June 8, 1937. H. W. DYMENT 2,083,257

CARTON OR PACKAGE SEALING MACHINE

Filed July 22, 1935 4 Sheets-Sheet 1

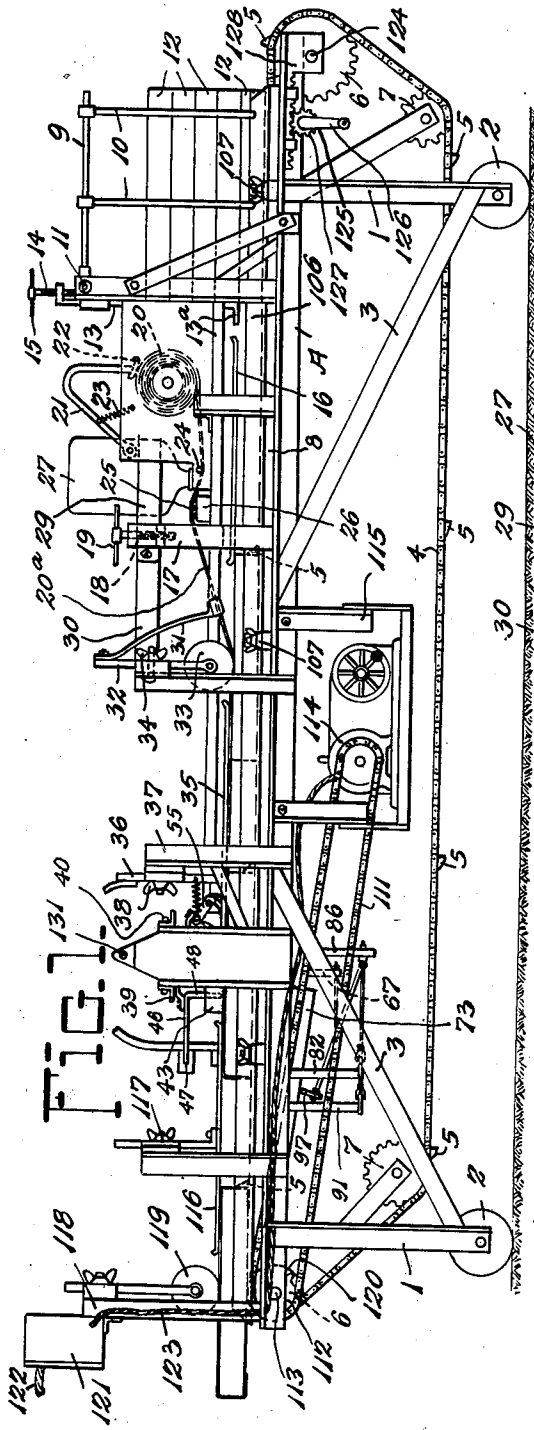


FIG. 1.

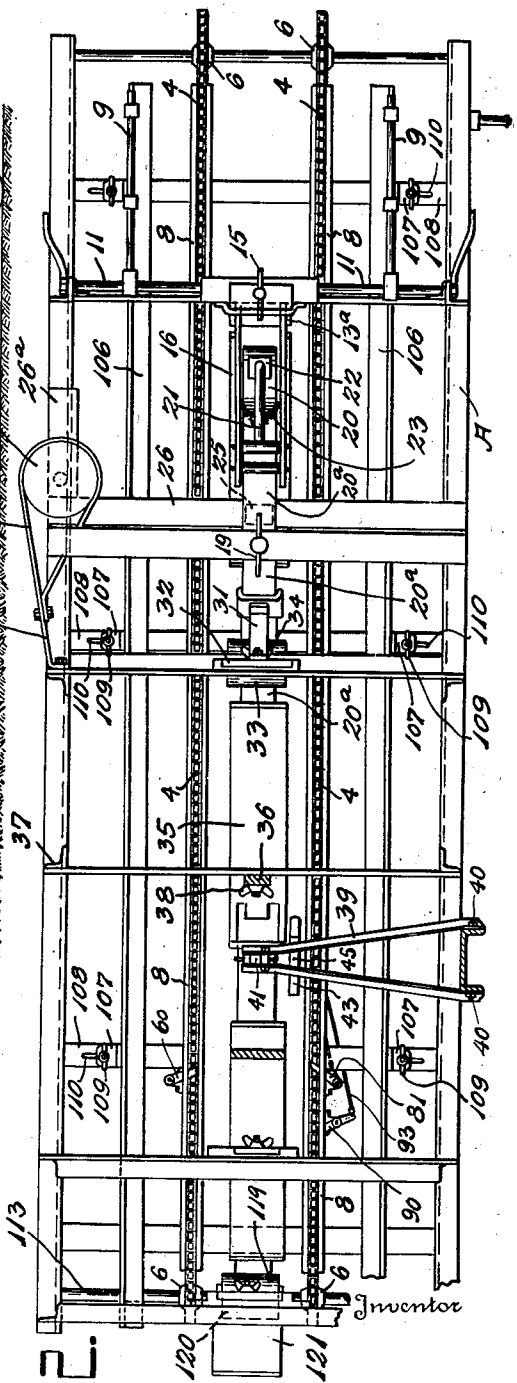


FIG. 2.

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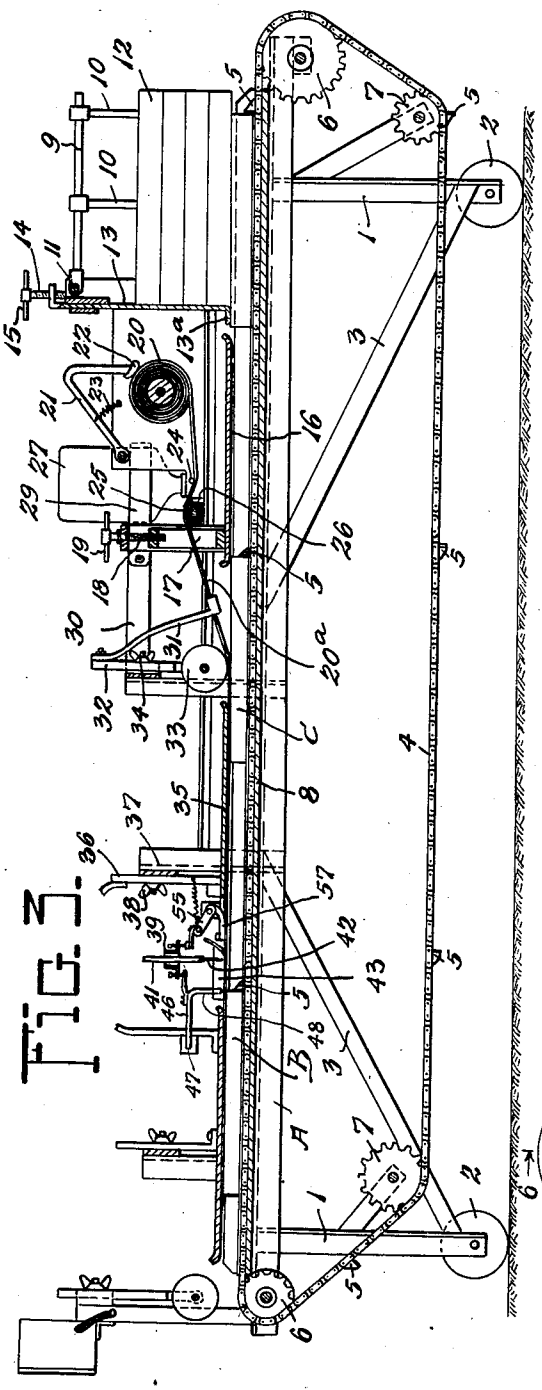


FIG. 3.

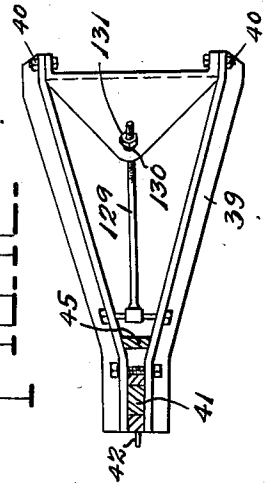


FIG. 12.

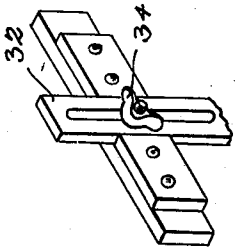


FIG. 7.

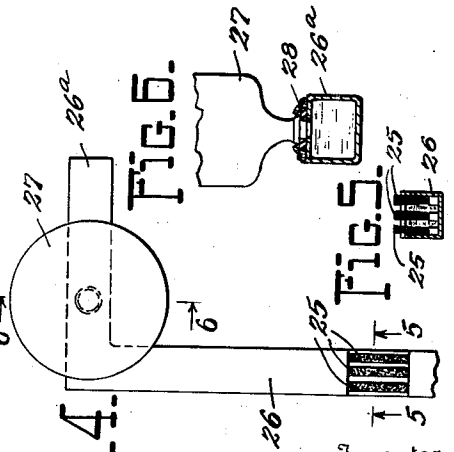


FIG. 6.

FIG. 5.

FIG. 4.

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CARTON OR PACKAGE SEALING MACHINE

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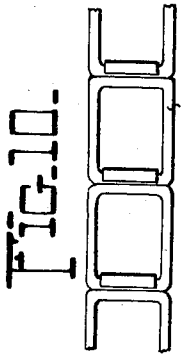


FIG. 10.

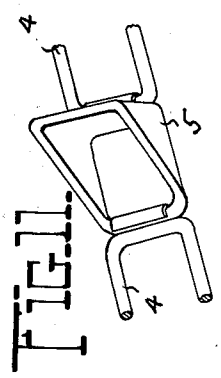


FIG. 11.

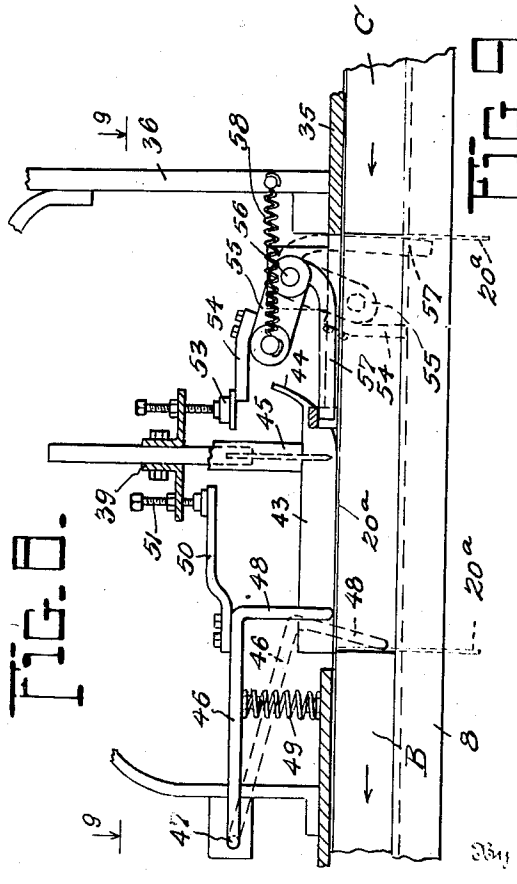


FIG. 8.

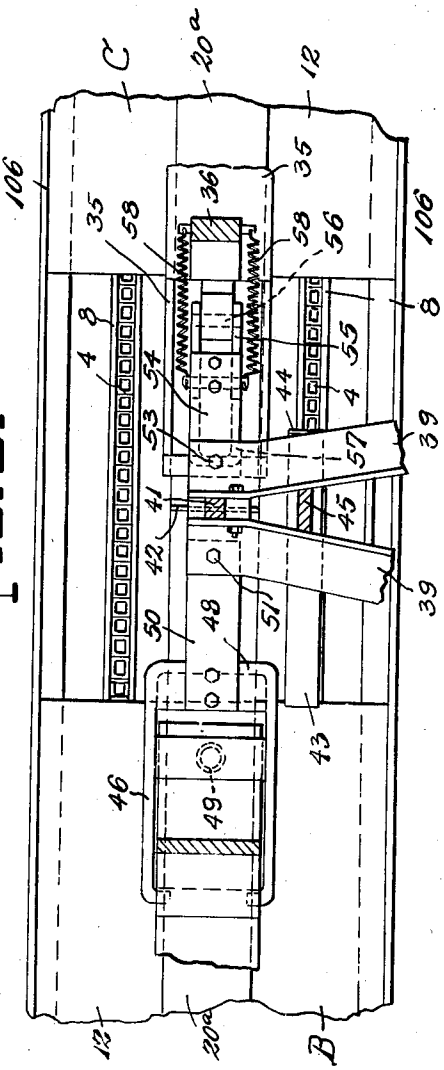


FIG. 9.

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CARTON OR PACKAGE SEALING MACHINE

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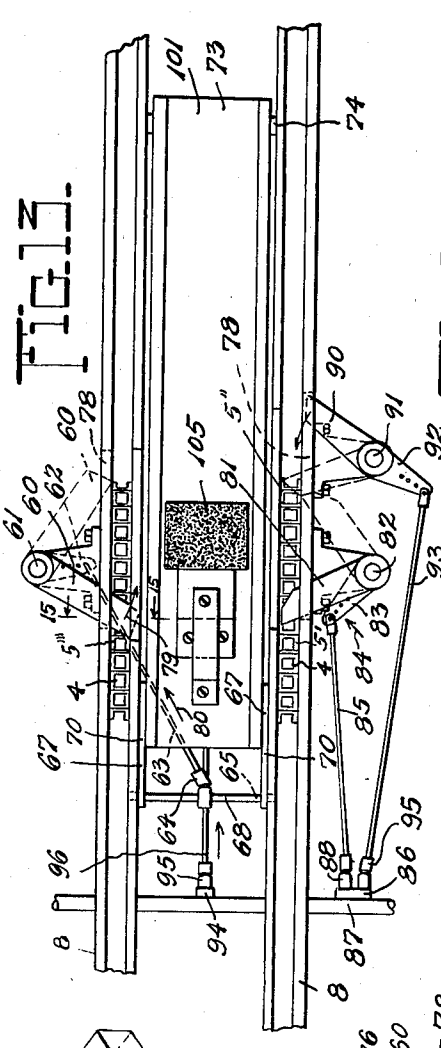


Fig. 13.

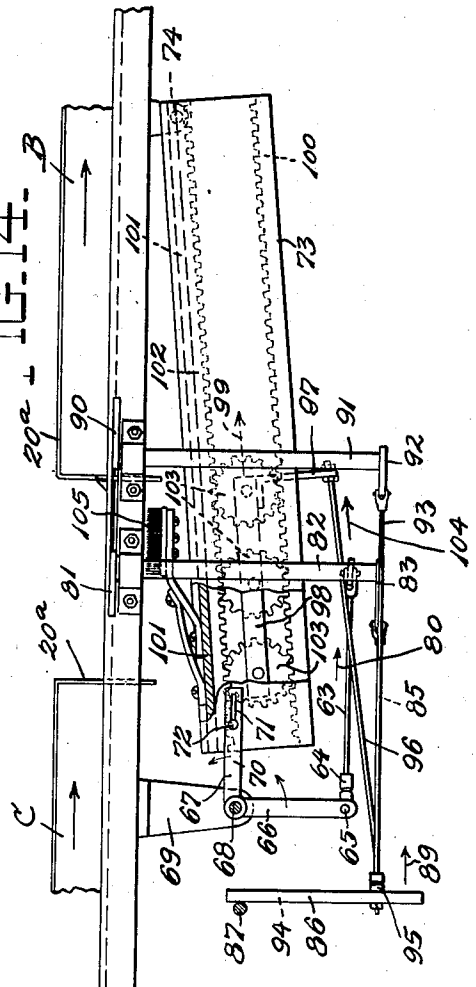


Fig. 14.

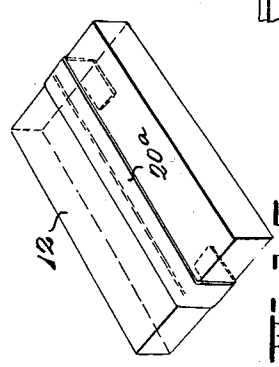


Fig. 16.

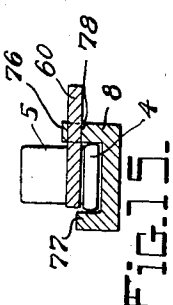


Fig. 15.

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UNITED STATES PATENT OFFICE

2,083,257

CARTON OR PACKAGE SEALING MACHINE

Harry W. Dyment, Cleveland, Ohio

Application July 22, 1935, Serial No. 32,680

25 Claims. (Cl. 216—29)

This invention comprises a novel and improved machine for applying adhesive tape to cartons after the contents of the latter have been placed therein, the tape constituting sealing means for the carton after it has been folded, whereby to maintain the receptacle in closed condition for the shipment of the same with its contents. Cartons of the type intended to be handled by the machine of this invention are usually made out of corrugated cardboard and comprise a bottom, ends with end top flaps, and sides with side top flaps, which are folded over the end top flaps so that the edges of the side top flaps are adjacent. The adhesive tape, usually paper, is applied to cartons or packaging receptacles of the class stated by hand ordinarily, being secured to the carton so as to overlie adjacent edges of the side top flaps, extending downwardly in adhesive connection with the outer faces of the ends, and thence portions of the tape are folded underneath the carton and are caused to adhere to the bottom thereof. Under these conditions the adhesive tape extends along the longitudinal central portion of the carton above the side top flap edges and downwardly around the ends some distance along the bottom, affording a sealing member which maintains the receptacle tightly closed and in proper condition for mailing or shipment or handling in any similar manner.

Simply expressed, the machine of this invention comprises various mechanical instrumentalities adapted to apply the adhesive tape in the manner above described without the necessity of manual handling or application of the tape in any way. It is only required that the cartons or receptacles in their folded condition, ready for the application of the adhesive member, shall be fed to the machine at one end and thereafter the mechanical devices of the machine will cause an application of the adhesive member in the manner stated above.

Among the novel features of the invention are the provision of a special adjustable hopper construction, certain guiding and pressing appliances controlling the movement of the adhesive tape, a peculiar type of cutting device or mechanism for severing the tape at the proper time, associated devices for causing the free portions of the tape when severed to be automatically and quickly carried downward against the ends of two adjacent cartons passing through the machine, and then quickly folded under and pressed against the bottom portions of said cartons for completing the sealing action of the tape respecting said ends of the cartons, together with special adjustable guide means for directing the movement of the cartons through the machine, and certain adjusting appliances for the pressure shoes, the latter two features dealing with the problem of handling different sizes of cartons by the machine.

A preferred embodiment of the invention is shown in the drawings, in which similar reference characters refer to like parts throughout, and in which—

Figure 1 is a side elevation of a machine embodying the invention.

Figure 2 is a top plan view thereof, certain parts being omitted.

Figure 3 is a longitudinal sectional view of the machine as shown in Figures 1 and 2, certain parts being omitted.

Figure 4 is a top plan view of the moistening trough or fountain, the brushes therein, and the water supply receptacle in place upon one end of said fountain.

Figure 5 is a cross sectional view through the water trough or fountain, taken on the line 5—5 of Figure 4 and showing the arrangement of the brushes.

Figure 6 is a fragmentary cross sectional view taken about on the line 6—6 of Figure 4, illustrating the inverted bottle or container of the water supported in communication with the moistening trough.

Figure 7 is a fragmentary perspective view of the mounting means for one of the pressure shoes.

Figure 8 is a vertical sectional view through that portion of the machine at which the cutting mechanism is located.

Figure 9 is a top plan view of the mechanism of Figure 8.

Figure 10 is a fragmentary plan view of the portion of the feed chain.

Figure 11 is a fragmentary perspective view showing one of the feed lugs or abutments carried by one of the feed chains.

Figure 12 is a top plan view of the cutting mechanism, including the support for the lifter shoe for the cutter bar.

Figure 13 is a plan view showing more particularly those parts which cooperate to lift the applicator brush by which the severed ends of the tape are caused to be adhesively applied to the bottom portion of the adjacent cartons or boxes going through the machine.

Figure 14 is a side elevation of the mechanism shown more particularly in Figure 13, parts being shown in section.

Figure 15 is a detail sectional view taken on the line 15—15 of Figure 13, showing the abut-

ment arm in the path of the lugs or abutments on one of the feed chains and above the channel guide in which the feed chain operates.

Figure 16 is a perspective view of a package to be sealed in the machine of the present invention.

Referring to the drawings and especially Figures 1, 2, and 3, a machine of the preferred form of my invention will preferably comprise a main frame A having the end legs or members 1, which may or may not be supported by rollers 2 depending on whether the machine is desired to be readily portable or not. Braces 3 extend between the main frame A and the end members 1, and arranged to travel lengthwise of the frame A are the endless feed chains 4 which carry feed lugs or abutments 5 at intervals in the length thereof. Preferably these abutments 5 will be spaced apart approximately a distance equivalent to about twice the length of a carton or box which is to be sealed by means of the machine in operation. There are two feed chains 4, seen best in Figure 2, and said chains are preferably sprocket chains passing about the upper sprocket gears 6 and the lower sprocket gears 7, see Figures 1 and 3.

For supporting the upper bights of the chains 4 in a plane corresponding with that of the upper portion of the frame A there are provided channels or tracks 8 such as shown in Figure 15 in cross sectional view, and the chains slide freely longitudinally of the machine as they progress over the frame A from end to end of the machine in their operating movement, thence passing downwardly and upwardly over the sprocket 7 as they travel away from the surface and back to the surface of the frame.

The feed end of the machine is that at which is located an adjustable hopper which comprises a sort of skeleton construction, including at each end thereof, and near opposite sides of the frame A, the horizontal bars 9 having the depending vertical bars 10, said horizontal bars 9 being slidably carried upon a cross bar 11 so that the parts 9 and 10 may be moved toward and from one another to adjust the area of the space between each set of said parts 9 and 10, the latter virtually forming the side ends of the said skeleton hopper construction. The provision of the bars 9 and 10 of the hopper means simply affords suitable devices for confining a stack of cartons or receptacles 12 piled one on top of each other.

In keeping the machine supplied with the cartons 12 to be sealed it is only necessary for the operator to see that a pile of superposed cartons is maintained in the hopper so that at least one carton, the lowermost one, is always ready to be engaged by the feed lugs of the feed chains and carried forwardly to the tape moistening, applying, cutting, and pressing parts of the various mechanisms performing these functions.

At what may be termed the outflow end of the hopper, which is the nearest end as seen in Figure 3, is located a vertically adjustable stop plate 13 movable upwardly and downwardly by means of a screw 14 having the handle 15. The lower edge of the stop member or plate 13 has a horizontal flange 13*a* acting as a thickness guide, and said plate 13 prevents the forward movement of any of the cartons 12 except the lower-most one engaged by predetermined feed lugs 5. Further referring to the machine in the actual progression of its operations, the carton 12, which is engaged by certain feed lugs 5 and carried forwardly by the feed chains 4, passes onwardly from the hopper means aforesaid beneath a guide plate 16 supported by a frame 17 and likewise adjustable vertically through the provision of an adjusting screw 18 and its handle 19, said screw being attached to the upper portion of the frame 17, as seen in Figure 3. Above the guide plate 16 is located the roll 20 of adhesive tape and this tape is preferably an ordinary paper tape gummed on one side and quite commonly used for sealing cartons today. Cooperating with the tape roll 20 is an overrun preventing device including the support 21 and the friction shoe 22, the latter resting on the roll 20 and being slightly pressed in frictional contact with the roll by means of a light spring 23. The tape of the roll 20 passes from the roll beneath a guide bar 24 and thence over the brushes 25 which are located in the water fountain or trough 26, see Figure 4.

The fountain or trough is of somewhat L-shaped construction and extends crosswise of the machine in reference to its largest dimension, being provided, however with a rearward extension 26*a* adapted to support, in the manner shown in Figure 6, the water receptacle 27, the open end of which when inverted is seated upon a suitable seat 28 including a gasket, said seat being carried by the part 26*a* of the trough 26. The gasket 28 affords a seal between the water supply receptacle 27 and the trough, and the receptacle 27 is preferably held in place by a supporting loop or band 29 carried by the horizontal arm 30 secured in a substantial manner to a portion of the frame of the machine. A bottle-type receptacle 27 for the moistening water in the trough 26 is employed so that the operator may readily see when the receptacle is nearly empty and thus be able to replenish the water by renewing a receptacle 27 containing a fresh supply whenever the previously used receptacle is about empty. The brushes 25 receive their moistening fluid by capillarity and said brushes may be made of either brush material or wicks, this being immaterial to the invention.

The paper adhesive tape of the roll 20 is designated 20*a*, and, after passing over the brushes 25 by which the under adhesive side of the tape is moistened, said tape passes through a guide loop of a guide arm 31 which is carried by the vertical support 32 of the pressure roller 33, disposed above the tape and adapted as shown in Figure 3 to press the moistened side of the tape downwardly in close contact with the adjacent edge portions of the top flaps of the carton which are to be sealed together and sealed to the end portions of the bottom of said carton, see Figure 16.

The pressure roller 33 is held at a suitable vertical adjustment by means of a set or thumb nut 34 screwed upon a threaded stem passing through a vertical slot in the member 32, the slot permitting vertical adjustment of the parts 31 and 33 as previously described. After the tape 20*a* passes beneath the pressure roller 33 by which it is firmly pressed in adhesive engagement with the top flap of the carton, the said tape moves forwardly under a pressure plate 35 designed to cause the tape to be pressed tightly against the portions of the carton with which it is engaged to establish the firm adhesive connection therewith as desired. The pressure plate 35, which acts also as a guide plate for the movement of the carton on the feed chains, is adapted for vertical

adjustment by means of the use of a standard 36 secured to a portion 37 of the frame by means of the adjusting nut 38 similar to the nut 34 previously described.

After the tape 20a has been applied to the upper side or top flaps of the carton in the manner described, the movement of the tape brings it to the cutting mechanism which will now be set forth in conjunction with Figures 8 and 9. The cutting mechanism includes a cutter bar frame, see Figure 12, designated 39, said cutter frame being pivoted at its outer end as shown at 40 to suitable supporting means on the main frame A. The cutter frame 39 at its free or inner end carries a vertical cutter bar 41, in the lower end of which is a slot disposed transversely of the machine and receiving the cutting blade 42 therein. The blade 42 is disposed transversely to the line of movement of the tape 20a, is slightly longer than the width of the tape, and is capable of up and down movement with the cutter frame 39, the downward movement causing severing of the portion of the tape between the two cartons B and C, as seen in Figure 3 and Figure 8.

Having in mind the previous description of the intended operation of the machine, it is notable that for a proper application of the adhesive tape 20a to the boxes or cartons, the tape must be severed so that portions thereof will extend some distance beyond the end or ends of cartons and these free portions must be depressed or moved downwardly to cause contact and adhesion thereof with the ends of the cartons, and thereafter the said free portions of the tape, extending below the plane of the undersides of the cartons, must be moved in a proper manner to cause them to be folded under the cartons and lifted into adhesive contact with the undersides or bottom portions of said cartons.

The mechanism for causing the downward movement of the free portions of the tape and the under-folding movement for carrying said portions into adhesive connection with the bottoms of the cartons, and timed with relation to the movement of the cutting mechanism, will now be described.

It will be seen, according to Figures 3 and 8, that as the carton B passes the cutter blade 42, said carton is still in contact with the underside of a cam lifter 43, which is a device shaped somewhat like a shoe and having the upturned cam end portion 44. The purpose of the upturned end 44 of the cam lifter 43 is to enable the cartons to engage said portion and lift the part 43 bodily. Said lifter 43 is carried by a standard 45, see Figures 12 and 8, which standard is secured between the sides of the cutter frame 39. Therefore, when the carton engages the cam end 44 of the lifter 43, the lifter will become elevated and raise the blade 42 and the cutter frame sufficiently for the blade to be above the path of movement of the adhesive tape 20a. The lifter 43 is displaced laterally a short distance from the blade 42, being therefore out of the path or line of movement of the tape so as to not interfere with the latter.

Bearing in mind, therefore, that so long as the lifter 43 is upheld by the carton B, for example, passing beneath the same, the cutter blade is inactive, it will be seen from Figures 3 and 8 that when the carton B passes from beneath the lifter 43 the lifter is permitted to drop and this permits the dropping of the cutter blade 42 which thereby severs the tape 20a. But the parts are so positioned that the blade 42 does not sever the tape 20a until there is a considerable length of tape stretched between the cartons B and C that are progressing through and into the cutting mechanism. Thus the blade 42 is dropped at a time such that two free ends of the portion of the tape at opposite sides of the severance point are formed in the cutting action. These two free portions of the tape must now be forced or pushed downwardly to engage them with the ends of the adjacent cartons B and C, and for this purpose there are provided two pushing devices, seen best in Figure 8. One of these devices 46 is pivoted to the frame at 47 and is provided with a downwardly extending pusher member 48. Normally the member 46 is maintained in its uppermost position by an expansion spring 49. An abutment arm 50 offstands from the member 46 at a point adjacent the member 48 and is in the path of an adjustable screw actuating member 51 carried by the cutter frame 39, previously referred to. The said frame 39 carries a second actuating member 53 capable of engaging an abutment arm 54 on the crank 55 offstanding from the shaft 56. The crank 55 carries another pusher member 57 which is normally held upraised by a coil spring 58 connected with a portion 36 on the frame A, or an adjacent supported part. The pusher member 57 operates downwardly through a slot which is formed in the pressure plate 35. The arrangement of the parts 48 and 57 is such that when the cutter frame 39 drops with the cutting blade 42 the actuating members 51 and 53 will engage the parts 50 and 54, respectively, and cause downward movement of the pusher members 48 and 57. The member 48 by its downward movement in an arcuate path applies the forward free severed portion of the tape to the adjacent or rear end of the box B, and the member 57 moving downwardly applies the rearward severed free portion of the tape to the front end of the box or carton C, as these cartons are being advanced in the regular progressive movement of the chains 4.

The foregoing operation takes place instantly with the cutting of the tape and under the control of the cutting mechanism.

It will be understood, of course, that as respects the carton B, at a previous portion of the cycle of its movement through the machine, the tape at its front end has been adhesively applied to said end and the underside of the carton adjacent thereto.

The next things to be described are the means for applying the free depending severed ends of the tape which have now been adhesively connected to the rear end of the carton B and front end of the carton C, to the underside of these cartons adjacent said ends. For this purpose the mechanism shown in Figures 13 and 14 is employed and will now be set forth.

As illustrated in Figures 13 and 14, the direction of progress of the cartons or packages under the action of the feed chains 4 and lugs 5 is to the right hand. At one side of the machine there is the trip arm 60 which is located, as shown in Figure 13, to swing in a horizontal plane above one of the feed chains 4. The arm 60 is carried by a vertical shaft 61 on the lower portion of which is mounted the arm 62 connected by a pull rod 63 and universal joint 64 with a cross bar or rod 65 of a depending arm 66 of a bell crank lever, generally indicated at 67. The bell crank lever 67 has as its axis the cross shaft 68, as clearly shown in Figure 14. The ends of the cross shaft 68 are mounted within brackets 69 secured to the chain guide members 8 or any

other convenient portion of the frame of the machine. The bell crank 67 comprises the arms 70 provided with slots 71 adapted to engage stud shafts 72 extending from a brush lifting or carrying unit 73 which is pivotally mounted to the chain guides 8, as clearly shown at 74 in Figure 14. It will therefore be seen that by actuating the bell crank 67 the brush lifting or carrying unit may be raised or lowered around its pivot point 74 for purposes as will be hereinafter described.

In view of the fact that the raising and lowering of the brush lifting unit have to be timed in such a way that a proper operation of the device is obtained no matter what size cartons are to be sealed by the machine, it has been found advantageous to control the raising and lowering operations of the brush lifting unit by means of the abutment members on the chains 4 which engage the cartons and move the same in proper spaced relation through the machine.

It is mentioned at this point that the abutment members on the chain 4, which are indicated by the numeral 5, are adjustable and may be arranged in closer and farther apart relationship, depending upon the size of the cartons to be handled by the machine. The abutment members 5 are upward extensions and are of a link-like configuration equal in size to the other link members of the chains 4. It will therefore be seen that the abutments 5 may be disconnected from the other link members of the chain and interposed between other link members of the chain at distances depending upon the length of the cartons handled by the machine. In this manner the distance between the cartons may be varied to suit various conditions, and for this very reason it has been found advantageous to interconnect the brush lifting and carrying mechanism, and also the brush operating mechanism, with the abutment members on the chain, so that a proper timing of the mechanism may be facilitated in a simple manner and whereby a change in the distance between the abutment members does not necessitate a change in the timing of the machine, because the latter is at all times dependent upon the position of the abutment members of the chain and a proper timing relation is at all times maintained no matter how far apart the abutment members are spaced. The lever 60 is therefore positioned in such a manner, with respect to one of the chains 4, that it will always be in the path of the abutment members 5.

Referring now to Figure 15, it will be seen that the chain guide 8 is of substantially U configuration, the upstanding portion 76 of which is somewhat higher than the upstanding portion 77. The arm 60, as shown in Figures 13 and 15, extends into the chain guide member 8 through a slot 78 directly into the path of the abutment members 5, as previously mentioned. It will therefore be seen that when one of the abutment members 5 strikes arm 60 the same will be moved, together with shaft 61, in the direction indicated by arrow 79 in Figure 13. Movement of the arm 60 in this direction will cause similar movement of the arm 62, and obviously rod 65 will be pushed in the direction shown by the arrow 80 in Figure 13. This will cause a rocking of the bell crank 67, and the brush lifting unit 73 will be raised in a manner obvious from Figure 13. At the same time the brush lifting unit 73 is raised, an abutment member 5 mounted on the other chain of the machine will engage arm 81 mounted on one of the chain guides 8 opposite the arm 60, and, in view of the fact that arm 81 is connected to a shaft 82 and arm 83, the latter will be moved in the direction indicated by arrow 84. The arm 83 is connected by a push rod 85 to a depending arm 86 which is riveted or welded to a shaft 87 mounted below the chain guides 8 within the frame of the machine in any convenient manner. Interposed between the push rod 85 and arm 86 is a universal joint 88.

It will be seen that the movement of arm 83 in the manner described will cause a corresponding movement of push rod 85, and the depending arm 86 will move in the direction indicated by arrow 89 in Figure 14, causing rotation of the shaft 87 in a counter-clockwise direction. Spaced from the arm 81 and also mounted to one of the chain guides 8 is an arm 90 connected to a shaft 91 and an arm 92. The arm 92 is also connected by means of a push rod 93 to the depending arm 86, as will be clearly seen from Figures 13 and 14. The movement of arm 86, referred to hereinabove, will exert a push on the rod 93, causing arm 90 to move from its full line position of Figure 13 to its dotted line position. It will therefore be seen that when the abutment member 5, which operates arm 81, causes the movement of the latter from its full line to its dotted line position, arm 90 will at the same time move from its full line to its dotted line position.

Movement of the depending arm 86 in the direction indicated by arrow 89 and the counter-clockwise rotation of shaft 87, as previously described, will cause similar movement of another depending arm 94 riveted or welded to shaft 87, and, in view of the fact that arm 94 is connected by means of a universal joint 95 and a rod 96 to a downwardly extending arm or bracket 97 which is connected to a pinion frame 98, said pinion frame 98 will be moved in a direction as shown by the arrow 99 in Figure 14.

The brush lifting or carrying unit 73 is provided at its bottom portion with gear racks 100, one rack being located at each side within the frame structure of the member 73. A sliding brush carrier 101 is arranged within the brush lifting unit 73 and is provided with gear racks 102 extending downwardly therefrom and located directly above the gear racks 100, previously referred to. A plurality of pinions 103 is arranged within the pinion carrier 98, three pinions being positioned at each side of the pinion frame or carrier 98, and these pinions are in engagement with their respective gear racks 100 and 102.

When the member 97 is moved in the direction indicated by arrow 104 during the operation previously referred to herein, the pinion carrier 98 and the pinions 103 are moved in the same direction. In view of the fact that the gear racks 100 are stationary while the gear racks 102 and the sliding brush carrier 101 are movably mounted within the unit 73, the sliding brush carrier will be moved in the direction of arrow 99 in Figure 14 at a considerably higher speed than the package traveling through the machine. Mounted on the sliding brush carrier 101 is a brush 105 which of course will perform the same motion as the sliding brush carrier 101.

It will be seen, therefore, that after the free ends of the tape 20a have been pushed down by instrumentalities referred to previously, and are in the position shown in Figure 14, the abutment members 5 on each chain, which are in front of the arms 60 and 81, will cause operation of the instrumentalities referred to above, and the unit 73 will thereby be raised and the brush 105

will be moved in the direction of arrow 99. As the brush 105 has been raised to an elevation to contact the bottom portion of the carton B in Figure 14, the free downwardly extending end of the tape 20a will be pressed against the bottom portion of the carton during the forward travel of the brush, and will be adhesively applied thereto.

The abutment member 5' which operated arm 81 has now reached the position indicated in dotted lines at 5'', and, in view of the fact that arm 90 is now in its dotted line position because the arms 81 and 90 are interconnected in such a manner as to move toward and away from each other, arm 90 will now be moved from its dotted line position to its full line position in Figure 13. This will cause a return stroke of the sliding brush carrier 101 and brush 105, and, since the front end of the carton C is now in the path of movement of brush 105, the downwardly extending tape 20a at the front end of carton C will, in a similar manner, be pressed against the bottom portion of carton C and will thereby be adhesively applied thereto. The arm 60 has now reached its dotted line position shown in Figure 13, and the abutment member 5''' will pass by arm 60 and the latter will immediately swing back to its full line position in view of the weight of the unit 73 resting on the bell crank 67. The brush lifting unit 73 is thereby immediately lowered, and the cycle of the apparatus illustrated in Figures 13 and 14 will now repeat to adhesively apply the downwardly extending tape portion to the rear end of the carton C and to the front end of the next following carton.

The arms 81 and 90 operate through slots in one of the chain guides 8, similarly to the manner described with reference to the arm 60, the arrangement being clearly shown in Figure 15.

It should be understood that during the operation of the mechanism described in Figures 13 and 14, the cartons continue their travel forward by reason of their engagement with the abutment members or lugs 5 on the chains 4.

The frame A of the machine is equipped with longitudinal guides 106 which consist of angle plates. These guides cooperate with the chain guides 8 to hold each carton or box as the same is carried from the bottom of the hopper means 9 and 10 onward to the various mechanisms of the machine by which the paper tape 20a is applied. The guides 106 are adjustable by means of the provision of adjusting plates 107 which are secured to cross members 108 of the frame structure. The adjusting members 107 consist of L-shaped plates, the base portions of which are attached to the members 108 by bolt and thumb nut means 109 passing through slots 110 in the base portions of the members 107.

The means for driving the feed chain as shown in the drawings (Figure 1) may include a drive sprocket chain 111 connected with a driven sprocket 112 mounted on shaft 113 which carries also the sprockets 6 which impart motion to chains 4. The chain 111 may be driven from a suitable motor 114 supported in a frame 115 at the middle portion of the machine beneath the uppermost portion of the main frame A.

An additional guide or presssure member 116 which is adjustable by means of instrumentalities 117 similar to those shown in Figure 7, is provided at the left-hand end of the machine, as shown in Figure 1. An upright member 118 at the left end of the frame A, see Figure 1, carries an adjustable roller 119 which cooperates with a roller 120 mounted on shaft 113 to apply additional pressure to the tape at the top and bottom portions of the carton to assure proper adhesive engagement between the tape and the carton which now reaches the machine and may be transferred upon any suitable conveyor structure or the like leading to a place where the sealed cartons are to be stored.

At 121 there is shown a fuse box which is connected with a source of electrical power by means of cable 122, while the motor 114 is connected over the fuse box 121 with power line by means of cable 123.

The sprocket gears 6, which are secured to a shaft 124 for rotation with the same and which engage the chains 4, are adjustable by means of instrumentalities indicated at 125. The operation of these instrumentalities will be obvious from Figure 1, rotation of the crank 126 and gear 127 causing movement of the bearing member 128 toward or away from the center of the machine to thereby permit the adjustment of the tension of the chains 4.

The portions 77 of the member 8 are partially cut away to prevent their interference with arms 60, 81, and 90.

The supporting rod 129, as shown in Figure 12, slides within the opening 130 and is adapted to limit only the downward movement of the blade by means of an adjustable nut 131.

As will be seen from Figure 8, member 46 is returned to its full line position by the pressure of spring 49, while member 55 is returned to its full line position by the spring 55 and the forward motion of package C pushing against portion 57.

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

1. In a machine of the class described, in combination, carton feeding mechanism, an adhesive tape supply mechanism, moistening mechanism for the adhesive side of said tape, pressing mechanism for pressing the tape when moistened against the top portion of the carton as it passes the pressing mechanism, cutting mechanism for severing the tape some distance from the end of the carton after it has been applied to the top of the carton, a pushing device for moving the free severed ends of the tape downward to apply it to the end of the carton during movement of the latter, and means cooperating with said free end of the tape after it is applied to the end of the carton for pressing the same in adhesive contact with the under-side of the carton.

2. A machine as set forth in claim 1, combined with means connecting one of the applicator devices with the cutting mechanism for operation by the latter.

3. A machine as set forth in claim 1, wherein the pushing means for applying the tape to the end of the carton is operably connected to the cutting mechanism for actuation thereby, together with means connecting the feeding mechanism for the cartons with the means which applies the tape to the bottom of the carton for actuation of the latter means.

4. In a machine of the class described, in combination, a main frame having supporting and feeding means for cartons to cause movement of the latter progressively through the machine, adhesive tape supply means, moistening means for the adhesive side of the tape supplied from the supply means, devices carried by the feeding means for moving cartons through the machine in spaced relation, means for applying the ad-

hesive tape to the top portions of the cartons during their progressive movement through the machine and while said cartons are spaced, cutter mechanism for severing the tape extending between the cartons, at a point intermediate said cartons, whereby to leave the severed ends of the tape free, and devices for moving the severed ends of the tape against the adjacent ends and bottoms of the cartons for affixing the tape to two cartons at said ends and bottoms.

5. A machine substantially as claimed in claim 4, wherein the devices which apply the tape at the ends of the cartons are operably connected for actuation by the cutter mechanism and wherein the devices for applying the severed ends of the tape to the bottom of the cartons are operable by the feed mechanism for the cartons.

6. In a machine of the class described, in combination, a main frame, means for feeding cartons along said frame while said cartons are disposed in spaced relation, adhesive tape applying instrumentalities for pressing moistened adhesive tape against the top portions of two spaced cartons to affix the said tape to said spaced cartons with the tape extending from one to the other, cutting mechanism for severing the tape at a point intermediate the cartons, and instrumentalities for sequentially applying the severed ends of the tape to the ends of the cartons and bottom portions of the cartons after the severing action of the cutting mechanism takes place.

7. In a machine of the class described, in combination, a main frame, means for feeding cartons along said frame while said cartons are disposed in spaced relation, adhesive tape applying instrumentalities for pressing moistened adhesive tape against the top portions of two spaced cartons to affix the said tape to said spaced cartons with the tape extending from one to the other, cutting mechanism for severing the tape at a point intermediate the cartons, instrumentalities for sequentially applying the severed ends of the tape to the ends of the cartons and bottom portions of the cartons after the severing action of the cutting mechanism takes place, said instrumentalities comprising pushing members for pushing the severed ends of the tape downwardly between the cartons with which said ends are to be connected, and connections between said pushing members and the cutting mechanism to synchronize the movements of these parts.

8. In a machine of the class described, in combination, a main frame, means for feeding cartons along said frame while said cartons are disposed in spaced relation, adhesive tape applying instrumentalities for pressing moistened adhesive tape against the top portions of two spaced cartons to affix the said tape to said spaced cartons with the tape extending from one to the other, cutting mechanism for severing the tape at a point intermediate the cartons, instrumentalities for sequentially applying the severed ends of the tape to the ends of the cartons and bottom portions of the cartons after the severing action of the cutting mechanism takes place, said instrumentalities comprising pushing members for pushing the severed ends of the tape downwardly between the cartons with which said ends are to be connected, and connections between said pushing members and the cutting mechanism to synchronize the movements of these parts, said instrumentalities also comprising an applicator device operable to engage the severed ends of the tape after they have been pushed downwardly subsequent to severing action and to press said severed ends into close adhesive contact with the bottom portions of the cartons.

9. In a machine of the class described, in combination, a main frame, means for feeding cartons along said frame while said cartons are disposed in spaced relation, adhesive tape applying instrumentalities for pressing moistened adhesive tape against the top portions of two spaced cartons to affix the said tape to said spaced cartons with the tape extending from one to the other, cutting mechanism for severing the tape at a point intermediate the cartons, instrumentalities for sequentially applying the severed ends of the tape to the ends of the cartons and bottom portions of the cartons after the severing action of the cutting mechanism takes place, said instrumentalities comprising pushing members for pushing the severed ends of the tape downwardly between the cartons with which said ends are to be connected, and connections between said pushing members and the cutting mechanism to synchronize the movements of these parts, said instrumentalities also comprising an applicator device operable to engage the severed ends of the tape after they have been pushed downwardly subsequent to severing action and to press said severed ends into close adhesive contact with the bottom portions of the cartons, and means for actuating the last mentioned applicator device to impart thereto a quick movement in the direction of movement of the cartons for acting upon one of the severed ends of the tape, and for imparting a reverse movement thereto for acting upon the other severed end of the tape.

10. A machine as claimed in claim 9, wherein the applicator device is operable from the feed means.

11. In a machine of the class described, in combination, carton feeding mechanism, adhesive tape supply mechanism, means for pressing the moistened adhesive tape into contact with the upper side of a carton fed forward by the feeding mechanism, cutting mechanism for severing the tape at a point spaced from the end of a carton so as to leave a free end of the tape beyond the end of the carton, and instrumentalities for engaging said free end of the tape after severing to fold it around the end of the carton in adhesive contact with the end and in contact with the bottom of the carton.

12. In a machine of the class described, in combination, carton feeding mechanism, adhesive tape supply mechanism, means for pressing the moistened adhesive tape into contact with the upper side of a carton fed forward by the feeding mechanism, cutting mechanism for severing the tape at a point spaced from the end of a carton so as to leave a free end of the tape beyond the end of the carton, and instrumentalities for engaging said free end of the tape after severing to fold it around the end of the carton in adhesive contact with the end and in contact with the bottom of the carton, said instrumentalities including parts operated by the cutting mechanism to move the free severed end of the tape past and against the end of the carton, together with other parts operable sequentially to the action of the severing means to apply the tape to the bottom of the carton after it has been applied to the end of the carton.

13. In a machine of the class described, in combination, horizontal carton feeding mechanism, adhesive tape supply and moistening mechanisms, the said feeding mechanism comprising parts to move cartons progressively through the

machine in spaced relation, adhesive tape applying instrumentalities for pressing moistened tape against two spaced cartons as they are fed progressively by said feeding mechanism, cutting mechanism to sever the adhesive tape after it is applied to two of the cartons, the severing taking place at a point intermediate the cartons and thereby leaving free end portions of the tape projecting from ends of the cartons, devices operable from the cutting mechanism for pushing the free severed ends of the tape downwardly to apply them to the ends of the cartons, and other mechanism for engaging the free end portions of the tape extending below the ends of the cartons and wiping said ends into close contact with the undersides of adjacent cartons as described.

14. A machine as claimed in claim 13, in which the last mentioned other mechanism includes an applicator member normally below the plane of the undersides of the cartons, and means for raising said applicator member and imparting forward and return movements to the same, the forward movement being in the direction of movement of the cartons under the action of the feeding mechanism.

15. In a carton sealing machine, adhesive tape feeding control mechanism, carton feeding mechanism including feed chains having adjustable abutments carried thereby to engage cartons and feed the same through the machine, cutting mechanism for the adhesive tape, operating means for the cutting mechanism including a shoe with which each carton may engage for imparting actuating movement thereto and to the connected cutting mechanism, and applicator mechanism for applying portions of the adhesive tape to certain portions of the carton, together with operating means for said applicator mechanism adapted to be operated by the adjustable abutments on the feed chains.

16. In a carton sealing machine, in combination, a main frame, supporting means thereon to supply a carton or cartons, adhesive tape supply means and an adhesive tape fed therefrom, moistening means for moistening the adhesive side of the tape, pressing devices for pressing the moistened adhesive side of the tape against the upper portions of a carton as the cartons progress through the machine, cutting mechanism for severing the tape some distance from the end of said carton, applicator devices for pushing the free severed end of the tape against the end of a carton subsequent to the severing action of the cutting mechanism, means for feeding the cartons forward through the machine to the tape supply, moistening, and cutting mechanisms aforesaid, and appliances on the applicator devices for applying the said free end of the tape to the bottom portion of the carton after it has been applied to the end portion aforesaid.

17. In a carton sealing machine of the class described, mechanism for feeding cartons through the machine, mechanism for applying adhesive tape in sealing engagement with a carton, tape cutting mechanism, means operable by the movement of said carton to actuate the cutting mechanism, applicator devices for applying portions of the tape to the end portion of the carton after the cutting action of the cutting mechanism thereon, applicator means engaging the free end of the tape for applying the same to the bottom portion of the carton, and adjustable means connected with the feeding mechanism comprising abutments detachable and adjustable in relation to the feeding mechanism to engage with cartons for moving the same through the machine.

18. In a machine of the class described, in combination, a main frame, means for feeding cartons along said frame while said cartons are disposed in spaced relation, adhesive tape applying instrumentalities for pressing moistened adhesive tape against the top portions of two spaced cartons to affix the said tape to said spaced cartons with the tape extending from one to the other, cutting mechanism for severing the tape at a point intermediate the cartons, means for applying the tape to the end portions of the cartons, and an applicator device for applying the free ends of the tape to the bottoms of the cartons comprising a pivotally mounted frame, a brush, means for shifting said brush, and instrumentalities for moving said frame and brush into operative position.

19. A package sealing machine comprising, in combination, tape applying means for adhesively applying tape to the top portion of a carton, means for applying the adhesive tape to the end portions of the carton, a brush, normally in inoperative position, instrumentalities for moving said brush into operative position with respect to the carton and tape, and means for shifting said brush for applying the tape to the bottom portions of the carton.

20. A package sealing machine of the class described, comprising, in combination, a main frame, means for feeding cartons to be sealed along said frame in one direction and spaced with respect to each other, instrumentalities for applying adhesive tape to the top portions of the cartons, means for severing said adhesive tape intermediate said cartons, instrumentalities for applying portions of the severed tape to the side portions of the cartons, and tape applying means operable in the direction of movement of said cartons but at a greater speed for applying the portions of the tape adjacent one of said side portions to the bottom portions of said cartons, said tape applying means being reversely movable in timed relation to the movement of the cartons and in an opposite direction to such movement for applying portions of said tape adjacent another of the side portions to the bottom portions of said cartons.

21. In a machine of the class described, in combination, carton feeding mechanism, an adhesive tape supply mechanism, moistening mechanism for the adhesive side of said tape, pressing mechanism for pressing the tape when moistened against the top portion of the carton as it passes the pressing mechanism, cutting mechanism for severing the tape some distance from the end of the carton after it has been applied to the top of the carton, a pushing device for moving the free severed ends of the tape downward to apply it to the end of the carton during movement of the latter, and means cooperating with said free end of the tape after it is applied to the end of the carton for pressing the same in adhesive contact with the underside of the carton, said means including a movable member, a brush on said member, means for moving said member and brush into operative position, and instrumentalities for moving said brush with respect to said movable member.

22. A machine of the character described, comprising, in combination, a main frame, means for moving cartons along said frame, means for applying tape to the top and side portions of the cartons, and tape applying instrumentalities

operable in the direction of movement of the cartons but at a greater speed to apply a portion of the tape to the bottom portion of a carton and reversely movable in timed relation to the movement of the cartons and in an opposite direction to such movement to apply another portion of the tape to the bottom portion of a carton.

23. A machine of the character described, comprising, in combination, a main frame, means for moving cartons along said frame, means for applying tape to the top and side portions of the cartons, and tape applying instrumentalities operable in the direction of movement of the cartons but at a greater speed to apply a portion of the tape to the bottom portion of a carton and reversely movable in timed relation to the movement of the cartons and in an opposite direction to such movement to apply another portion of the tape to the bottom portion of a carton, said tape applying instrumentalities comprising a movable frame pivotally mounted on said main frame, an applicator brush, a carrier member movably carrying said brush within said movable frame, means for shifting said brush and carrier member with respect to the main frame, and instrumentalities for raising and lowering said movable frame into operative and inoperative positions.

24. In a machine of the class described, in combination, a main frame, means for feeding cartons along said frame while said cartons are disposed in spaced relation, adhesive tape applying instrumentalities for pressing moistened adhesive tape against the top portions of two spaced cartons to affix the said tape to said spaced cartons with the tape extending from one to the other, cutting mechanism for severing the tape at a point intermediate the cartons, instrumentalities for sequentially applying the severed ends of the tape to the ends of the cartons after the severing action of the cutting mechanism takes place, said instrumentalities comprising pushing members for pushing the severed ends of the tape downwardly between adjacent cartons, and means for applying the free ends of said tape after they have been pushed downwardly to press said end into adhesive contact with the bottom portions of adjacent cartons.

25. In a machine of the class described, in combination, a main frame, means for feeding cartons along said frame while said cartons are disposed in spaced relation, adhesive tape applying instrumentalities for pressing moistened adhesive tape against the top portions of two spaced cartons to affix the said tape to said spaced cartons with the tape extending from one to the other, cutting mechanism for severing the tape at a point intermediate the cartons, instrumentalities for sequentially applying the severed ends of the tape to the ends of the cartons after the severing action of the cutting mechanism takes place, said instrumentalities comprising pushing members for pushing the severed ends of the tape downwardly between adjacent cartons, means for applying the free ends of said tape after they have been pushed downwardly to press said end into adhesive contact with the bottom portions of adjacent cartons, and instrumentalities for actuating said last mentioned means to impart thereto a quick movement in the direction of movement of the cartons for acting upon one of the severed ends of the tape of one of adjacent cartons, and for imparting a reverse movement thereto for acting upon the other severed end of the tape of the other of adjacent cartons.

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