameter of the gear 29 and has one-half the number of teeth so that it takes two revolutions of the pinion 28 to make one revolution of the gear 29. Therefore at each rotation of the shaft 27 the yoke 21 is given a full stroke in one direction and at the next rotation of shaft 27 the yoke is given a full stroke in the reverse direction.

The shaft 27 rotates intermittently, making one complete rotation during each period of rest of the spider and remaining at rest during the movement of the spider. The mechanism for giving to the shaft 27 said intermittent movement is as follows:
 25 Mounted on the shaft 27 is an intermittent gear 130 which meshes with an intermittent gear 131 on shaft 13, said shaft 13 being a continuously rotating shaft which, through intermediate mechanism, drives the spider as already described. The intermittent
 30 gears 13 and 131 are so constructed and their teeth bear such relation to each other as to give the intermittent rotation to shaft 27 alternately with the intermittent rotation of the spider as above mentioned.

40 At each movement of the yoke and the glue rolls in either direction they are adapted to engage between them one of the extended flaps of the carton if the carton is in the proper position as will be hereinafter described. It is important that the glue rolls should be made to revolve as they travel over the flap of the carton, and it is also important that their peripheries should revolve at the same rate of speed that they travel in the reciprocating movement. The mechanism for this is as follows: Mounted
 50 on the axle 33 of one of the glue rolls, which as shown is the upper glue roll 20, is a pinion 34 which engages with a pinion 35 mounted on a stud which projects from the yoke. Said pinion 35 engages with a stationary toothed rack 36 so that as the yoke is reciprocated the pinion 35 will engage with the rack 36 and will be caused to revolve, thereby revolving the pinion 34, and thus rotating the glue roll 20. The glue roll 20 by its friction with the glue roll 19 causes the glue roll 19 to revolve. The pinion 34 is of such size in relation to the
 65 diameter of the glue roll that the peripheries

of the glue rolls will rotate at the same rate of speed as the reciprocating movement given to them by the movement of the yoke.

The mechanism for applying glue to the glue rolls is as follows: Journaled in bearings 37 is a shaft 38 on which is mounted a glue roll 39 which as it revolves dips into a glue pot 40 and is constantly rotated by means of the intermediate connection with the driving wheel 41 mounted on a shaft 42.
 70 Said intermediate connections shown consist of the shaft 44 having a flexible connection with the shaft 38 at one end and carrying at its other end a pulley 45 which is belted to a pulley 46 on the driving shaft 42. The toothed part of the rack 36 is of just sufficient length so that on the outward stroke of the yoke 21 the pinion 35 will reach the end of the toothed portion of the rack just before the end of the stroke and
 80 the feed roll 39 is so positioned that at the outward stroke of the lower glue roll 19, it will be brought into engagement with the feed roll 39. The engagement of the rotating feed roll 39 with the glue roll 19 will cause the glue roll 19 to revolve and thereby a film of glue will be deposited from the feed roll upon the glue roll 19. The rotation of the glue roll 19 which is in frictional engagement with glue roll 20 will also cause the
 90 glue roll 20 to revolve, thereby depositing a part of the film of glue upon the glue roll 20.

As the carton approaches the position where the gluing is to take place, the flaps
 100 are all usually in the upright position. The cartons are moved broadside on, and it is the rear flap which is to be glued. The glue rolls move transversely of the path of the carton just at the rear of the carton after
 105 the carton has come to a period of rest. In order, therefore, to glue the lap, it is necessary to turn the said flap backward at an angle to the carton into the path of the glue rolls—that is—if the cartons are held in a
 110 vertical position, the flap will be turned into an approximately horizontal position pointing rearward. Inasmuch as when the bottom flap of the empty carton is to be sealed, the carton is in an inverted position upon the
 115 block—that is—the bottom end of the carton is upward—then so far as the operation of the gluing is concerned, the bottom of the empty carton will occupy the same position as the top end of the filled carton occupies
 120 when the filled carton comes around, because the filled carton stands bottom downward, so that the same means for spreading and gluing and folding the bottom flaps of the empty carton are also adapted to spread and
 125 fold and glue the top flaps of the filled carton.

Not only is it necessary to fold outward the side flap which is to be glued to bring it into position to be engaged by the glue rolls,
 130

but it is also desirable to turn down the two end flaps to get them out of the way temporarily during the gluing of the side flaps. Means for doing this is as follows: Secured to the yoke is a thin spreader plate 47 which extends between the ends of the glue rolls and projects beyond the ends of the glue rolls and has tapered lateral portions 471 extending both forwardly and rearwardly, the tapered forward portion being adapted to fold the flaps when the yoke and glue rolls reciprocate in one direction and the tapered portion at the other end being adapted to fold the flaps of the next carton when the yoke moves in the reverse direction. This spreader plate is normally outside of the path of the carton. When the yoke and glue rolls reciprocate after the carton is at rest the spreader plate is carried transversely of the path of the upwardly projecting flaps and engages the outer end flap *b* turning it inward and also engages the rear side flap *c* folding it backward and as it continues the movement it turns the inner end flap *a* away from the carton, that is toward the center of the circular path of the cartons so that the two end flaps *b*, *a* and the rear side flap *c* will be turned down in time for the two glue rolls 19 and 20 to engage the rearwardly spread side flap *c*. The forward movement of the yoke is sufficient for the glue rolls to travel over the entire length of the side flap *c*. The spreader plate 47 is formed with a recess 48 between the glue rolls so as not to interfere with the engagement of the glue rolls with the side flap of the carton. This gluing of the flap takes place during one of the periods of rest of the spider and carton. Then the glue rolls remain stationary while the spider moves carrying the carton away from the glue rolls. After passing out from the spreader plate 47, the flaps which have thereby been spread down spring back again toward the vertical position, and it is now necessary to fold inwardly the two end flaps and to fold down upon said two end flaps the side flap which has been glued and then to fold outside of all the other side flap. The mechanism for doing this is as follows: Pivoted at 49 to a stationary portion of the machine above the path of the moving carton is a downwardly hanging arm 50 to the lower end of which there is pivoted at 51 a finger 52 intermediate its ends, said finger extending crosswise of the direction of movement of the carton and being adapted to engage with the outer end flap of the carton. A spring 53, one end of which is secured to the arm 50 and the other end of which is secured to a projection on the finger 52, tends normally to hold the finger 52 tilted upward as shown in Fig. 4.

The forward portion of the finger 52, that is the portion at the right of the pivot 51 as viewed in Fig. 4, which engages the flap of

the carton, is preferably made thinner than the rear portion of the finger which is at the left of the pivot 51 in order to not interfere with the folding of the second flap onto the first flap before the finger 52 is withdrawn. The purpose of having the finger 52 first engage the flap of the carton at an upward angle is because the flap being in an approximately vertical position, if the finger should engage it straight on, that is horizontally, there would be danger of the flap being punctured by the finger. Therefore it is desirable to have the finger tilted upward until the flap is partially folded after which the finger may be brought into a horizontal position to complete the folding so that the finger will at no time engage the flap at right angles thereto.

The means for actuating the finger 52 as above described is as follows: Secured to a downwardly hanging plate 54, which is a part of the frame, is a block 55 slightly offset from the plate on which the rear end of the finger 52 normally rests, forming a stop which limits the upward tilt of the forward end of the finger. Projecting laterally from the rear end of the finger in the opposite direction between the plate 54 and the finger 52 is a roll 56 which, after the finger has been swung forward, is adapted to engage the upper edge of a block 57 which is secured to the face of the plate 54 between the block 55 and the plate 54. This block 57 is curved at its upper rear corner, as viewed in Fig. 4, where the roll 56 first engages it, so that as the roll rides over the upper edge of the block 57, the finger will gradually be brought down into a horizontal position, and during the latter part of its movement it rides on the horizontal upper edge of the block 57, maintaining the finger 52 during the remainder of its forward movement in a horizontal position. When the arm 50 swings backward withdrawing the finger 52 from the flap, as soon as the roll 56 rides back off of the sloping back of the block 57, the spring 53, which all the time exerts an upward pull on the finger 52, pulls the finger 52 again into its tilted position. The block 55 is adjustable vertically in order to regulate or vary the angle of inclination of the finger 52. This adjustability may be secured by forming the plate 54 with a vertical slot 58 and clamping the block to the plate by a bolt 59 which passes through the block and said slot. Preferably also the horizontal block 57 is adjustable laterally so as to vary the point at which the finger 52 will be brought down into a horizontal position. This may be done by forming the plate 54 with an elongated horizontal slot 60, the said block 57 being secured to the plate 54 by bolts 61 passing through said block 57 and elongated slot 60.

The mechanism for actuating the arm 50

is as follows: Pivoted at one end to said arm 50 is a connecting rod 62 whose opposite end is pivoted to one arm of a bell crank 63 which is pivoted on a stud 64. The other 5 arm of said bell crank 63 is pivoted to a connecting rod 66 which is adjustably connected to a rod 67 whose lower end is connected with a fork 68 which straddles the shaft 16 merely as a guide. Mounted on the 10 shaft 16 is a cam 69 having in its side a cam path with which there engages a roll (not shown) projecting from the side of the fork 68 as the cam 69 revolves. The connecting rod 67 is raised and lowered and 15 thereby, through the connecting mechanism, actuating the arm 50, rocking said arm so as to give the proper movement to the folder finger 52. The other end flap is folded by a finger 72 which is actuated by mechanism 20 corresponding exactly to the mechanism which actuates finger 52, the only difference being that one is right and the other is left. This mechanism includes arm 70, finger 72, bell crank 73, connecting rods 76 and 77, 25 fork 78 and cam 79.

The glued flap, which is the rear flap the way the carton is moving, should next be folded. The mechanism for doing this is as follows: Fast to a rockshaft 91 is a lever 30 92 which hangs down over the path of the carton and carries at its lower end a roller 90. The rockshaft 91 is actuated in such manner that after the carton has come to one of its periods of rest, the arm 92 will be caused to sweep down and forward just behind the carton in the same direction that 35 the carton has moved and engage the rear face of the upwardly extending glued flap and the continued onward sweep of the lever 92 will fold the said glued flap down upon the previously folded end flaps and then after the spider begins to move again, the lever 92 will be turned back to its normal position so as not to interfere with the upwardly extending flaps of the next carton as 40 it passes beneath.

The mechanism for actuating the rockshaft 91 is as follows: The rockshaft 91 is pinned to a lever 93, one end of which is pivoted to a connecting rod 94, the other end of 50 said connecting rod being pivoted to one end of a cam lever 95, the other end of said cam lever being pivoted to a bracket 96. The cam lever 95 carries a roller which engages with a path cam 97 mounted on shaft 16. 55 The cam 97 is so constructed and timed as to give the proper movement to the mechanism for folding the glued flap just after the two end flaps have been folded.

60 Hung over the path of the moving cartons just beyond the point where the carton passes from the point where the glued flap is folded is a roller 98 which engages the forward side flap which is the last unfolded 65 flap and folds said flap as the carton moves

on beneath it. After passing the folding roller 98, the carton passes on beneath a pressure plate 99 which holds the flap in its folded position for a time to prevent springing back while the carton passes to a position 70 beneath a press plate 100.

At one of the periods of rest of the spider after the flaps have been folded the carton stops beneath the press plate 100. Mechanism is provided for causing this press plate 75 to descend and to press down upon the top of the outside folded flap during this period of rest. The mechanism provided is as follows: The press plate 100 is carried by an arm 101 fulcrumed at 102. The actuating 80 mechanism which is shown is a toggle joint mechanism. Pivoted to the upper side of the press plate 100 is a link 103 whose upper end is pivoted to one arm of the bell crank lever 104, said bell crank being pivoted at 105, the other arm of said bell crank 85 being pivoted at 106 to the upper end of the fork 107. Passing loosely through the lower end of the fork 107 is a connecting rod 108 whose lower end is pivoted to a cam 90 lever 109. The upper end of said connecting rod 108 passes some distance up through the lower end of the fork 107 and through a coil spring 110 seated as to its lower end on said fork, the upper end of said spring 95 bearing against a head 111 on said connecting rod. The object of said spring is to give the pressure plate 100 a yielding pressure when the connecting rod 108 is pulled down to straighten the toggle joint and thereby 100 depress the plate 100. The cam lever 109 is fulcrumed at 112 and carries at its forward end a roller 113 which engages with a path cam 114 on shaft 16. The cam 114 is so 105 formed as to cause the pressure plate 100 to descend in time to engage the last folded flap of the carton just as it passes from beneath the plate 99. The object of this pressure plate is to press the folded flaps firmly during one of the dwells of the spider so 110 that the glue may become set sufficiently to prevent the flaps from springing open when the carton is moved away from the press. This is of greater importance in sealing the bottom flaps of the empty carton than of sealing the top flaps of the filled carton although it is useful in both cases. The pressure plate is raised before the spider begins its next movement.

As previously described, the outer side of 120 the pocket 9 is left open. The purpose of this is to enable the filled carton to be pushed out of the pocket at the end of the sealing operation. This removal of the carton takes place at a period of rest in the rotation of 125 the spider after it passes the pressure plate. In the machine shown, it is at the extreme right hand in Fig. 1. It is important that the mechanism for doing this shall be so timed in relation to the mechanism for actu- 130

ating the other parts of the machine that the removal should take place during said period of rest, and it is also important that this push mechanism shall be operated only when there is a pocket for a filled carton in position, that is in the machine as shown in the drawings, at every alternate period of rest of the spider, because there is alternately a block and a pocket brought into that position and the push mechanism is intended to operate only in connection with the filled cartons and not with the empty cartons. The mechanism provided is as follows: The rear wall of the pocket 9 is formed with an opening (not shown) through which a plunger may enter to push the filled cartons out through the pocket. A horizontal plunger rod 115 is slidably mounted in a bracket 116 and carries at its forward end a push plate 117 which, when the plunger moves forward, is adapted to pass through the opening in the rear wall of the pocket 9 and engage the carton held therein and to move forward and to push the carton out of the pocket. Mechanism is provided as follows: Fast to the rear end of the plunger rod 115 is a slotted cross-head 118. Rigidly mounted on shaft 119 is a pinion 120 and fast to the lower end of shaft 119 which carries the pinion 120 is a crank 121. The rear end of the crank 121 carries a pin 122 which engages with an elongated slot 123 in the cross-head 118 so that as the pinion 120 revolves, the plunger rod 115 will be given a sliding movement and the guide-ways in the bracket 116 will cause it to travel in a right line.

For the reason before stated it is desirable that the plunger should move forward only for each alternate period of rest of the spider. Fast to the face of gear 29 is an intermittent gear 124 whose teeth are adapted to engage with the teeth of the pinion 120. As already described the gear 29 makes only a half revolution for each revolution of the shaft 27, and shaft 27 makes one revolution for each period of movement of the spider; therefore the gear 124 makes one complete revolution for each two revolutions of the shaft 27 and for each two periods of movement of the spider. The toothed portion of the intermittent gear 124 is so proportioned that during one-half revolution of the gear 124 the gear 120 will be made to revolve and during the next one-half revolution the plain edge of the gear 124 will pass by the gear 120 and therefore cause no movement of the gear 120; thus the plunger rod 115 is actuated only at each alternate period of movement of the spider. At each rotation of the gear 120 the crank 121 will cause the plunger to move forward and back.

What I claim is:—

1. In a machine for closing and sealing the flaps of cartons, a rotary carrier having

a series of holders each adapted to hold an empty carton bottom upward, a series of pockets each adapted to hold a filled carton, said holders for the empty cartons and for the filled cartons alternating with each other, means for intermittently rotating said carrier, means for gluing and sealing the end closing flaps for the bottom of the unfilled cartons and the top closing flaps of the filled cartons at a certain point in the travel of each carton, the pockets for the filled cartons being open on their outer sides, a reciprocable plunger and mechanism actuated at each alternate period of rest of the carrier which engages one of the filled cartons at one of the stations of rest after it has passed the sealing mechanism to eject the filled carton from the pocket.

2. In a machine for closing and sealing the flaps of cartons, a rotary carrier for the cartons, means for intermittently moving the carrier, two glue rolls normally located outside the path of the cartons, means for reciprocating said glue rolls whereby said glue rolls will at each stroke in either direction embrace between them one of the flaps of the carton and travel across the same gluing both faces thereof, means for controlling the movement of said glue rolls and carton carrier whereby one carton will be glued during the forward stroke of the glue rolls during a period of rest of the carton carrier, the glue rolls remaining stationary while the carton carrier moves to bring another carton into position for gluing, the glue rolls then being moved through the return stroke and embracing the flap of said second carton.

3. In a machine for closing and sealing the flaps of cartons, a rotatable carrier having a series of blocks each adapted to hold an empty carton slipped thereon, a series of pockets each adapted to hold a filled carton, said pockets alternating with the said blocks, flap gluing mechanism, mechanism for actuating said carrier whereby the empty cartons and filled cartons are alternately brought to a position to be glued and mechanism for actuating said flap gluing mechanism whereby said gluing mechanism applies glue alternately to a flap of one of the empty cartons and to a flap of one of the filled cartons, said pockets being open on the outer side and closed on the other three sides, and means whereby after the filled cartons have passed the gluing mechanism the said filled packages are ejected from the pockets through the outer open side thereof.

4. In a machine for closing and sealing the flaps of cartons, a rotary carrier having a series of blocks each adapted to receive an empty carton slipped thereon in an inverted position, a series of pockets each adapted to hold a filled carton in an upright position, means for rotating said carrier, means for turning outwardly one of the flaps

on the uppermost end of each of the cartons in turn whether filled or unfilled, gluing mechanism and means for actuating said gluing mechanism whereby the glue will be applied to said turned flap of either the unfilled or the filled cartons at a predetermined point in the movement of each carton, said pockets for the filled cartons being open on their outer sides and having an opening through the wall of the inner side, a reciprocable plunger and mechanism which at a certain point in the position of the pocket after it has passed the gluing mechanism actuates the plunger to engage the inner face of the carton through the opening in the rear wall of the pocket and eject the carton from the pocket.

5. In a machine for closing and sealing the flaps of cartons, a carrier for the cartons, a reciprocable glue-roll carrier, two rotary glue rolls mounted thereon parallel with each other and so located that their peripheries are adjacent to each other, means for moving said glue-roll carrier in such manner as to cause the two glue rolls to embrace between them one of the flaps of the carton and travel across the same gluing both faces thereof, and means for positively rotating one of the glue rolls during the reciprocation of the glue-roll carrier independently of its contact with the flap with which it engages.

6. In a machine for closing and sealing the flaps of cartons, a carrier for the cartons, a reciprocable glue-roll carrier, two rotary glue rolls mounted thereon parallel with each other and so located that their peripheries are adjacent to each other, means for moving said glue-roll carrier in such manner as to cause the two glue rolls to embrace between them one of the flaps of the cartons and travel across the same gluing both faces thereof, means for positively rotating one of the glue rolls during the reciprocation of the glue-roll carrier independently of its contact with the flap with which it engages and means for regulating the speed of movement of the periphery of the glue roll thus actuated whereby the rotary movement of the glue roll has the same speed as the glue-roll carrier.

7. In a machine for closing and sealing the flaps of cartons, a carrier for the cartons, a reciprocable glue-roll carrier, two rotary glue rolls mounted thereon normally located outside of the path of the cartons, means for moving said glue-roll carrier in such manner as to cause the two glue rolls to embrace between them one of the flaps of the carton and travel across the same gluing both faces thereof, a toothed rack, gear connection between the said rack and one of the glue rolls,

including a pinion on the glue-roll shaft, whereby said glue roll is caused to rotate during the movement of the glue-roll carrier until the glue roll has traveled to the end of the toothed portion of the rack, a rotating glue feed roll so located that when the said glue-roll carrier reaches the end of its stroke in one direction the pinion on the glue-roll shaft will have reached the end of the toothed portion of the rack and the glue-roll will engage with the glue feed roll.

8. In a machine for gluing and sealing the flaps of cartons, a rotary carrier having a series of carton holders, a reciprocable glue-roll carrier, two rotary glue rolls mounted thereon normally located outside of the path of the cartons, means for moving the carton carrier intermittently, means for moving said glue-roll carrier during one of the periods of rest of the carton carrier in such manner as to cause the two glue rolls to embrace between them one of the flaps of the cartons and travel across the same gluing both faces thereof, a toothed rack, gear connection between the said rack and one of the glue rolls whereby said glue roll is caused to rotate when the glue-roll carrier moves until the glue roll has traveled to the end of the toothed portion of the rack, the other glue roll being rotated by frictional engagement with an opposing surface, a rotating glue feed roll so located that when the said glue-roll carrier reaches the end of its stroke in one direction the pinion on the glue roll shaft will have reached the end of the toothed portion of the rack and the glue roll will engage with the rotating glue feed roll.

9. In a machine for sealing the flaps of cartons, a carton carrier, means for intermittently moving said carrier, a gluing device normally located outside of the path of the cartons, means for reciprocating said gluing device whereby said gluing device will at each stroke in either direction engage one of the flaps of the carton and travel across the same, means for controlling the movement of said gluing device and carton carrier whereby one carton will be glued during the forward stroke of the gluing device during a period of rest of the carton carrier, the gluing device remaining stationary while the carton carrier brings another carton into position for gluing, the gluing device then being moved through the return stroke and engaging a flap of said second carton.

In testimony whereof I affix my signature, in presence of two witnesses.

WILLIAM A. JOPLIN.

Witnesses:

WILLIAM A. COPELAND,
ALICE H. MORRISON.