C. P. RICKER.

MACHINE FOR SEALING PAPER BOXES.

APPLICATION FILED AUG. 21, 1913.

1,084,298.

Patented Jan. 13, 1914.

2 SHEETS—SHEET 1.

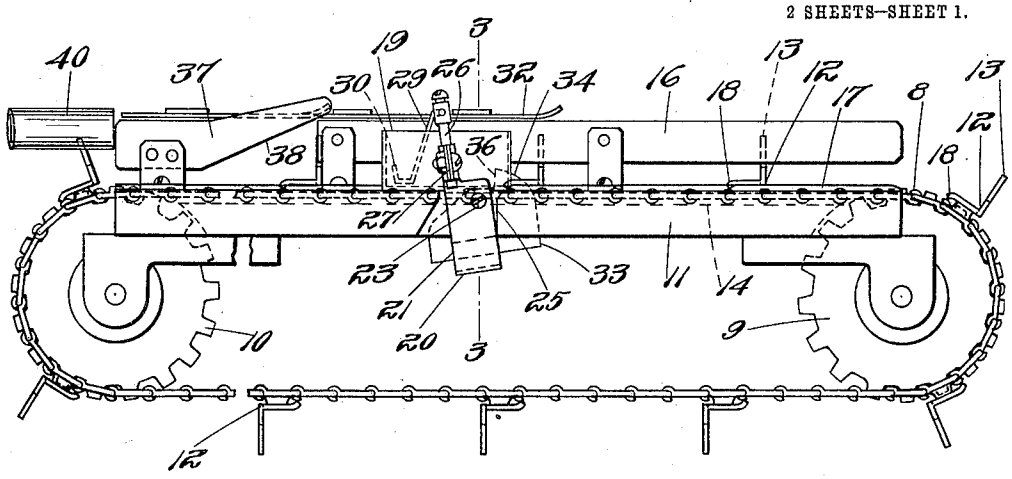


Fig. 1.

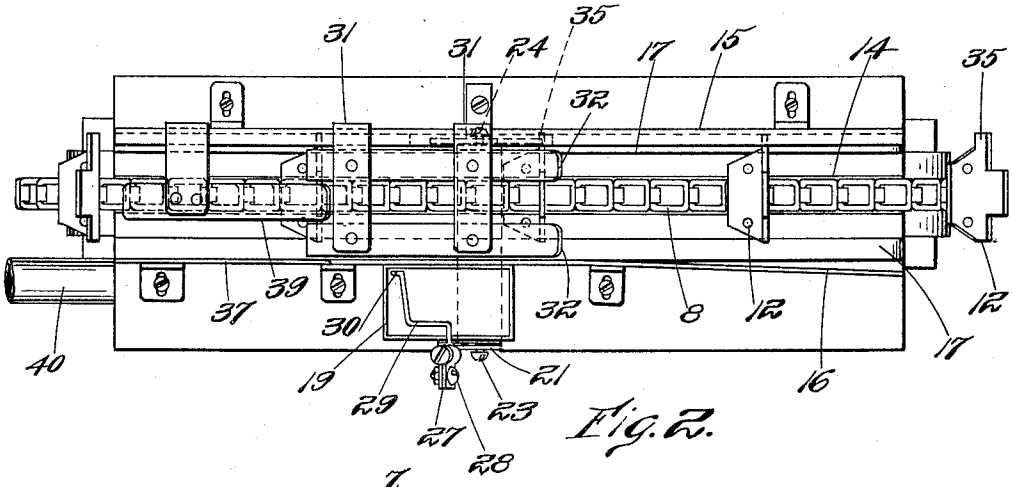


Fig. 2.

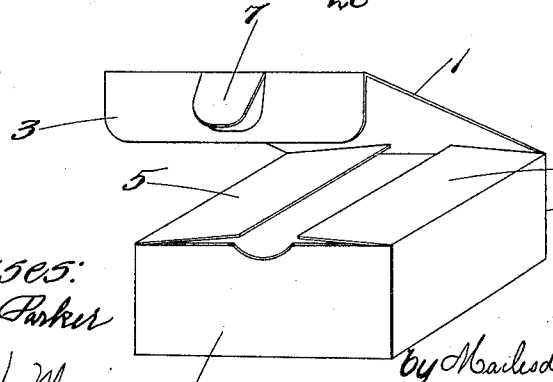


Fig. 7.

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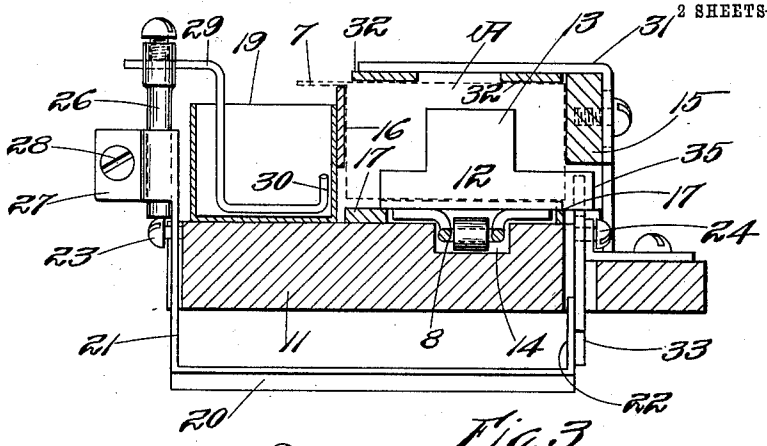


Fig. 3.

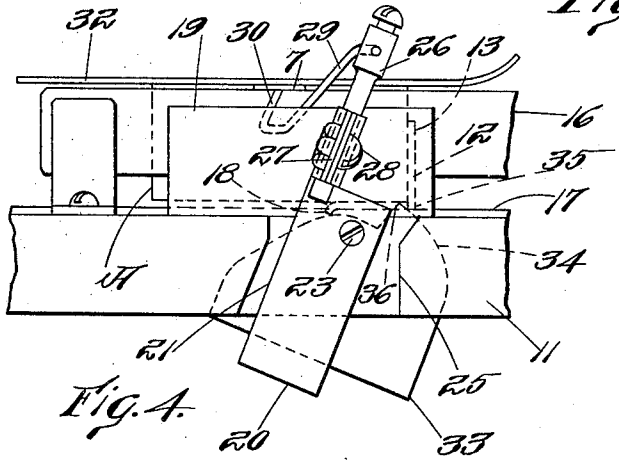


Fig. 4.

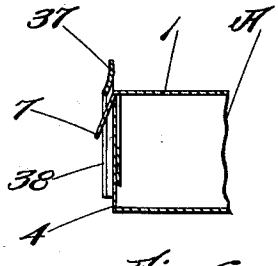


Fig. 6.

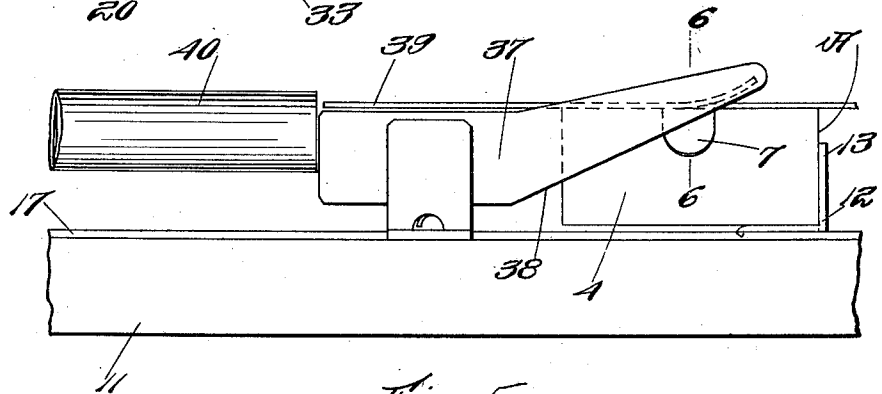


Fig. 5.

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UNITED STATES PATENT OFFICE.

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MACHINE FOR SEALING PAPER BOXES.

1,084,298. Specification of Letters Patent. Patented Jan. 13, 1914.

Application filed August 21, 1913. Serial No. 785,864.

To all whom it may concern:

Be it known that I, CHARLES P. RICKER, a citizen of the United States, residing at Dixfield, county of Oxford, State of Maine, have invented a certain new and useful Improvement in Machines for Sealing Paper Boxes, of which the following is a specification, reference being had therein to the accompanying drawings.

The invention relates to a machine for closing and sealing a closing or locking flap for paper boxes.

It is especially intended for application to folding boxes which are formed in such manner that when the box is set up there is a tongue or flap projecting from one edge of the cover of the box and which is adapted to be turned down into engagement with one of the end or side panels of the box and glued to said side or end panel so as to afford a secure fastening to keep the cover closed until it is desired to open the box to expose the contents.

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

In the drawings, Figure 1 is a view in elevation of a machine embodying the invention. Fig. 2 is a plan view of the parts shown in Fig. 1. Fig. 3 is a section on line 3—3 of Fig. 1. Fig. 4 is a detail of the glue applying mechanism showing the parts in the position they occupy when the glue is applied to the flap of the box. Fig. 5 is a detail showing the method of turning in the flap and pressing and heating it after the glue has been applied. Fig. 6 is a section on line 6—6 of Fig. 5. Fig. 7 is a view in perspective of one form of box such as is employed in the use of a machine embodying the invention.

Referring now to the drawings,—A represents a box which has been filled and the cover has been closed and is ready for sealing. In the particular form of construction shown the box is formed of a single sheet of paper blanked out to the proper form with flaps to form the various panels which form the box, the details of which are not essential to the present invention, but as shown it is formed with a cover 1 hinged or integral with the back 2, being creased to form a hinge, and said cover is formed with a front flap 3 which when the box is closed shuts down inside of the front panel 4 between the front panel 4 and the inturned end flaps 5, 6. Projecting from the cover panel 1 is a tongue 7 which in the form of box shown is produced by slitting the flap 3 so that the said tongue 7 is formed integral with the cover. Any suitable form of tongue, however, whether made integral with a cover or made separate and attached thereto, will answer the purpose or the entire flap 3 may be turned down outside of the panel 4 and employed as the sealing flap.

The object of the invention is to provide a machine whereby the tongue 7 will be turned down and sealed to the front panel 4.

In the machine embodying the invention a box carrier is provided which as shown in the drawings consists of an endless chain 8 which runs over the sprocket wheels 9, 10 located respectively at opposite ends of the frame or bed 11 which supports the parts, and is provided with angle plates 12 secured to the sprocket chain at intervals apart which serve as holders for the boxes as they are carried through the mechanism for sealing the locking tongue. These angle plates have a base portion to form a seat for the boxes and an upright back rest 13 to retain the box in position as it passes through the machine. Preferably the sprocket chain 8 travels in a slot 14 in the bed of the frame 11 so that the box carriers 12 will travel along just above the surface of the bed plate. Rising from the bed plate 11 on the two sides of the path of travel of the box are the two side guides 15, 16 which are spaced apart from each other the width of the box, but preferably they have a flaring entrance to facilitate the insertion of the boxes on their carriers by the attendant. In the form of machine shown this is accomplished by making the side guide 16 flare outwardly at its entrance. Preferably also there are rails 17 on the top of the bed plate onto which the boxes are to be placed by the attendant, so that they will be in position to be engaged by the angle plates as they come along in turn to the box. Preferably also the base of each angle plate 12 is formed with a downwardly flaring front edge 18 so that when it comes to a box it will extend beneath the box and pick it up as the angle plate moves along.

Mounted on the top of the bed plate on the outer side of the side guide 16 is a glue pot 19. A rocker frame or yoke is provided having a base 20 which extends transversely underneath the bed of the machine and two upright arms 21, 22 which extend up on opposite sides of the bed plate and are pivoted to the frame by the pivot pins 23, 24 respectively, somewhat off center of gravity so that the yoke will normally tend to swing slightly backward from plumb, being limited in its backward swing by some stop arrangement, as for instance by a shoulder 25 on the side of the bed plate. Mounted on the arm 21 of the yoke is a rod 26 which is preferably adjustably mounted in such manner that it can be raised and lowered to varying positions and to this end it is shown as held by a clamp 27 which is secured to the arm 21, said clamp being provided with a screw 28 so that the clamp may be relaxed to admit the adjustment of the rod 26 and then tightened up by the nut on the screw to firmly clamp the said rod in the adjusted position. Secured to the said rod 26 is a bent wire 29 which is bent so as to extend over and then down into the glue pot 19 and is formed with a turned up portion 30 which is to serve as the means for applying glue to the under side of the tab 7 in the manner to be hereinafter described. Preferably the wire is adjustable radially as by making either the wire or the rod 26 rotatable and clamping it in its adjusted position. This is for the purpose of varying the point of contact with the sealing flap. Said side guide 16 is of the right elevation so that when the box is seated upon the holder 12 the top of the box will reach the top of the said side guide 16 and the tongue 7 will project out over the edge of the said guide. As the box travels past the location of the glue pot the tongue 7 will travel over the top of the glue pot.

In order to keep the box from jumping up from its seat in its travel past the gluing mechanism a top guard is provided which overlies the path of travel of the box. This top guard as shown is as follows: Two bracket arms 31 secured to the side guide 15 extend transversely over the space between the two side guides and two longitudinal bars 32 are secured to the under sides of said brackets 31. The entrance ends of these top guards 32 are curled upward so as not to obstruct the entrance of the boxes beneath the said guards 32, 32. The guard 32 is slightly higher than the upper edge of the side guide 16, so as to allow the tongue 7 to project beneath the top guard 32 over the upper edge of the side guide 16 and over the top of the glue pot.

Means are provided whereby the yoke which carries the wire gluing device will be rocked on its pivots at the proper time when the box is passing the glue pot, so that the bent end 30 will come up and engage the under side of the tongue 7 depositing a slight amount of adhesive to the under side of the tongue and will then rock back away from the tongue. It is desirable that the arc of movement of the gluing end 30 shall swing up to meet the advancing tongue but will then rock back away from the tab. It is desirable that the arc of movement of the gluing end 30 shall swing up to meet the advancing tongue but shall not rock far enough to ride off onto the opposite side of the tongue as that will have a tendency to deposit a trail of glue which will spread out over the edges of the tongue, and it is desired to avoid this. It is preferable that the wire shall rock up just enough for its end to merely strike the bottom of the tongue and immediately drop back without any sliding movement on the tongue. To that end the mechanism is so constructed that as soon as the gluing end of the wire 30 has contacted with the under side of the tongue to leave a spot of glue it will rock back again in the reverse direction to that in which it came up and in the same general direction that the box is traveling and away from it instead of continuing its movement in the opposite direction to the travel of the box; that is, it will rock back in the arc of a circle while the box travels in a straight path. In order to accomplish this rocking movement of the gluing mechanism a plate 33 is rigidly secured to the turned up arm 22 of the yoke, said plate being formed on its rear end with a cam portion having a convex edge 34 which extends above the upper level of the rails 17 just at one side of one of the rails and is engaged by the arm 35 which projects from the side of each box holder 12 during the travel of the said holders. The engagement of said arm with the said cam edge will cause the cam plate to rock down and as the cam plate is rigidly attached to the said yoke it will thereby rock the said yoke so that the bottom portion of the yoke will swing forward and the rod 26 will swing backward thereby swinging the gluing arm upward and slightly backward, causing the gluing end 30 to swing up until it engages the under side of the tongue 7. It is desirable to have a quick return of the wire. For this reason the upper end of the cam edge 34 terminates in a sudden drop 36 and as soon as the arm 35 passes the high point of the cam 34 the cam will immediately swing back on its pivot by reason of the fact that the yoke is hung off center, as already described, so that it has a tendency to swing back as soon as the arm 35 rides past the high point of the cam. This will cause the gluing wire to swing down away from the box tongue 7

and also cause it to swing down into the glue pot so that it will be immersed and take up fresh glue for the next box. The level of the glue in the pot should be high enough so that when the wire drops the end will always be immersed and thereby keep the glue from drying on the wire as well as to take up fresh glue for the next operation.

In the continued travel of the carrier after the box tongue 7 has been glued it is important that the said tongue should be bent down so as to bring the glued inner surface against the front panel 4 and hold the tongue pressed against the said panel to cause it to adhere. To this end there is provided a side guide 37 which is termed the closing guide having an inclined lower edge 38 the upper end of which extends backward in a direction to engage the oncoming tongue of the box, and, as the box passes along, the downward slope of the under edge of the guide 37 will turn down the tongue until it is bent at a right angle and flat against the panel 4 of the box and is held by the inner face of the guide 37 flat against the said panel. In order to prevent the box from jumping up a top guard 39 is provided to engage the top of the box after it passes from beneath the top guards 32.

It is desirable that the tongue 7 shall be held under pressure against the panel 4 for a short time, in order to insure its perfect sealing, and in order to more quickly dry the glue, so that the machine may not have to run too slowly, an extension of the side guard 37 is provided which constitutes also a drying device. This as shown consists of a steam pipe 40 which is kept heated by steam or other suitable means and which serves also as a side guide.

While for the purposes of illustration the box is shown as having a small locking tongue 7 struck up out of the flap 3, the invention is not limited to use with boxes of that particular form of construction, for instance the flap 3 from which the tongue 7 is struck up might be folded down on the outside of the front panel 4 instead of on the inside, and in that case the entire flap 3 might serve as the locking flap to receive the adhesive and engage the outside of the panel 4. Preferably the side guides 15 are adjustable relatively to the side guide 16 to vary the width of the space between them to accommodate different widths of boxes; also the top guards are adjustable to different elevations to allow for different lengths of boxes. In order to allow of varying lengths of boxes the wire 29 may be rotatively adjusted so that the gluing end of the wire will come up farther forward or farther back as the case may require.

What I claim is:

1. In a machine for sealing boxes which are provided with a sealing flap, a box carrier, a gluing mechanism located alongside of the path of movement of the boxes over which the said flap projects during the movement of the box, means to move the gluing mechanism into engagement with the under side of the sealing flap, side guides between which the box travels and a top guard elevated slightly higher than said side guides, said top guard and one of said side guides being so arranged alongside of said gluing mechanism that in the travel of the box said sealing flap extends horizontally between said top guard and said side guide over the gluing mechanism.

2. In a machine for sealing boxes which are provided with a sealing flap, a box carrier, a gluing mechanism located alongside of the path of movement of the boxes over which the said flap projects during the movement of the box, means actuated by the movement of the box carrier to move the gluing mechanism into engagement with the under side of the sealing flap, means which cause the said gluing mechanism to then move back out of engagement with the sealing flap, side guides between which the box travels and a top guard elevated slightly higher than said side guides, said top guard and one of said side guides being so arranged alongside of said gluing mechanism that in the travel of the box said sealing flap extends horizontally between said top guard and said side guide over the gluing mechanism.

3. In a machine for sealing boxes which are provided with a sealing flap, a box carrier, a gluing mechanism located alongside of the path of movement of the boxes over which the said flap projects during the movement of the box, means actuated by the movement of the box carrier to move the gluing mechanism into engagement with the under side of the sealing flap, means which cause the said gluing mechanism to then move back out of engagement with the sealing flap, side guides between which the box travels, and a top guard elevated slightly higher than said side guides, said top guard and one of said side guides being so arranged alongside of said gluing mechanism that in the travel of the box said sealing flap extends horizontally between said top guard and said side guide over the gluing mechanism, and an additional side guide which is formed with an inclined edge and engages said sealing flap after it passes the gluing mechanism and bends it down and presses it against a side panel of the box.

4. In a machine for sealing boxes which are provided with a sealing flap, a box carrier, a gluing mechanism located alongside of the path of movement of the boxes over which the said flap projects during the movement of the box, means actuated by the

movement of the box carrier to move the gluing mechanism into engagement with the under side of the sealing flap, means which cause the said gluing mechanism to then move out of engagement with the sealing flap, side guides between which the box travels, a top guard elevated slightly higher than said side guides, said top guard and one of said side guides being so arranged alongside of said gluing mechanism that in the travel of the box said sealing flap extends horizontally between said top guard and said side guide over the gluing mechanism, and an additional side guide which is formed with an inclined edge which engages said sealing flap and bends it down and presses it against a side panel of the box, said last mentioned side guide being provided with an extension which is heated and which engages the outer side of said sealing flap to hold the sealing flap closed and to dry the adhesive.

5. In a machine for sealing boxes which are provided with a sealing flap, a box carrier, a gluing mechanism located alongside of the path of movement of the boxes over which the said flap projects during the movement of the box, said box carrier consisting of an endless traveler provided with a series of box holders secured thereto at intervals apart from each other, a rocker on which said gluing mechanism is mounted, a cam mounted on said rocker, said box holders being formed with projections which engage said cam to actuate the gluing mechanism in a direction to apply the glue to the said sealing flap.

6. In a machine for sealing boxes which are provided with a sealing flap, a box carrier, a gluing mechanism located alongside of the path of movement of the boxes over which the said flap projects during the movement of the box, means actuated by the movement of the box carrier to move the gluing mechanism into engagement with the under side of the sealing flap, means which cause the said gluing mechanism to then move out of engagement with the sealing flap, said box carrier consisting of an endless traveler provided with a series of box holders secured thereto at intervals apart from each other, supports to receive the boxes before they are engaged by the carrier at a slight elevation above the bed of the machine, said box holders being formed with a base having a downward flare which engages the under side of the box and picks it up onto the holder.

7. In a machine for sealing boxes which are provided with a sealing flap, a box carrier, a glue receptacle located alongside of the path of movement of the boxes, over which the said flap projects during the movement of the box, a gluing device having a bent arm which extends down into the glue in the receptacle, and terminates in an upwardly bent portion which is normally also beneath the level of the glue, means actuated by the movement of the box carrier to raise said upwardly turned end of the gluing arm into engagement with the under side of the said sealing flap.

8. In a machine for sealing boxes which are provided with a sealing flap, a box carrier, a glue receptacle located alongside of the path of movement of the boxes, over which the said flap projects during the movement of the box, a gluing device having a bent arm which extends down into the glue in the receptacle, and terminates in an upwardly bent portion which is normally also beneath the level of the glue, means actuated by the movement of the box carrier to raise said upwardly turned end of the gluing arm into engagement with the under side of the said sealing flap, and means for causing the retraction of the said gluing arm immediately after contact with the said sealing flap.

9. In a machine for sealing boxes which are provided with a sealing flap, a box carrier, a glue receptacle located alongside the path of movement of the boxes over which the said flap projects during a certain part of the movement of the box, an upwardly extending gluing finger which is normally immersed in the glue, and means actuated by the movement of the box carrier to move said finger upward for instantaneous contact with the under side of the sealing flap, and means for immediately retracting said gluing finger without trailing action on the flap.

10. In a machine for sealing boxes which are provided with a sealing flap, a box carrier, a gluing mechanism located alongside of the path of movement of the boxes over which the said flap projects during the movement of the box, means to move the gluing mechanism into engagement with the under side of the sealing flap, a side guide, a top guard elevated slightly higher than said side guide, said top guard and side guide being so arranged alongside of said gluing mechanism that in the travel of the box said sealing flap extends between said top guard and said side guide over the gluing mechanism, and an additional side guide which is formed with an inclined edge and engages said sealing flap after it passes the gluing mechanism and bends it down and presses it against a side panel of the box.

11. In a machine for sealing boxes which are provided with a sealing flap, a box carrier, a gluing mechanism located alongside of the path of movement of the boxes over which the said flap projects during the movement of the box, means to move the gluing mechanism into engagement with the under side of the sealing flap, and a side guide which is formed with an inclined edge

which engages said sealing flap and bends it down and presses it against a side panel of the box, said side guide being provided with an extension which is heated and which engages the outer side of said sealing flap to hold the sealing flap closed and to dry the adhesive.

12. In a machine for sealing boxes which are provided with a sealing flap, a box carrier, a glue receptacle located alongside of the path of movement of the boxes, over which the said flap projects during the movement of the box, a gluing device having a bent arm which extends down into the glue in the receptacle, and terminates in an upwardly bent portion which is normally also beneath the level of the glue, and means to raise said upwardly turned end of the gluing arm into engagement with the under side of the said sealing flap.

13. In a machine for sealing boxes which are provided with a sealing flap, a box carrier, a glue receptacle located alongside of the path of movement of the boxes, over which the said flap projects during the movement of the box, a gluing device having a bent arm which extends down into the glue in the receptacle, and terminates in an upwardly bent portion which is normally also beneath the level of the glue, means to raise said upwardly turned end of the gluing arm into engagement with the under side of the said sealing flap, and means for causing the retraction of the said gluing arm immediately after contact with the said sealing flap.

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

CHARLES P. RICKER.

Witnesses:
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JOHN S. HARLOW, Jr.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."