H. L. JOHNSON.

PACKAGE SEALING MACHINE.

APPLICATION FILED OCT. 3, 1918.

1,352,899.

Patented Sept. 14, 1920.

6 SHEETS—SHEET 1.

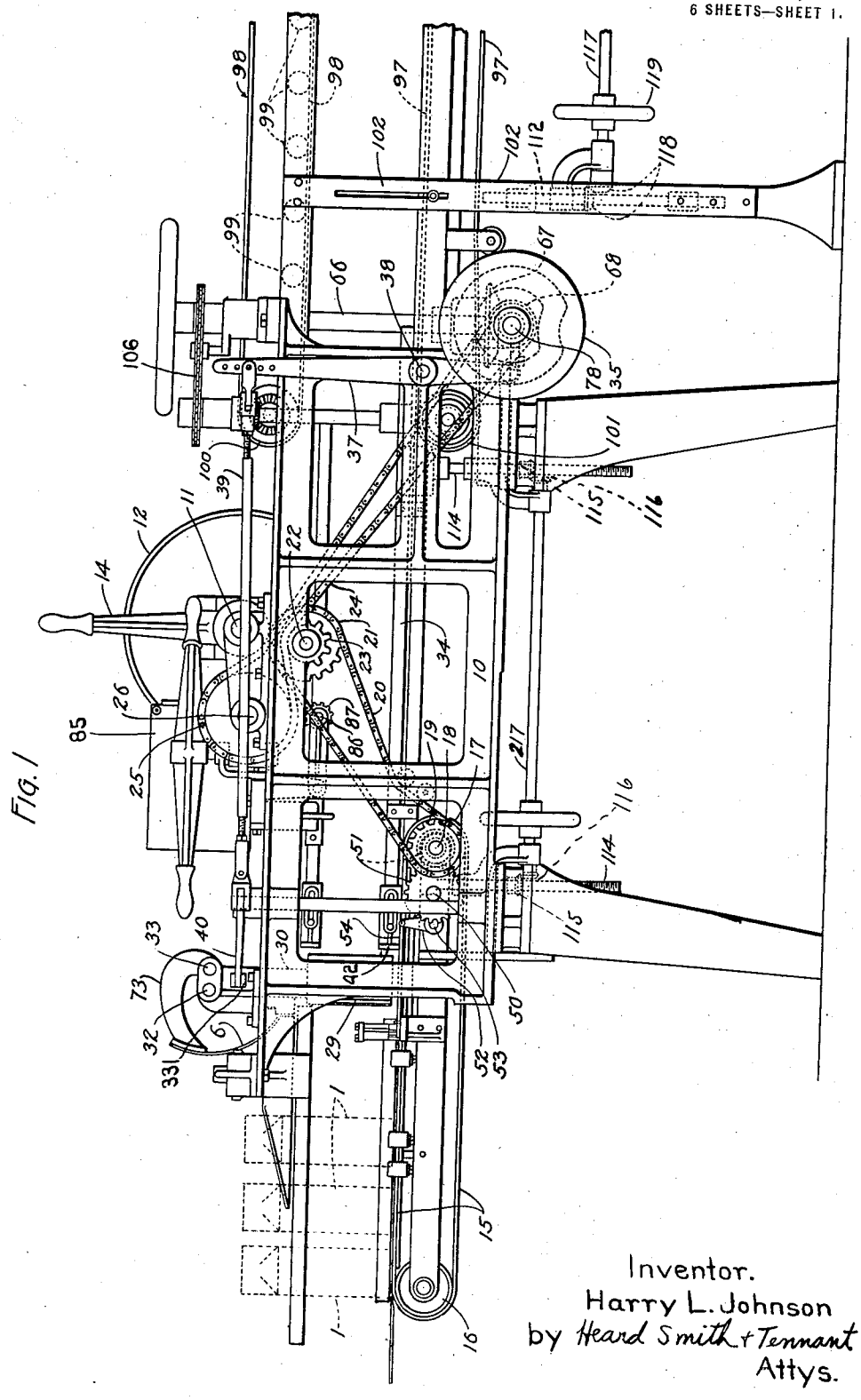


Fig. 1

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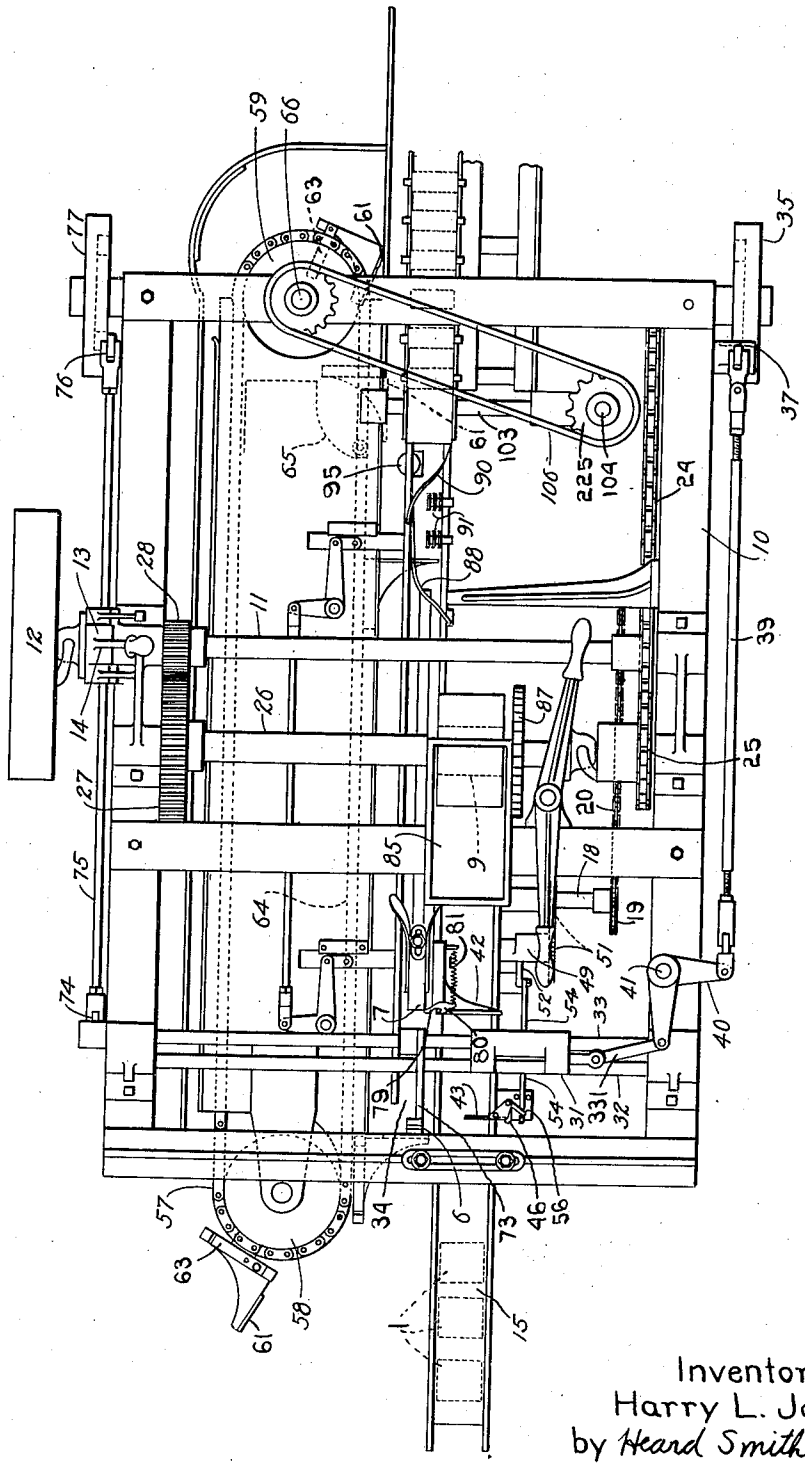


FIG. 2

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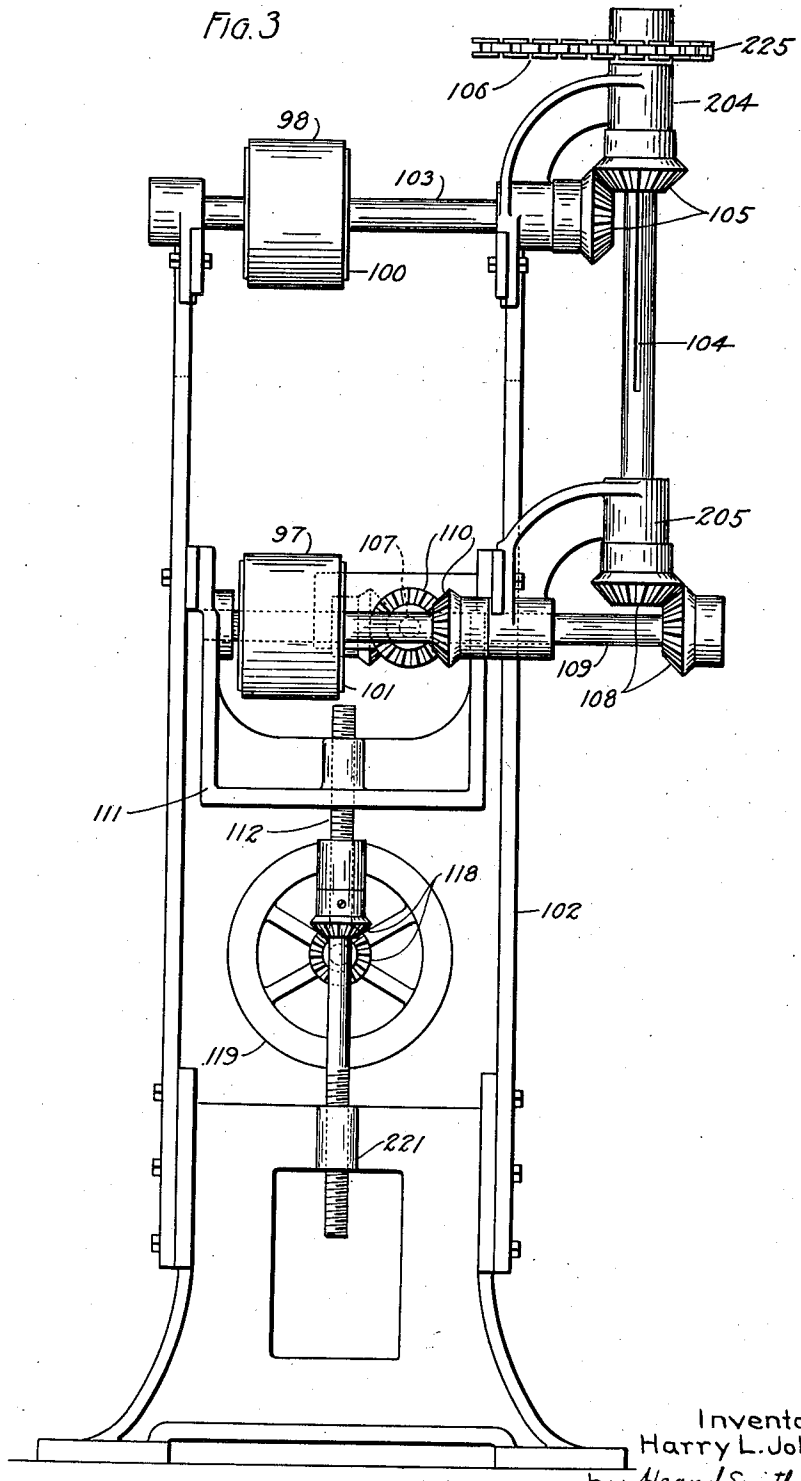
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6 SHEETS—SHEET 3.

Fig. 3



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6 SHEETS—SHEET 4.

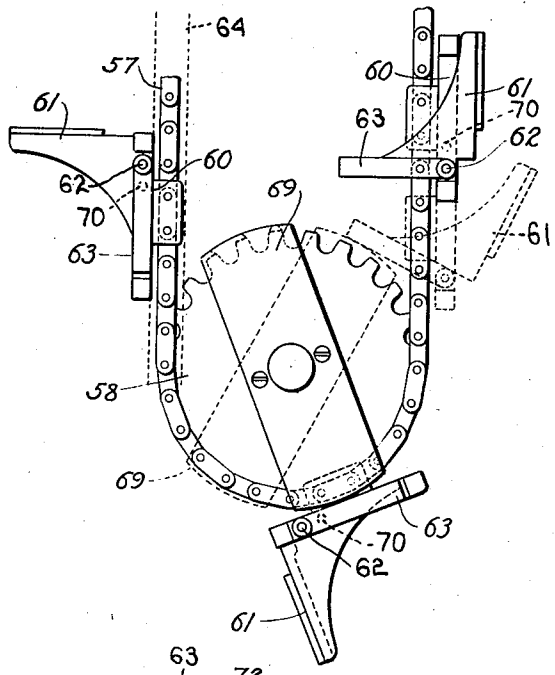


FIG. 4

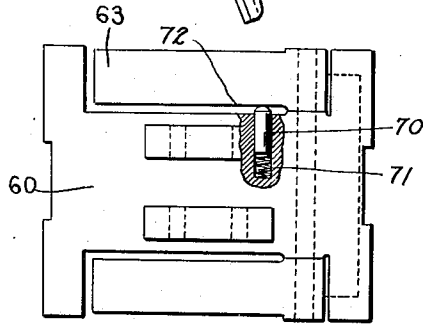


FIG. 5

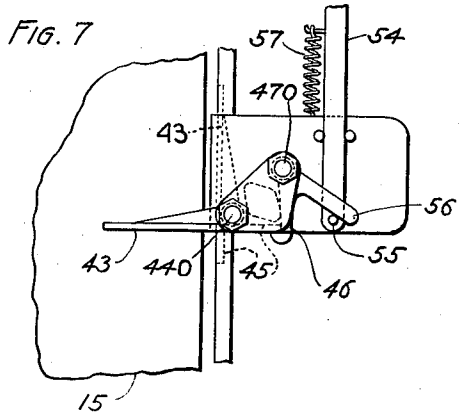


FIG. 7

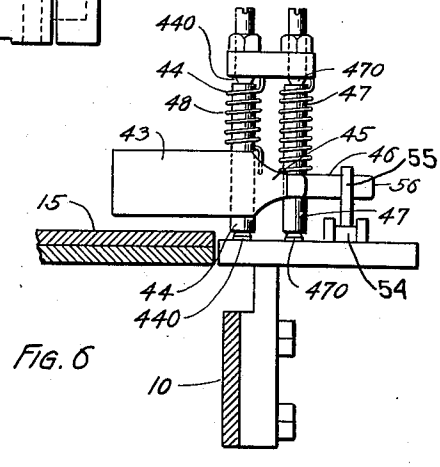


FIG. 6

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6 SHEETS—SHEET 5.

FIG. 8

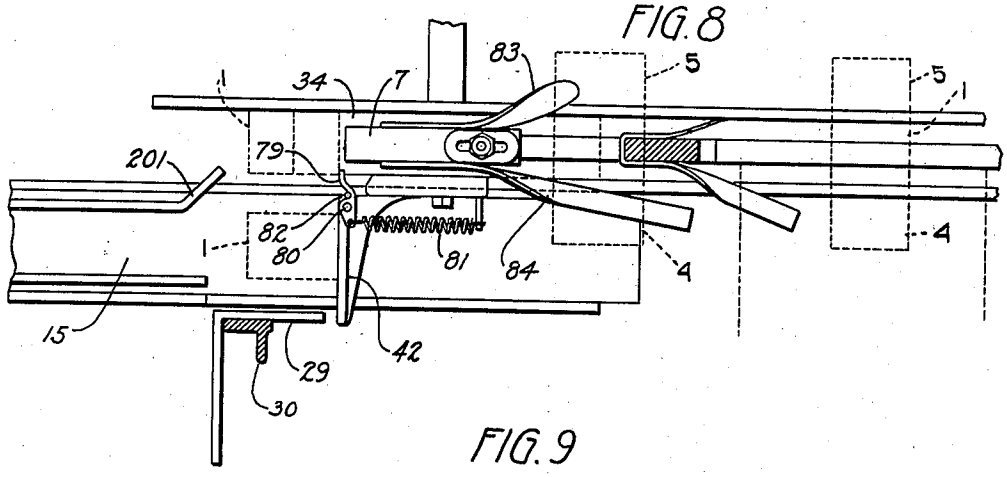


FIG. 9

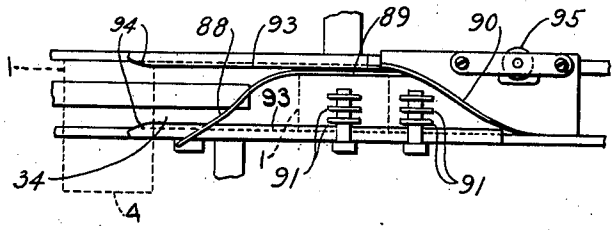


FIG. 10

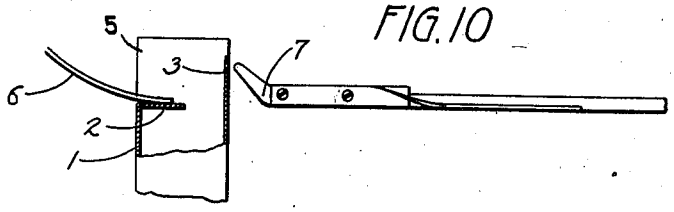


FIG. 11

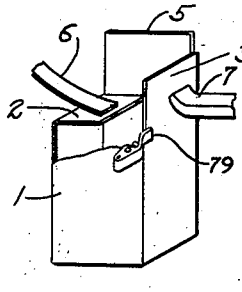


FIG. 12

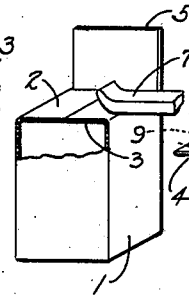


FIG. 13

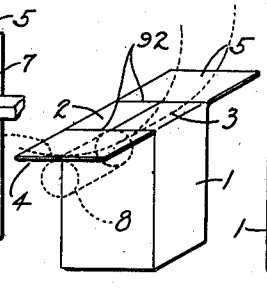


FIG. 14

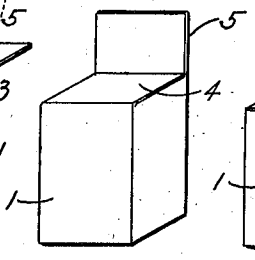
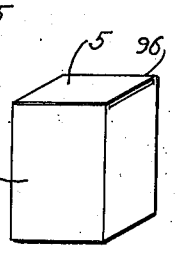


FIG. 15



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6 SHEETS—SHEET 6.

Fig.18.

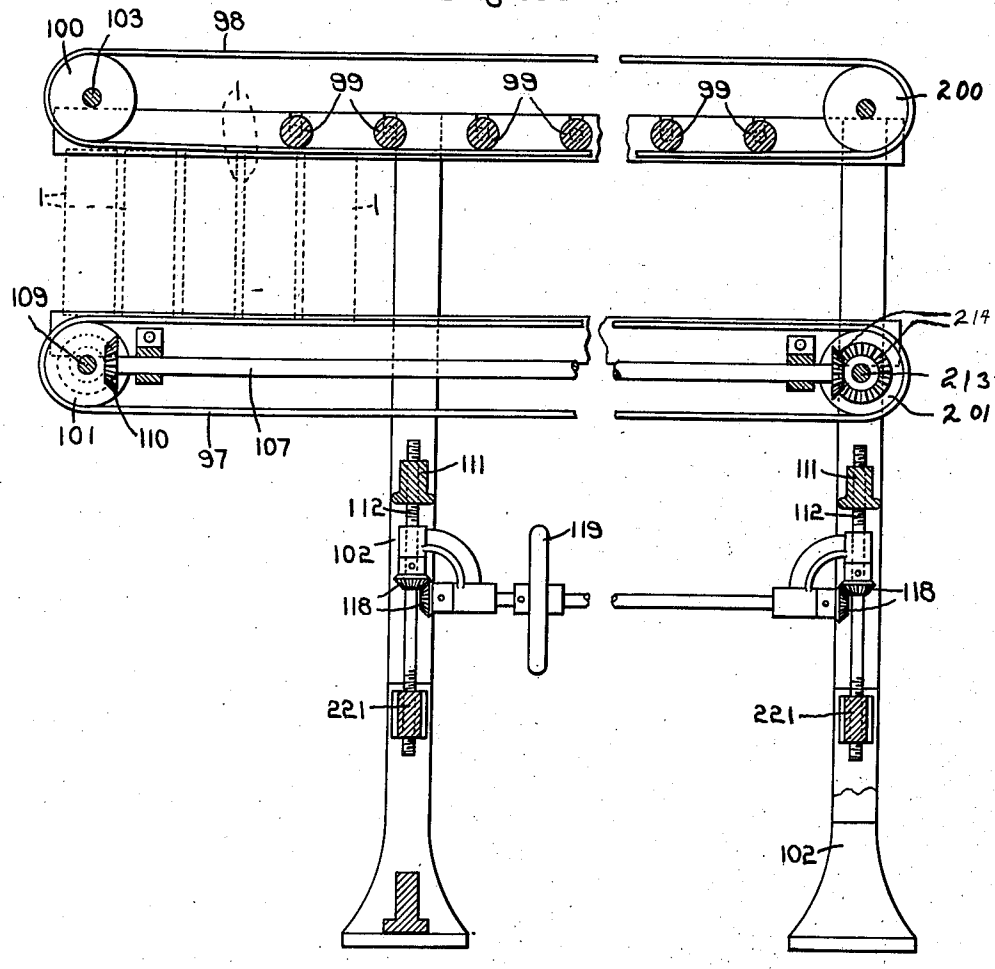


Fig.16.

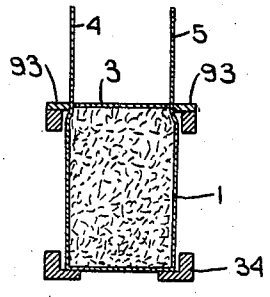
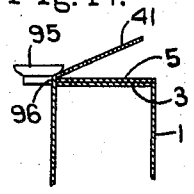


Fig.17.



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UNITED STATES PATENT OFFICE.

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PACKAGE-SEALING MACHINE.

1,352,899. Specification of Letters Patent. Patented Sept. 14, 1920.

Application filed October 3, 1918. Serial No. 256,730.

To all whom it may concern:

Be it known that I, HARRY L. JOHNSON, a citizen of the United States, residing at Boston, county of Suffolk, State of Massachusetts, have invented an Improvement in Package-Sealing Machines, of which the following description, in connection with the accompanying drawing, is a specification, like characters on the drawing representing like parts.

This invention relates to a machine for sealing cartons of the type known to the trade as a "top sealer." These machines are constructed first to fold the front and rear flaps of a filled carton and then to fold first one side flap over onto the folded front and rear flaps and then the other side flap over onto the first-named folded side flap, one or both of the side flaps being supplied with glue so as to cause them to adhere when they are folded.

Such machines usually comprise a feeding-in conveyer for feeding the filled cartons into the machine, flap-folding and sealing instrumentalities including a conveyer device for moving the filled package forward, folding elements arranged first to fold the front and rear flaps as the carton is moved forward by the conveyer and then to fold the side flaps successively, and means to apply glue to one of the side flaps before it is folded, and a drier element which receives the sealed package from the conveyer and holds the folded flaps in position until the adhesive has set.

The object of my present invention is to provide an improved top-sealing machine of the above-mentioned type which has various novel features, all as will be more fully hereinafter set forth.

In order to give an understanding of my invention, I have illustrated in the drawings a selected embodiment thereof which will now be described, after which the novel features thereof will be pointed out in the appended claims.

Figure 1 of the drawings is a side view of a machine embodying my invention;

Fig. 2 is a top plan view thereof;

Fig. 3 is a view showing the manner of adjusting the belts of the drier to accommodate different sizes of packages;

Fig. 4 is a detail view of the main conveyer which carries the packages past the folding and sealing elements;

Fig. 5 is a view of one of the paddles or pushers of the conveyer with a part broken out;

Figs. 6 and 7 are side and plan views, respectively, of the controller which controls the delivery of the packages to the folding and sealing elements;

Fig. 8 is a plan view showing some of the flap-folding elements;

Fig. 9 is a plan view showing the folding elements by which the side flaps are folded;

Fig. 10 is a detail view showing the manner of folding the end flaps;

Figs. 11, 12, 13, 14 and 15 show various steps in the process of folding the flaps of and sealing the carton as carried out in the machine;

Fig. 16 is a sectional view showing the manner of holding the top of the carton when the side flaps are being folded;

Fig. 17 is a view showing the operation of the wheel 95;

Fig. 18 is a longitudinal sectional view through the drier.

Before entering into a detailed description of the machine, it will perhaps be of benefit to refer to the successive steps of sealing a carton in machines of this type.

The filled cartons 1 come to the machine with the front and rear flaps 2 and 3 and the side flaps 4 and 5 at the top of the carton open. The first step in sealing the carton is that shown in Fig. 11 wherein an end folder 6 acts on the rear flap 2 and folds the latter over. At this time the carton is so positioned that the front flap 3 rests against a stationary front flap folder 7, and after the rear flap has been folded, the carton is moved along in the direction of the arrow, Fig. 12, to cause the front flap 3 to be folded by said stationary front flap folder 7. As the carton progresses through the machine after the front and rear flaps are folded, the side flaps 4 and 5 are opened out, as shown in Fig. 13, and glue is applied to both sides of the side flap 4 by means of gluing rolls 8 and 9 indicated in dotted lines Fig. 13. As the carton is then moved forward, the glued flap 4 is folded over, as shown in Fig. 14, after which the flap 5 is folded over onto the flap 4, as shown in Fig. 15, thus sealing the car-

ton. Inasmuch as the side flap 4 has glue applied to both sides thereof, this folding of the flaps will cause the flap 4 to adhere both to the folded front and rear flaps 2 and 3 and also to the folded side flap 5.

The operative parts of the device by which the above operations are carried out are mounted on a suitable frame 10 and they are driven by a shaft 11 suitably journaled in the frame. This shaft 11 may be rotated by any suitable means. I have herein shown a driving pulley 12 loosely mounted thereon and adapted to be clutched thereto by means of a clutch 13 which is controlled by a clutch lever 14.

At the receiving end of the machine is a feeding-in conveyer in the form of an endless belt 15 which passes around pulleys 16, 17. This belt brings the filled packages into the machine to a transferring device which transfers them to the flap-folding and sealing mechanism. The feeding-in belt 15 is driven from the shaft 11, and for thus purpose, the pulley 17 is fast on a shaft 18, and said shaft has a sprocket wheel 19 thereon which is driven from a sprocket chain 20 that passes around a sprocket wheel 21 fast on a shaft 22. The shaft 22 has a sprocket wheel 23 fast thereon which meshes with a sprocket chain 24 that extends around a sprocket wheel 25 on a shaft 26, the latter shaft being geared to driving shaft 11 by the gears 27, 28.

The flap-folding devices include not only the folding elements hereinafter described for folding the flaps, but also a guideway 34 along which the cartons are moved during the flap-folding operations. This guideway 34 is situated out of line with the feeding-in belt 15, and at the delivery end of said belt is a transferring device adapted to transfer the cartons successively from the feeding-in belt to the flap-folding mechanism. This transferring device is in the form of a pusher 29 carried by an arm 30 that depends from a block 31 mounted to reciprocate on a rod or bar 32. Said block is provided with an aperture through which extends a rock-shaft 33 that acts as a guide for the block in its reciprocation. The block 31 is reciprocated longitudinally of the rod 32 thereby to carry the transferring element 29 transversely across the feeding-in belt 15. In its retracted position the transferring element is in the position shown in Fig. 8 at one side of the feeding-in belt 15, and when it moves forwardly, it is carried across the feeding-in belt, thus pushing a carton transversely therefrom into line with and onto the guideway 34 of the flap-folding and sealing mechanism.

The block 31 may be reciprocated in any suitable way, but I have herein shown it as actuated from a cam 35 on a shaft 78 which is provided with a sprocket wheel over which the sprocket chain 24 passes, whereby the shaft is driven by said sprocket chain. This cam 35 acts against the lower end of a lever 37 pivoted to the frame at 38, the upper end of the lever being connected by a link 39 to an elbow lever 40 which is pivoted to the frame at 41 and is connected to the block 31 by a connection 331.

At the delivery end of the belt 15 is a stop 42 which arrests the advancing cartons, as shown in dotted lines Fig. 8, and holds each arrested carton in proper position to be acted upon by the transferring element 29. In order that the transferring element may operate properly, it is, of course, necessary that a carton should be in position against the rest 42 at each forward movement of the transferrer because if when the transferrer is moved forwardly, the foremost carton should be separated some distance from the stop 42, said carton would be crushed by the advancing transferring device instead of being transferred to the guideway 34. To prevent this possibility, I have provided herein a novel controlling device which controls the movements of the cartons along the belt 15 and which allows the end carton to move up against the stop 42 only at the time when the transferrer is being retracted into the position shown in Fig. 8. As a result, the foremost carton will always be either against the stop 42 when the transferrer 29 moves forwardly, or will be held back by the controlling device entirely out of the way of the transferrer. This controlling device is in the nature of a stop arm 43 which is pivotally mounted at the side of the feeding-in belt 15 and which is acted upon by a spring that normally tends to swing it into a position transverse to the belt. The stop arm is shown as provided with trunnions 44 which are pivoted between pivot screws 440, and the spring which acts on the arm tending to swing it into a position transverse to the belt, as shown in Fig. 7, is indicated at 48. The spring 48 is relatively light so that as long as the packages are being continuously fed to the transferrer by the feeding-in belt, the pressure of the moving packages against the arm 43 will hold it in the dotted line position Fig. 7. When the feed of the packages is interrupted, however, the spring 48 will operate automatically to swing the stop into a position across the belt. A latch shown at 46 is provided which is adapted to engage automatically with the tail or extension 45 of the stop arm when the latter swings into its operative position shown in full lines Fig. 7, said latch positively holding the stop arm in this position until it is released at a predetermined point in the cycle of operations, such point being when the transferrer is at the end of its inward movement and is about to begin its retract-

ing movement. The latch 46 is provided with trunnions 47 which are pivotally mounted between pivot screws 470 and said latch is provided with a tail or arm 56 which is engaged by a pin 55 carried by a sliding bar 54. This bar is connected to a lever 52 pivoted at 53 to the frame and acted upon by a cam 49 carried by a shaft 50, said shaft being geared to the shaft 18 by means of gearing 51. The bar 54 is acted upon by a spring 57 which tends to maintain it in the position shown in Fig. 7. Whenever the cam 49 engages the lever 52 the bar 54 will be moved to the right, Fig. 2, or toward the top of the sheet Fig. 7 thereby swinging the latch 46 out of engagement with the tail 45 of the stop arm. The stop arm is thus released thereby to allow the passage of packages along the belt 15.

So long as there is a continuous feed of packages along the belt 15 the stop arm 43 will be held in its inoperative position shown in dotted lines Fig. 7 by the moving cartons or packages, but if for any reason there should be an interruption in the feed of the packages, then the stop arm will swing into its operative full line position Fig. 7 and will be automatically locked in such position by the latch 46. After the stop arm has thus been locked in its operative position it will arrest any package moving along the belt 15 until said latch is released. The timing of the cam 49 is such as to release the latch about the time that the transferrer has completed its inward transferring movement. As soon as the latch is released the stop arm will yield and thus allow the packages to move forward on the belt 15. The arrangement is such that any package which has been arrested by the stop arm 43 will be carried from its arrested position into a position against the stop 42 while the transferrer is moving from its inward position to the position shown in Fig. 8. As a result, when the transferrer moves forwardly the package to be transferred will always be against the stop 42 and in position to be transferred into the guidway 34 without being crushed against the rail 201 associated with the feeding-in belt.

The flap-folding mechanism is of that type which comprises a conveyer device for moving the cartons along the guideway 34, an oscillatory rear flap folder 6 which acts on and folds the rear flap 2, as seen in Figs. 10 and 11, a stationary front flap folder 7 which engages the front flap 3 as the carton moves forwardly thereby to fold said front flap, devices for applying glue to both sides of the side flap 4, and folding elements for folding the side flaps 4 and 5 successively.

The conveyer which carries the cartons along the guideway 34 is shown as an endless chain 57 which passes around two sprocket wheels 58 and 59 and which is provided at intervals along its length with blocks 60, each of which has a pusher 61 pivotally mounted thereon at 62. Each pusher has an L-shape and is provided with the tail portion 63 which rests against and is guided by a guiding member 64 extending alongside of the guideway 34, said guiding member 64 operating to hold the pusher 61 at right angles to the chain and in position to carry the cartons along the guideway 34. At the delivery end of the guideway 34 the guide 64 is recessed or cut away, as shown at 65, so that when the tail of each pusher has been carried to the point 65, the pusher is allowed to swing backwardly until it lies parallel to the chain and thus becomes ineffective for advancing the package. This occurs just after the sealed package has been delivered from the guideway to the drier, as will be presently described.

Associated with the sprocket wheel 58 is a pusher-positioning plate 69 which is constructed to engage the tail portion 63 of each pusher as the pushers are carried around said sprocket wheel, this plate 69 operating to positively swing each of the pushers into its operative position as it passes into the entering end of the guideway 34. The sprocket chain 57 may be driven in any suitable way. I have herein shown the sprocket wheel 59 as fast on a vertically extending shaft 66 which carries at its lower end a bevel gear 67 that meshes with another bevel gear 68 on the shaft 78.

Each block 60 is shown as having a friction pin 70 therein which is backed by a spring 71 and which yieldingly engages the surface 72 of the pusher. This friction device is for the purpose of preventing undue flapping of the pushers as they pass along the back run of the chain.

The rear folder 6 is carried on an arm 73 which is fast on the rock-shaft 33 and means are provided for oscillating said rock-shaft in timed relation with the movements of the transferring device so that the folder 6 will be given a forward folding movement at the proper time to fold the rear flap 2 of each carton after it is transferred to the guideway 34. This rock-shaft has fast thereon an arm 74 which is connected by a link 75 to a lever 76 that is actuated from a cam groove in a cam 77 fast on the shaft 78.

The folding of the rear flap 2 by the movement of the rear flap folder 6 takes place just as the carton has been transferred from the feeding-in belt 15 to the guideway 34 and before the carton is moved forwardly along the guideway by means of one of the pushers 61. If the rear flap 2 is somewhat stiff, it sometimes happens that the engagement of the flap folder 6 therewith tends to tip the package forwardly instead of folding the flap 2 as shown in Figs. 10 and 11. In order to prevent this, I have provided

herein a yielding finger 79 which is pivoted to the frame at 80 and is acted upon by a spring 81 which tends to hold it in the position shown in Fig. 8 against the stop 82. This finger 79 is of such a length and is so situated that when each carton has been transferred onto the guideway 34, the end of the finger will engage the upper front corner of the carton. The resiliency of the spring 81 is sufficient to hold the carton from tipping when the folder 6 engages and folds the rear flap 2. When a pusher engages the carton after the rear flap has thus been folded, the forward movement of the carton will push the finger out of the way against the resiliency of the spring 81, and when the carton has passed the finger will be again returned to normal position to engage the next carton and prevent it from tipping.

As the cartons are moved forwardly, the front flap holder 7 engages the front flap 3 and folds the latter, as shown in Fig. 12. At the end of the front flap folder are two flap-turning elements 83 and 84 which engage the side flaps 4 and 5 and bend them outwardly into the position shown in Fig. 13. When the flaps have been thus bent outwardly, the flap 4 passes between two glue rollers 8 and 9 which apply glue to both sides thereof. The glue roller 9 is mounted on the shaft 26 and operates in a glue receptacle 85. The other glue roller 8 is mounted on a shaft 86 which is geared to the shaft 26 by suitable gearing 87.

After the carton has been carried through the gluing rollers and both sides of the flap 4 have been glued, said carton is acted upon by a side flap folder 88 in the form of a resilient wire which has a portion extending diagonally across the guideway 34, the end 89 of said folder extending parallel to the guideway. The action of this folder 88 against the glued flap 4 folds the latter over onto the folded front and rear flaps, as shown in Fig. 14. Situated at the end of the folder 88 is another folder 90 adapted to act on the flap 5 and fold the latter over onto the flap 4 so that when the carton is carried out from under the folder 90 all the flaps have been folded.

91 indicate presser rolls which are situated between the side flap folders 88 and 90, and which apply pressure to the folded flaps 4 and insure a tight joint between it and the folded flaps 2 and 3.

It frequently happens that a filled package will bulge more or less at the sides so that the sides of the package to which the side flaps 4 and 5 are secured will have a bulging contour. Under such conditions, there is apt to exist a space between the edges 92 of the side flaps 2 and 3 after they are folded and the sides of the carton which, if not closed, will allow the contents of the package to sift out even after the flaps 4 and 5 are folded. In order to provide a non-sifting package, it is desirable that the upper edges of the two sides of the carton should be held firmly against the sides 92 of the front and rear flaps 2 and 3, while the side flaps 4 and 5 are being folded, for if this is done, the flaps will be squarely folded and no cracks or spaces will be left through which the contents of the package may sift.

The machine herein illustrated is so constructed that the upper edges of the sides of the package or carton will be held firmly against the sides 92 of the front and rear flaps after they are folded, even though the sides of the package bulge more or less, and this result is secured without compressing the bulging sides of the package below the top edges thereof.

The guideway 34 is formed at its upper edge with the overhanging lips 93 situated adjacent the side flap folder 88, said projecting lips being constructed to engage the sides of the package at the top edge thereof and to hold the sides firmly against the sides 92 of the front and rear flaps after they are folded. Both of the lips 93 are shown as having the beveled or inclined entering end 94 so that as the package or carton is fed forwardly, the upper edge thereof will be wedged between the lips 93 after the side flaps have been folded, and thus the top of the sides is held against the sides of the folded front and rear flaps without, however, compressing the bulging sides of the package inwardly.

95 indicates a fold-tightening wheel which is situated adjacent the flap folder 90 and is arranged to act on the corner of the package at the base of the flap 5 as the latter is being folded. This fold-tightening wheel coöperates with the folder to make a square corner at the package, for said wheel acts on the corner of the package as the flap 5 is being swung down into its folded position, as shown in Fig. 17, and thus by the time that the flap 5 has been brought firmly into contact with the folded flap 4 by the flap folder, the edge of the package has been acted on by the wheel. It is an advantage to have the fold-tightening wheel acting on the corner of the package before the last flap 5 is folded against the flap 4 because after the flaps are brought into contact the glue on the flap 5 tends to hold them in position and prevents any re-adjusting of the flap necessary to form the square corner.

After the carton has been carried through the folding and sealing devices, it passes into a drier through which it is conveyed and in which the folded flaps are subjected to pressure until the glue or other adhesive becomes set. This drier is of the known type which comprises a lower endless belt 97

on which the packages are received and an upper endless belt 98 situated to engage the top of the package and acted upon by loosely-mounted rolls 99 which apply weight or pressure to the top of the package. The belts 97 and 98 are positively driven at a speed less than that at which the conveyer is moving so that the sealed packages travel through the conveyer at a slower speed than they do through the folding mechanism.

The belt 98 passes around two pulleys 100 and 200 and the belt 97 passes around two pulleys 101 and 201. The drier is carried on a frame 102 which is separate from the frame 10, but the belts 97, 98 are driven from the same driving mechanism that operates the folding and sealing devices. The belt pulley 100 is mounted on a shaft 103 which is geared to a vertical shaft 104 by means of bevel gears 105. The shaft 104 is journaled in bearings 204, 205 carried by the frame 102 and said shaft is connected by gears 108 to a shaft 109 on which the belt pulley 101 is fast. The shaft 104 has a sprocket wheel 225 thereon around which passes a sprocket chain 106, the latter being driven by a sprocket wheel on the shaft 66. The belt pulley 201 is also positively driven so that the lower belt 97 will be driven from both ends. This belt pulley 201 is fast on a shaft 213 which is connected by bevel gears 214 to a shaft 107 extending longitudinally of the drier frame, said shaft being connected to the shaft 109 by bevel gears 110. The lower belt carries the load of the packages or cartons being conveyed through the drier and the advantage of having it driven positively at both ends is that a more even feed of the packages will be secured.

The lower belt is vertically adjustable so as to vary the space between the belts to accommodate cartons of different sizes. This adjustment is provided for by mounting the shafts 109 and 213 in supporting frames 111 that are vertically adjustable on the main frame 102. Each supporting frame has an adjusting screw 112 screw-threaded thereto, each adjusting screw also having screw-threaded engagement with the main frame at 221. Each adjusting screw is provided with a right and left screw-thread so that the turning of the adjusting screws will give a quick vertical movement to the supplemental frames 111. The adjusting screws are connected by the shaft 117 and suitable gearing 118, said shaft having a hand wheel 119 thereon by which it may be turned. The bearing 205 is carried by the supporting frames 111. One of the gears 105 is splined on the shaft 104. This permits the shaft 104 to be adjusted vertically with the frame 111 while maintaining the proper operative connection between the belts.

In some machines of this type the drier element is spaced somewhat from the folding and sealing mechanism so that as each carton is discharged from the folding and sealing mechanism it will remain between said mechanism and the drier until it is pushed into the drier by the succeeding cartons. In the present machine the drier is so arranged that each carton will be passed into the drier as it is delivered from the folding and sealing mechanism. The drier is so positioned that the ends of the belts 97, 98 at which the cartons enter is situated so that the cartons will be carried between the belts by the pushers 61 before the tails of the pushers reach the cutaway portion 65 and hence when each pusher becomes ineffective because the tail thereof has reached the recess 65, the carton which said pusher is acting on has already been carried between the belts 97, 98, and is being moved forward thereby. The first presser roll 99 is situated some little distance from the entering end of the belts 97 and 98, and the pulleys 100, 101 around which the belts pass are so spaced that each carton will be loosely held between the belts at their entering end, but there will be sufficient engagement between the belts and the cartons to carry it forward. The belts 98, 97 will preferably be moving at a considerably slower rate of speed than the pushers, but because the packages are loosely held between the belts as they enter the same, this difference in speed between the pusher and the belt does not create any difficulty. Before each carton reaches the first presser roll 99, the pusher engaging the carton has been released and is not effective in giving movement to the carton. The advantage of this construction is that each carton will be positively carried through the machine and into the drier so long as the machine is running without the necessity of any attention on the part of the operator in effecting a transfer from the folding and sealing mechanism to the drier of the last packages sealed.

The lower part of the guideway 34 is also vertically adjustable to accommodate different sizes of cartons. Depending from each end of the lower part of the guideway is a screw-threaded post 114 which has screw-threaded engagement with a nut 115 in the form of a bevel gear. The two bevel gears 115 are geared to bevel gears 116 on a shaft 217 so that by turning the shaft 217, both ends of the lower part of the guideway can be raised and lowered simultaneously.

The feeding-in belt 15 and the automatic stop are mounted so as to be raised and lowered with the bottom of the guideway and thus the adjusting of the guideway for different sizes of packages maintains proper adjustment of the feeding-in belt.

I claim:

1. In a package-sealing machine, the com-

bination with flap-folding mechanism, of package feeding means, a transferrer to transfer packages from said feeding means to the flap-folding mechanism, a stop device to prevent packages from being delivered to said transferrer, and means other than the transferrer to render the stop device inoperative at a predetermined point in the cycle of operations.

2. In a package-sealing machine, the combination with flap-folding mechanism, of package-feeding means, a transferrer to transfer packages from the feeding means to the flap-folding mechanism, a stop device which is held inoperative by the continuous feeding of packages to the transferrer but which becomes operative automatically to stop the movement of the packages when the feed is interrupted, and means other than the transferrer to release the stop device at a predetermined point in the cycle of operations.

3. In a package-sealing machine, the combination with flap-folding mechanism, of package-feeding means, a transferrer to transfer packages from said feeding means to the flap-folding mechanism, a stop device to prevent packages from being delivered to the transferrer, a latch to hold said stop in operative position, and means other than the transferrer to release the latch at a predetermined point in the cycle of operations.

4. In a package-sealing machine, the combination with flap-folding mechanism, of package-feeding means, a transferrer for transferring packages from the feeding means to the flap-folding mechanism, a pivoted stop arm, a spring acting on said arm and tending to swing it into operative position to stop movement of packages, a latch to hold the stop arm in its operative position, and means other than the transferring device to release the latch at a predetermined point in the cycle of operations.

5. In a package-sealing machine, the combination with flap-folding mechanism, of package-feeding means, a transferrer to transfer packages from said feeding means to the flap-folding mechanism, a stop device to prevent packages from being delivered to said transferrer, driving means for operating the feeding means, and means actuated by said driving means to render the stop device inoperative at a predetermined point in the cycle of operations.

6. In a package-sealing machine, the combination with flap-folding mechanism, of package-feeding means, a transferrer to transfer packages from said feeding means to the flap-folding mechanism, a stop device to prevent packages from being delivered to the transferrer, a latch to hold said stop in operative position, driving means for operating said feeding means, and means actuated by the driving means to trip the latch.

7. In a package-sealing machine, the combination with a conveying device, of means to deliver packages thereto, a rear flap folder to fold the rear flap of each package, and a single device to engage the packages successively while the rear flap of each is being folded thereby to prevent said package from tipping or sliding forwardly.

8. In a package-sealing machine, the combination with a guideway, of means to deliver packages thereto, a rear flap folder to fold the rear flap of each package, a spring-pressed finger pivoted to the guideway and adapted to engage the front of the package while the rear flap is being folded thereby to prevent the package from tipping forwardly.

9. In a package-sealing machine, the combination with a guideway, of means to feed packages therealong, means for folding the front and rear flaps of each package as it travels along the guideway, side flap folders, and means to engage each side of the package at its top and hold said sides against the edges of the folded front and rear flaps while the side flaps are being folded.

10. In a package-sealing machine, the combination with a guideway, of means to feed packages therealong, means for folding the front and rear flaps of each package, side flap folders, said guideway having a lip to engage the side of the package at the top and hold it firmly against the edges of the folded front and rear flaps while the side flaps are being folded.

11. In a package-sealing machine, the combination with a guideway, of means to feed packages therealong, means to fold the front and rear flaps of each package, two side flap folders for folding the side flaps of each package successively, and a presser roll interposed between the side flap folders for pressing the first folded side flap against the folded front and rear flaps.

12. In a package-sealing machine, the combination with a guideway, of means to feed packages therealong, means to fold successively the side flaps of each package as said package is fed along the guideway, and a fold-tightening wheel situated and constructed to engage the top edge of the package at the base of the last-folded side flap while said side flap is being folded.

13. In a package-sealing machine, the combination with a guideway, of a conveying device to convey packages along the guideway, means to fold the flaps of the packages, and a drier having package-feeding means independent of the conveying device for feeding packages therethrough, the entering end of the drier being so sit-

uated relative to the delivery end of the guideway that each package will be fed directly into the feeding means of the drier by said conveying device.

14. In a package-sealing machine, the combination with a guideway, of a conveying device to convey packages therealong, means to fold the top flaps of each package, a drying device comprising upper and lower conveying belts separate from said conveying device to drive said belts, said conveying device being arranged to deliver each package positively into the entering end of the conveying belts.

15. In a package-sealing machine, the combination with a guideway, of a conveying device to convey packages therealong, means to fold the flaps of the packages, and a drier having package conveying means separate from said conveying device for conveying packages therethrough, said means being adjustable for different sizes of packages, the entering end of the drier being so situated relative to the delivery end of the guideway that each package will be fed directly into the conveying means of the drier by said conveying device.

16. In a package-sealing machine, the combination with a guideway, of a conveying device to convey packages along the guideway, means to fold the flaps of the packages, and a drier having means independent of the conveying device for feeding packages therethrough positively at a slower rate of speed than they are conveyed by the conveying device, the entering end of the drier being so situated relative to the delivery end of the guideway that each package will be fed directly into the feeding means of the drier by said conveying device.

17. In a package-sealing machine, the combination with a guideway, of a conveying device to convey packages along the guideway, means to fold the flaps of the packages, and a drier situated in line with said guideway, said drier having means independent of the conveying device to feed packages positively therethrough, the entering end of the drier being so situated relative to the delivery end of the guideway that each package will be fed directly into the feeding means of the drier by said conveying device.

In testimony whereof, I have signed my name to this specification.

HARRY L. JOHNSON.