

Nov. 2, 1937.

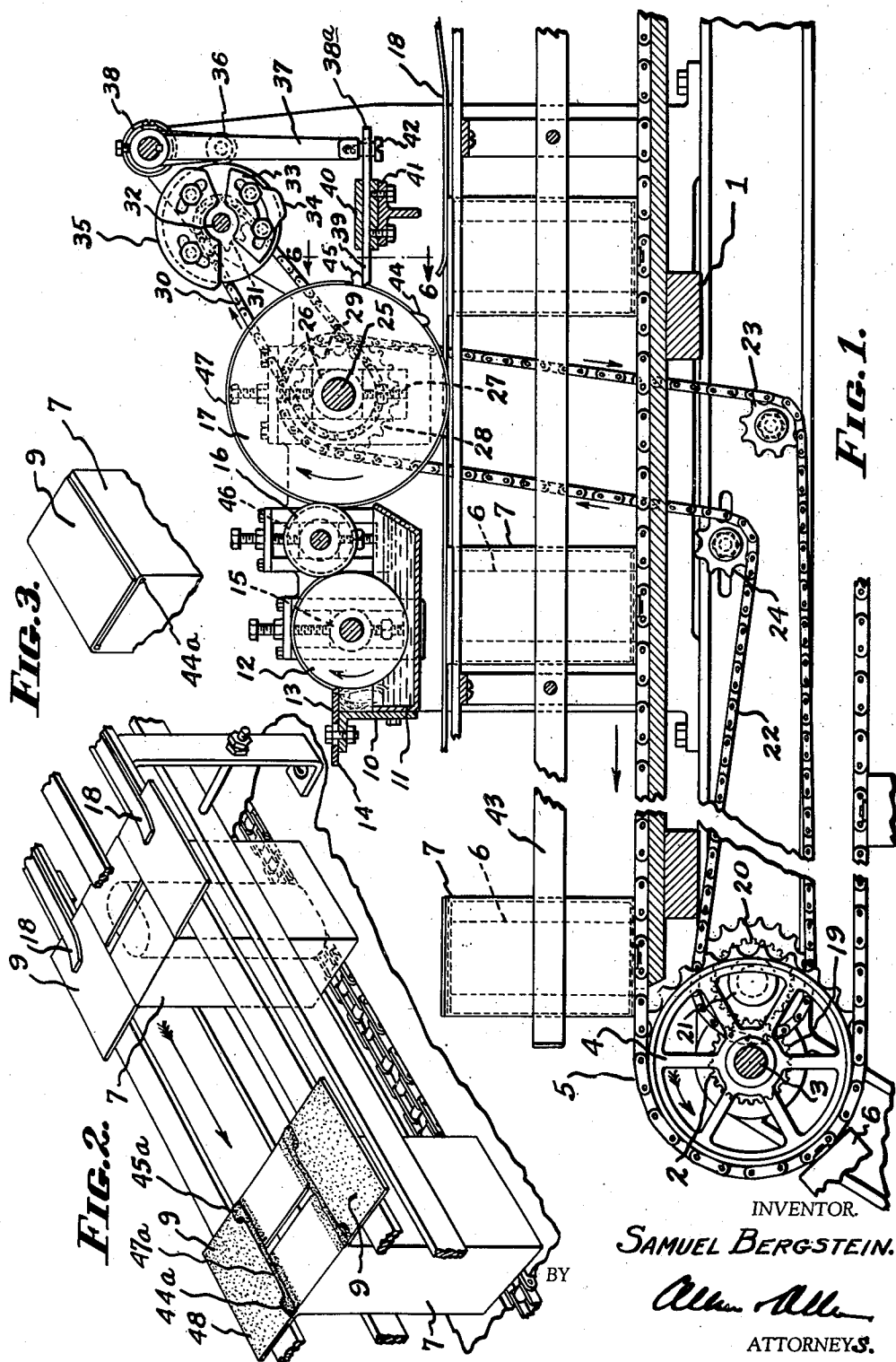
S. BERGSTEIN

2,097,428

MECHANISM FOR SEALING PACKAGES HERMETICALLY

Filed Feb. 14, 1935

3 Sheets-Sheet 1



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3 Sheets-Sheet 2

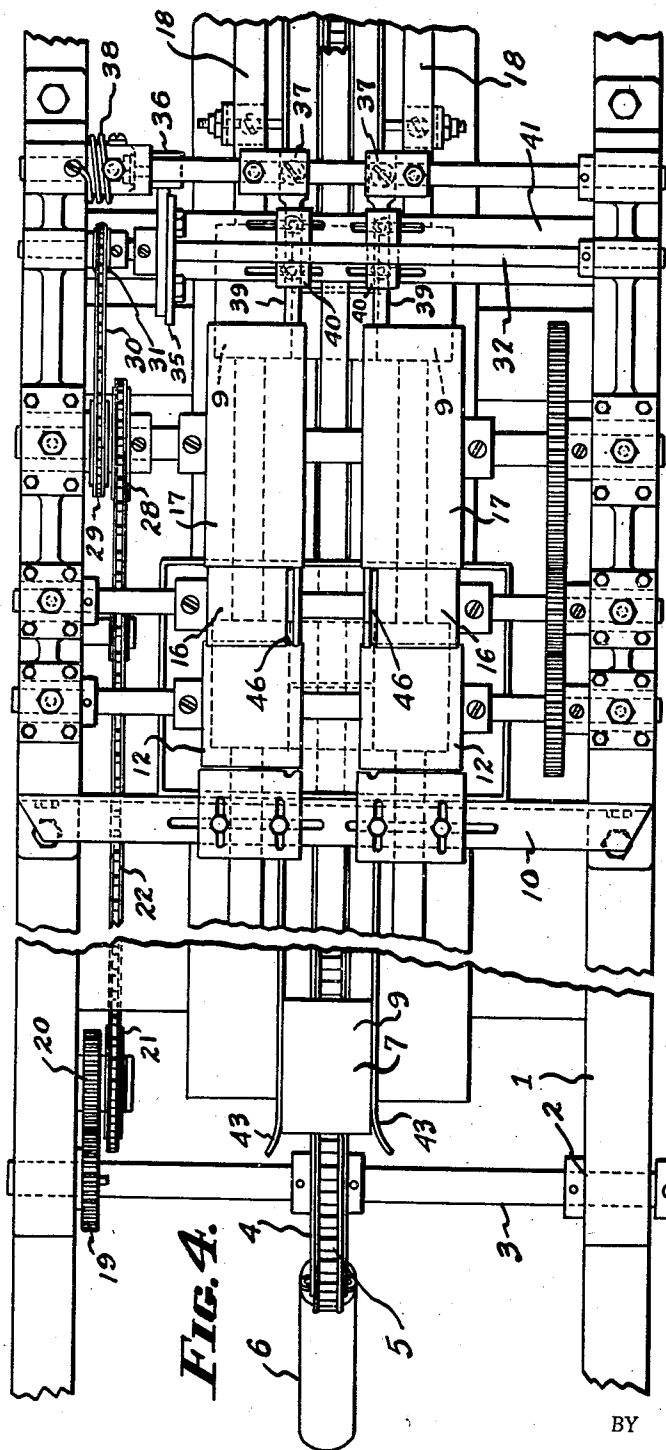


FIG. 4.

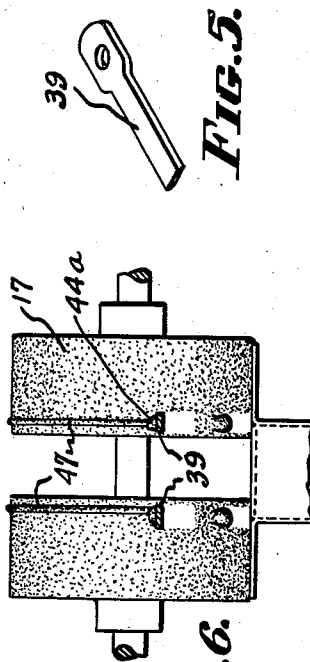


FIG. 5.

FIG. 6.

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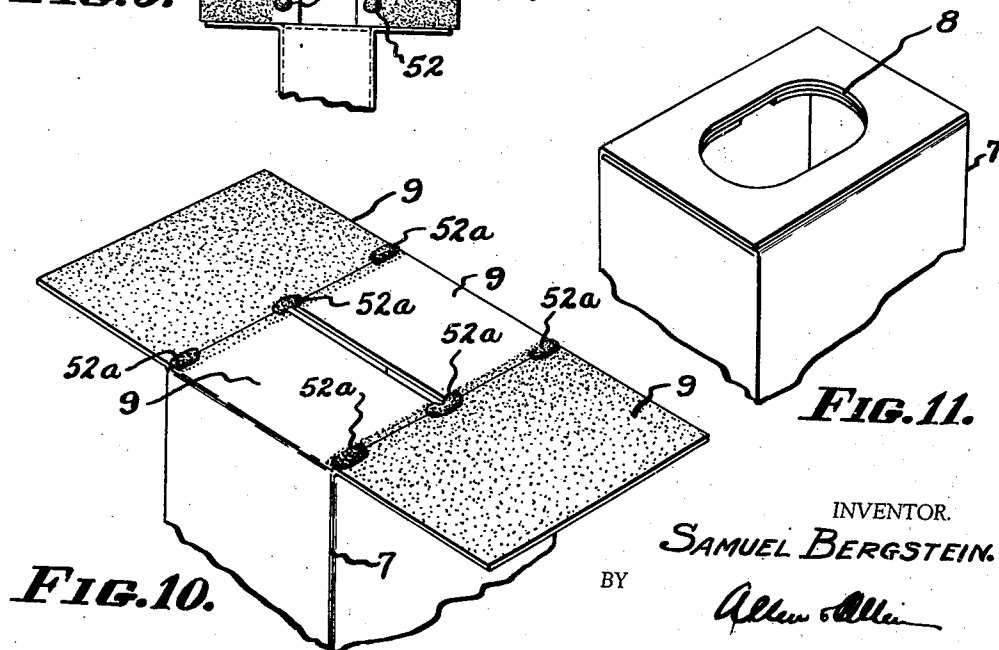
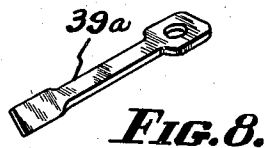
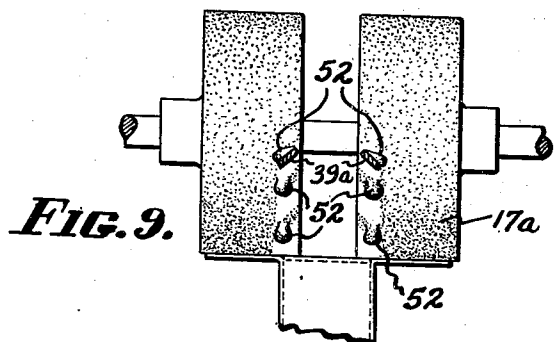
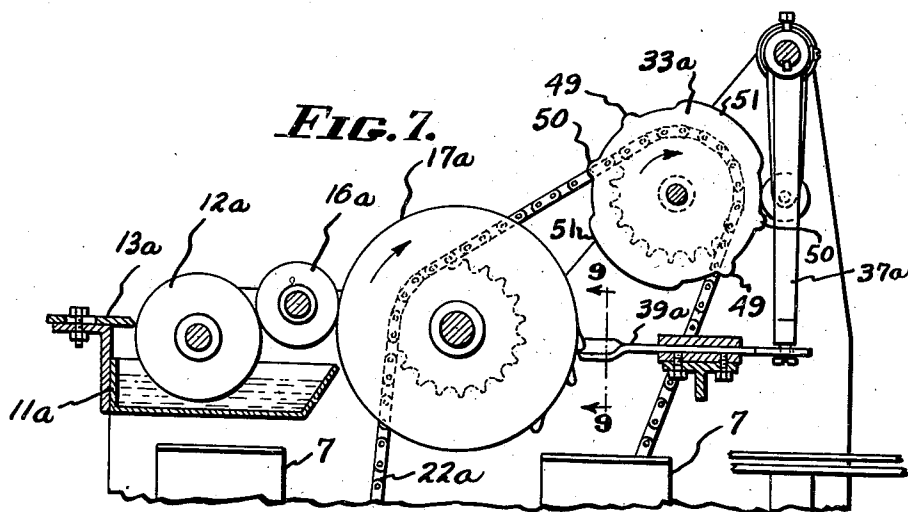
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MECHANISM FOR SEALING PACKAGES HERMETICALLY

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3 Sheets-Sheet 3



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2,097,428

MECHANISM FOR SEALING PACKAGES
HERMETICALLYSamuel Bergstein, Cincinnati, Ohio, assignor to
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Application February 14, 1935, Serial No. 6,537

12 Claims. (Cl. 91—50)

The invention relates to auxiliary methods and mechanism operative in conjunction with old and well known carton sealing mechanism for applying extra quantities of adhesive to selected portions of carton flaps to provide hermetic seals therefor.

It is the object of my invention to provide mechanism for use with glue applying mechanism in a container sealing machine in which the glue or adhesive is built up on the glue roll by means of scrapers so that the built up gobs or dabs are applied to predetermined portions of the cartons during the sealing operation. These portions may be the corners or other edge portions where pin holes and cracks are likely to develop.

This invention is a modification, improvement and/or variation of the invention disclosed in my United States Patents Nos. 1,974,256 and 1,976,830.

In the first noted patent a continuous ribbon, band or bead of adhesive is applied along the corner edge of the sealing flap directly over the score line. In some instances, in such practice, an excessive amount of glue is applied which seeps into the inside of the carton. This excess is objectionable, and liable to be contaminating to products within the container.

In my Patent No. 1,976,830, I have described a machine in which by means of a timed glue applying roll, a heavy gob or dab of glue is applied at the corner of the sealing flaps. In this type of mechanism less glue is applied along the edge of the sealing flap than at the corners.

In order to incorporate the principle of hermetic sealing by the application of an excess of glue at the corners, and to fill in cracks and pin holes where they are likely to develop, no standard type of carton sealing machine with which the inventions set forth in my two patents as aforesaid may be used, without considerable re-designing of the entire mechanism. A re-designing of the glue mechanism of standard types of sealing machines would not only be required, but it would, in most cases, be necessary to make expensive changes in the mechanism, such as changes required to bring the drive shaft in proper alignment with the position of the carton. This would require substantial re-designing of the drive for the glue applying mechanism.

It is one of my objects to provide mechanism, which, as long as the peripheral speed of the glue applying roll moves at the same surface speed as the carton moving mechanism, excess

quantities may be applied to predetermined corner and edge positions.

One of the features of my proposed mechanism is that the excessive gobs or dabs of glue are only applied in the proper position at the corners where the greatest likelihood of leakage tends to develop, and I accomplish this by applying sufficient adhesive to the carton flaps by means of the regular gluing mechanism of a carton machine to cause adhesion between the flaps and then build up the excesses for the corners and other predetermined positions so that they will be applied in position in a manner which will make of the carton a completely hermetically sealed job.

It is further my object to employ scrapers so actuated at selected intervals they may be reciprocated by cam action or other suitable mechanism, and thus build up the excess in the form of a gob or dab of glue which is released by the return movement of the scraper.

Preferably the normal position of the scraper as actuated by cam mechanism is not to contact the roll continuously, but merely to deposit thin films of adhesive direct from the glue roll.

It is one of the features of my invention that irrespective of the size of the glue wheel, as long as the peripheral speed of the glue applying roller is sufficiently timed not to cause buckling of the carton in transit, and as long as such peripheral speed is substantially the same, the application of the gobs or dabs of excessive adhesive can be controlled to the proper predetermined position relative to the sealing flaps during the sealing operation.

I may in some modifications of the invention employ a grooved feed roller which applies fairly thick strips or bands of adhesive along the crack at the side edges of the sealing flaps, and with such mechanism, my scraper is of a slightly different shape than is employed where the glue wheel has a smooth peripheral surface. As I have stated, it is one of the features of my invention to incorporate my hermetic sealing mechanism to the ordinary gluing mechanism of a standard sealing machine irrespective of the diameter of the glue applying rollers.

The above objects and other objects to which reference will be made in the accompanying specification, I accomplish by that arrangement illustrated in the accompanying drawings. Referring to the drawings:—

Figure 1 is a side elevation of one preferred type of mechanism employed.

Figure 2 is a perspective view with the glue applying mechanism removed, showing one carton with the sealing flaps open prior to the application of adhesive, and the other after the adhesive has been applied.

Figure 3 is a perspective view of a carton with the sealing flaps closed.

Figure 4 is a plan view of the mechanism shown in Figure 1.

Figure 5 is a perspective view of a scraper for use with the mechanism illustrated in Figures 1 and 4.

Figure 6 is a detailed sectional view taken along the line 6-6 of Figure 1.

Figure 7 is a side elevation of a modified type of mechanism.

Figure 8 is a perspective view of a scraper for use with mechanism illustrated in Figure 7.

Figure 9 is a detailed sectional view taken along the lines 9-9 in Figure 7.

Figure 10 is a perspective view of a carton after the application of the adhesive by the use of the mechanism shown in Figure 7.

Figure 11 is a perspective view of the other end of the carton shown in Figure 10.

Referring first to Figs. 1 and 4, I have illustrated a standard type of carton sealing machine having a frame 1 in which are mounted journals or bearings 2 for a shaft 3 carrying a sprocket wheel 4. A link belt conveyor 5 engages the teeth of the sprocket wheel 4 and thus carries around a series of blocks 6, on which are carried cartons indicated at 7.

I have shown my proposed improvements in hermetical sealing mechanism in combination with a carton sealing machine having rounded blocks which fit within the openings 8 of the carton 7. I propose in the description which follows, to illustrate only the sealing mechanism as it affects the sealing of the flaps 9 of the carton 7 after one of the ends of the carton has been sealed. Assuming that the end 8 of the carton 7 shown in Figure 11, has been sealed and prepared for the insertion of a metal cap to provide a sealed closure after the contents have been inserted, the cartons are placed on the machine either automatically or by hand, so that the block 6 extends up through the openings in the bottoms of the cartons so as to provide reinforcement for the sealing of the top closure flaps 9.

If my invention is to be employed for the sealing of both the tops and bottoms of the cartons or containers, the cartons would preferably be run through two sets of machines, the first to seal the bottoms or one end, and the second to seal the top or opposite end.

I have illustrated my invention only in combination with a sealing machine for sealing one end of the carton.

The sealing machine illustrated has a bracket 10, which supports an adhesive receptacle 11 in which an adhesive wheel or roller 12 rotates, the excess of adhesive being removed from the roller by means of a scraper knife 13, preferably adjustably mounted as indicated at 14. The glue wheel 12 is mounted in suitable journals indicated at 15, and is in peripheral engagement with a spreading roller 16, which picks up the layer of adhesive from the roller 12 and transfers it to the roller 17, which normally during its rotation, would apply adhesive in a thin coating across the side flaps of the container during the sealing operation.

I have not illustrated the turn-over blades or fingers which fold in the end edges of the car-

tons, as such mechanism is very old in the art. I have however, shown one set of turn-over blades 18 which turn in the side flaps of the carton after the adhesive has been applied to the under-surface of the flaps in accordance with my present invention.

The machine as so far described, forms no part of my invention, and is more or less a standard type of top sealing machine such as has been in use for many years.

I have illustrated the glue applying mechanism as being actuated by a gear 19 mounted on the shaft 3 which engages a gear 20 on a shaft 21, also journaled in the frame of the machine. A chain 22 extends over idler sprockets 23, 24. The idler sprocket 24 is shown as adjustably mounted.

The glue or adhesive applying roll 17 is mounted on a shaft 25 journaled as indicated at 26 in bracket 27. On the shaft 25 there are two sprockets, the first sprocket 28 rotates the glue wheel 17 and the other sprocket 29 provides a chain 30 which engages a driving sprocket 31 on a shaft 32. On the shaft 32 there is a cam wheel 33 having adjustable cam members 34 and 35, which actuate a roller 36 on a crank arm 37, journaled at 38. The crank arm 37 is adjustably connected as indicated at 38a with the reciprocating knife 39 which slides in a guiding slot 40 in a bracket 41.

The knife 39 as indicated in Figure 5, is secured by means of an adjustment stud 42 with the end of the crank arm 37.

To explain the operation of the sealing mechanism to which my improvements have been applied, it may be assumed that the sprocket 4 makes one revolution every time two blocks carrying cartons pass from underneath the sprocket to the delivering position illustrated in Figure 1, where the position of the carton is maintained on the carrier chain by means of the side guide strips 43. By means of the gear ratio illustrated, the glue wheel 17 will also make one revolution per carton, and the cam carrying wheel 33 will make two revolutions per carton.

The machine must be so timed that when the dab or gob of excess adhesive is built up on the roller 17, as indicated at 44, the front corner edges of a carton will be in position so that the excess quantity indicated at 44 will be transferred to the corner edges of the carton as indicated at 44a. The carton is illustrated in Figure 2.

The cam wheel so reciprocates the scraper knife 39, for the particular type carton illustrated, that another excess of adhesive will be built up on the roll as indicated at 45, and when the carton passes along on the conveyor belt, another excess of adhesive will be applied to the corner edges 45a, illustrated in Figure 2.

It will be obvious that irrespective of the diameter of the glue wheel 17, by alternately placing the scraper knives against the surface of the glue wheel, the adhesive will be dammed up and an excess quantity will be released as soon as the scraper knife 39 is retracted by reason of the cam mechanism.

It will be necessary for the glue wheel 17 to have the same peripheral surface speed of rotation as the rate of movement of the containers, but aside from this there will be no requirement as to any particular size for the glue wheel. Since the crank arm 37 and the cams 34, 35, are adjustable, by operating the standard sealing mechanism of a machine in the usual manner, and by setting the cams 34, 35 and the crank arm 37, the scraper knife 39 may be in contact with the surface of

the glue wheel a desired interval. In the drawings, Figures 1 and 4, the glue wheel 16 has peripheral grooves 46 which apply in predetermined widthwise positions on the roll 17, dabs 47, or stripes of adhesive. It is against these dabs that the scraper knife engages, building up the little gobs or dabs as indicated at 44—45.

Referring to Figure 2, the carton 7 with its side flaps 9 extended laterally passes under the glue wheel 17 and stripes 47a are applied along the edge between the inwardly folded end flaps and the fold line of the side flaps 9, while at the corner edges excess quantities of adhesive will be applied as indicated at 44a, 45a, which when the side flaps 9 are folded in will cause a little pocket of adhesive, which will prevent pin hole leaks and cracks at the corner edges of the sealed carton.

The inner surface of the side sealing flaps of the carton will have a thin layer of adhesive applied to them from the contact with the peripheral surface of the glue wheel 17, as indicated at 48.

In the modification of my invention illustrated rather diagrammatically in Figure 7, the mechanism is again that of a normal top sealing machine having an adhesive receptacle 11a, and an adhesive roller 12a and a scraper knife 13a. The coating of adhesive carried up from the glue pan is transferred to the roller 16a, which in turn transfers the adhesive to the roller 17a. A similar type of crank arm 37a is employed and the knife or scraper 39a is shaped differently so that it need not engage the roller 17a in a position parallel with a horizontal line extending out from the axis of the roller 17a. The roller 17a is driven by a chain 22a which also drives a cam wheel 33a, having thereon abrupt cam members 49 and 50, and less abrupt cam members 51.

It will be noted that in the modification in Figure 7, there is no bead of adhesive applied to the glue roller 17a which carries a normal amount of adhesive. The adhesive will be built up in little excess gobs 52 which are formed by reason of the reciprocating movement of the scraper members 39a.

In Figure 10 is illustrated a carton which instead of having a bead as indicated at 47a in Figure 2, has a series of excess deposits 52a placed at the corner junctures and the meeting corners of the flaps 9, so that the excess bead does not tend to seep down into the carton and contaminate the contents.

The timing of the cam and of the scraper knife is of course essential to the proper application of the excess quantities of adhesive to the predetermined spots on the carton flaps, to which such application is desired, but this timing, as will be obvious, may be originally made on a trial and error basis, and when once the machine is adjusted regardless of the size or diameter of the glue applying roller, the proper positioning of the excess quantities of adhesive will be repeated.

It is apparent that from an examination of the drawings that, to build up gobs of glue on the glue applying roller, the scraper engages the glue applying roller after it has carried adhesive past the high point in its arc of peripheral movement. Thus my apparatus serves a distinctively different purpose than the usual use of a doctor blade which engages a glue roller and causes a film of glue to be held back and caused to flow back into the source of supply.

It will further be apparent that the function of the blade 39 is not, as in the suggestions of the prior art, to withhold the application of

adhesive from certain areas of a carton and then to apply a film of controlled depth to other areas but to dam up the film on the applying roller so as to apply an excess to predetermined areas. Thus the blade 39 does not determine the thickness of the layer or film of adhesive on the roll. It acts merely as an auxiliary doctor to withhold adhesive and build up gobs after the thickness of the film has previously been determined, as shown in Figure 1 by the doctor 13 and as shown in Figure 7 by the doctor 1.

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

1. For use with a carton flap sealing machine 15 having an adhesive spreading doctor roller, an adhesive applying roller, and feeding means for moving a carton so that a flap thereof comes into surface engagement with a coating of adhesive evenly spread on said roller, mechanism comprising reciprocating scraper means so positioned with respect to said adhesive applying roller as to engage said roller after it has carried adhesive thereon past the high point in its arc of peripheral movement and for engaging the surface of said roller whereby an excess of adhesive is built up on said roller and whereby with the withdrawal of said means said excess is deposited in a predetermined position on said carton flap.

2. For use with a carton flap sealing machine 30 having an adhesive spreading doctor roller, an adhesive applying roller, and feeding means for moving a carton so that a flap thereof comes into surface engagement with a coating of adhesive carried on said roller, mechanism comprising reciprocating scraper means so positioned with respect to said adhesive applying roller as to engage said roller after it has carried adhesive thereon past the high point in its arc of peripheral movement and for engaging the surface of said roller whereby an excess of adhesive is built up on said roller and whereby with the withdrawal of said means said excess is deposited in a predetermined position on said carton flap, said reciprocating scraper means operative irrespective of the diameter of said adhesive applying roller.

3. In a carton flap sealing machine having an adhesive applying roller and a doctor adhesive spreading roller, scraping means so positioned with respect to said adhesive applying roller as to engage said roller after it has carried adhesive thereon past the high point in its arc of peripheral movement and reciprocable for engaging the surface of said roller and withdrawing therefrom whereby excess quantities of adhesive are formed on said roller.

4. In a carton flap sealing machine having an adhesive applying roller and a doctor for evenly spreading adhesive on said roller, scraping means so positioned with respect to said adhesive applying roller as to engage said roller after it has carried adhesive thereon past the high point in its arc of peripheral movement and reciprocable for engaging the surface of said roller and withdrawing therefrom whereby excess quantities of adhesive are formed on said roller, and means for actuating said scraping means in its reciprocating movement adjustable for timing the reciprocation of said scraping means to apply the built up excess of adhesive at a predetermined position on the flap of a carton.

5. An auxiliary glue applying mechanism for use in a carton flap sealing machine having a glue roller adapted to apply an even film of glue to a carton flap comprising a scraper so positioned

with respect to said adhesive applying roller as to engage said roller after it has carried adhesive thereon past the high point in its arc of peripheral movement and provided with actuating mechanism for intermittently moving said scraper into peripheral contact with said glue roller to build up gobs of glue thereon for application to a predetermined position on a carton flap.

6. An auxiliary glue applying mechanism for use in a carton flap sealing machine having a glue roller adapted to apply an even film of glue to a carton flap comprising a scraper so positioned with respect to said adhesive applying roller as to engage said roller after it has carried adhesive thereon past the high point in its arc of peripheral movement and provided with actuating mechanism for intermittently moving said scraper into peripheral contact with said glue roller to build up gobs of glue thereon for application to a predetermined position on a carton flap, and means for timing said scraper actuating mechanism whereby the actuation of said scraper will deposit said gobs of glue at corner edges of a carton flap.

7. In a carton flap sealing machine having an adhesive applying roller, a primary doctor for controlling the thickness of a film of adhesive on said roller and feeding means for moving a carton so that a flap thereof comes into surface engagement with the coating of adhesive carried on said roller, mechanism comprising reciprocating scraper means so positioned with respect to said adhesive applying roller as to engage said roller after the thickness of the film of adhesive has been controlled thereon and for engaging the surface of said roller whereby an excess of adhesive is built up on said roller and whereby with the withdrawal of said means said excess is deposited in a predetermined position on said carton flap.

8. In a carton flap sealing machine having an adhesive applying roller, a primary doctor for controlling the thickness of a film of adhesive on said roller and feeding means for moving a carton so that a flap thereof comes into surface engagement with the coating of adhesive carried on said roller, mechanism comprising reciprocating scraper means so positioned with respect to said adhesive applying roller as to engage said roller after the thickness of the film of adhesive has been controlled thereon and for engaging the surface of said roller whereby an excess of adhesive is built up on said roller and whereby with the withdrawal of said means said excess is deposited in a predetermined position on said carton flap, said reciprocating scraper means op-

erative irrespective of the diameter of said adhesive applying roller.

9. In a carton flap sealing machine having an adhesive applying roller and a primary doctor for controlling the thickness of a film of adhesive on said roller, scraping means so positioned with respect to said adhesive applying roller as to engage said roller after it has had the film of regulated thickness applied thereto, and reciprocable for engaging the surface of said roller and withdrawing therefrom whereby excess quantities of adhesive are formed on said rollers.

10. In a carton flap sealing machine having an adhesive applying roller and a primary doctor for controlling the adhesive on said roller, scraping means so positioned with respect to said adhesive applying roller as to engage said roller after a film of regulated thickness has been applied thereto, and reciprocable for engaging the surface of said roller and withdrawing therefrom whereby excess quantities of adhesive are formed on said roller, and means for actuating said scraping means in its reciprocating movement adjustable for timing the reciprocation of said scraping means to apply the built up excess of adhesive at a predetermined position on the flap of a carton.

11. An auxiliary glue film controlling mechanism for use with a carton flap sealing machine having a glue roller adapted to spread an even film of glue on a carton flap comprising a scraper so positioned with respect to said adhesive applying roller as to engage said roller after the even film of glue has been applied thereto, and provided with actuating mechanism for intermittently moving said scraper into peripheral contact with said glue roller to build up gobs of glue thereon for application to a predetermined position on a carton flap.

12. An auxiliary glue film controlling mechanism for use with a carton flap sealing machine having a glue roller adapted to spread an even film of glue on a carton flap comprising a scraper so positioned with respect to said adhesive applying roller as to engage said roller after the even film of glue has been applied thereto, and provided with actuating mechanism for intermittently moving said scraper into peripheral contact with said glue roller to build up gobs of glue thereon for application to a predetermined position on a carton flap, and means for timing said scraper actuating mechanism whereby the actuation of said scraper will deposit said gobs of glue at corner edges of a carton flap.

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