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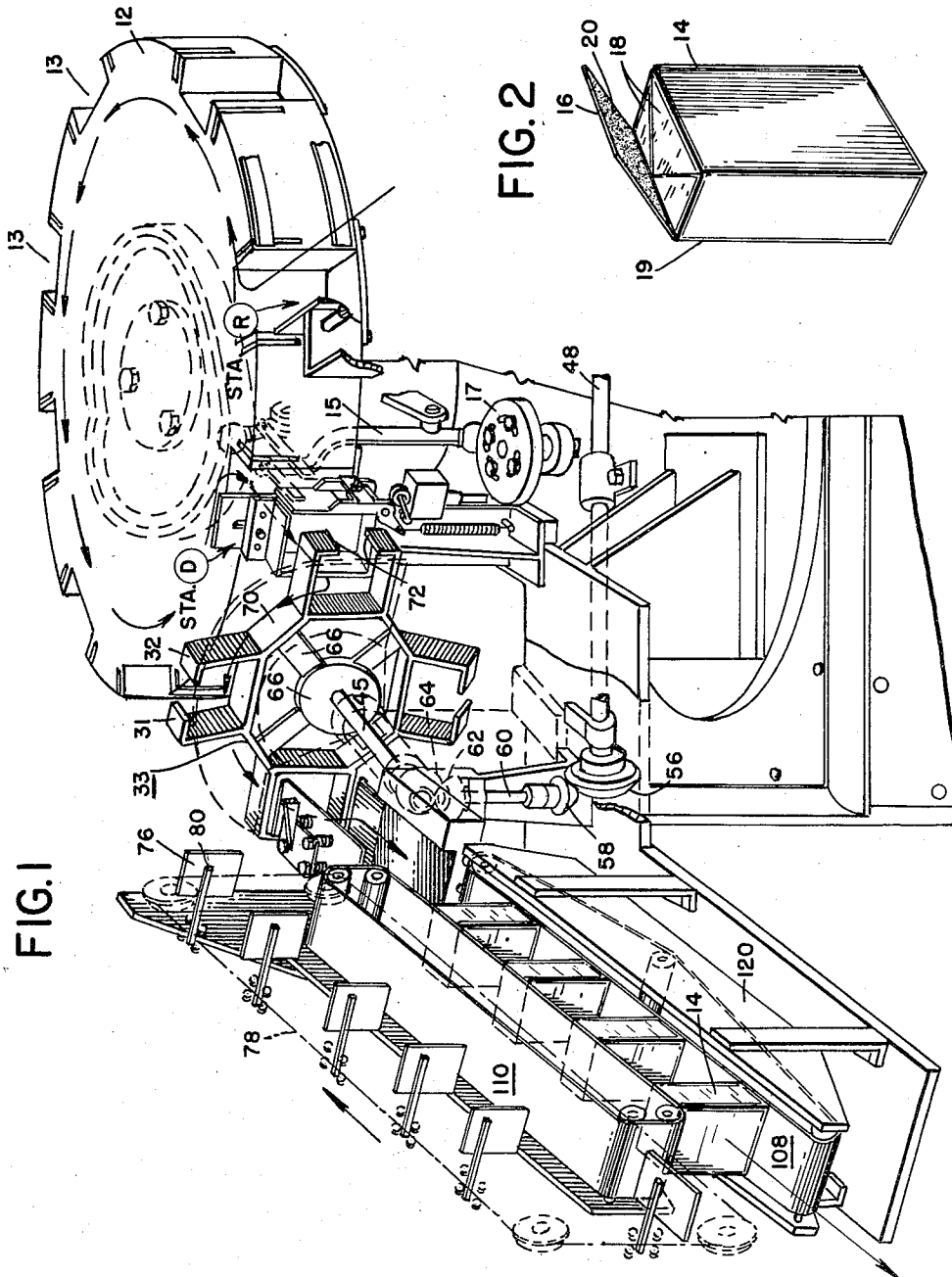
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METHOD AND APPARATUS FOR SEALING CARTONS

Filed Dec. 23, 1950

6 Sheets-Sheet 1



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Dec. 7, 1954

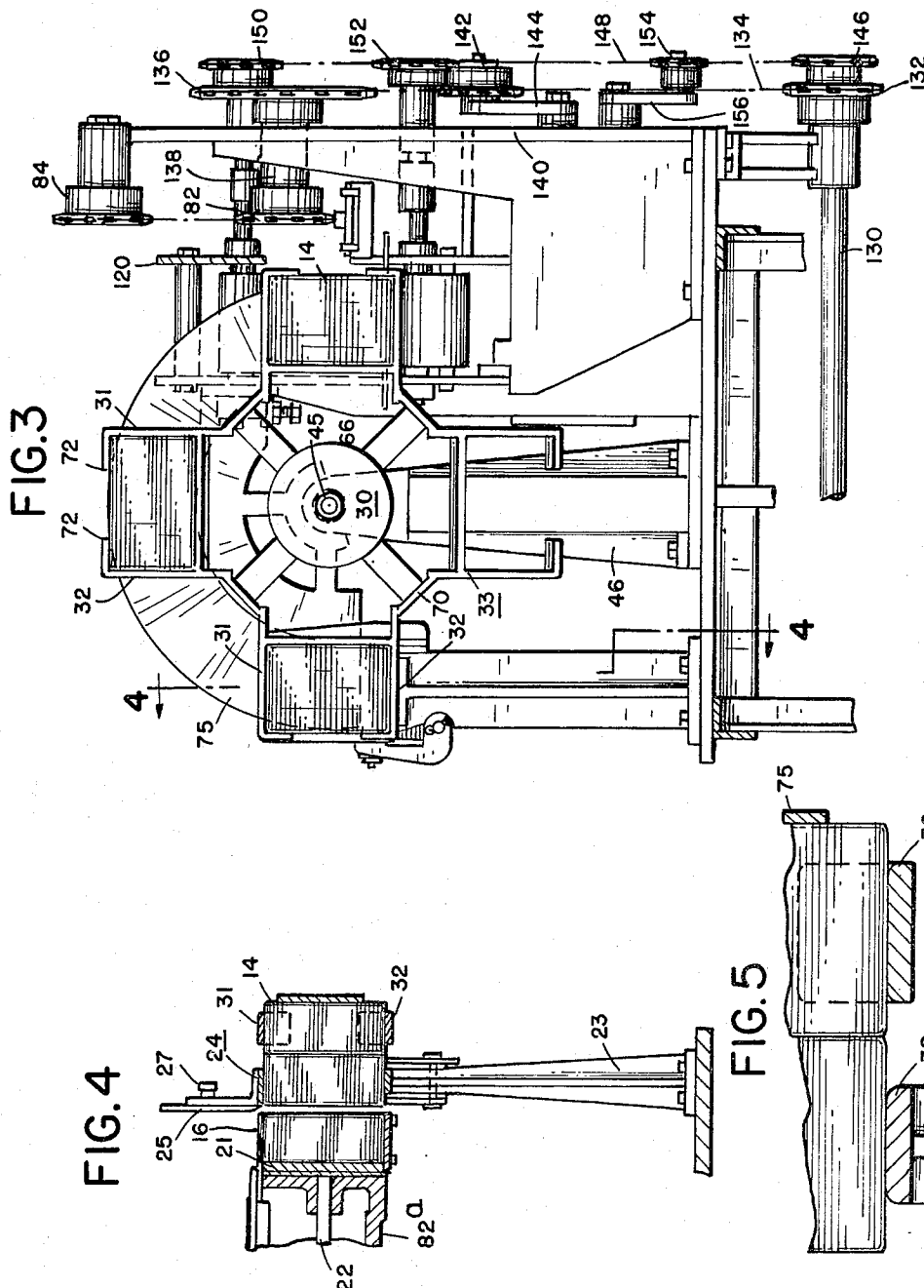
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METHOD AND APPARATUS FOR SEALING CARTONS

Filed Dec. 23, 1950

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Dec. 7, 1954

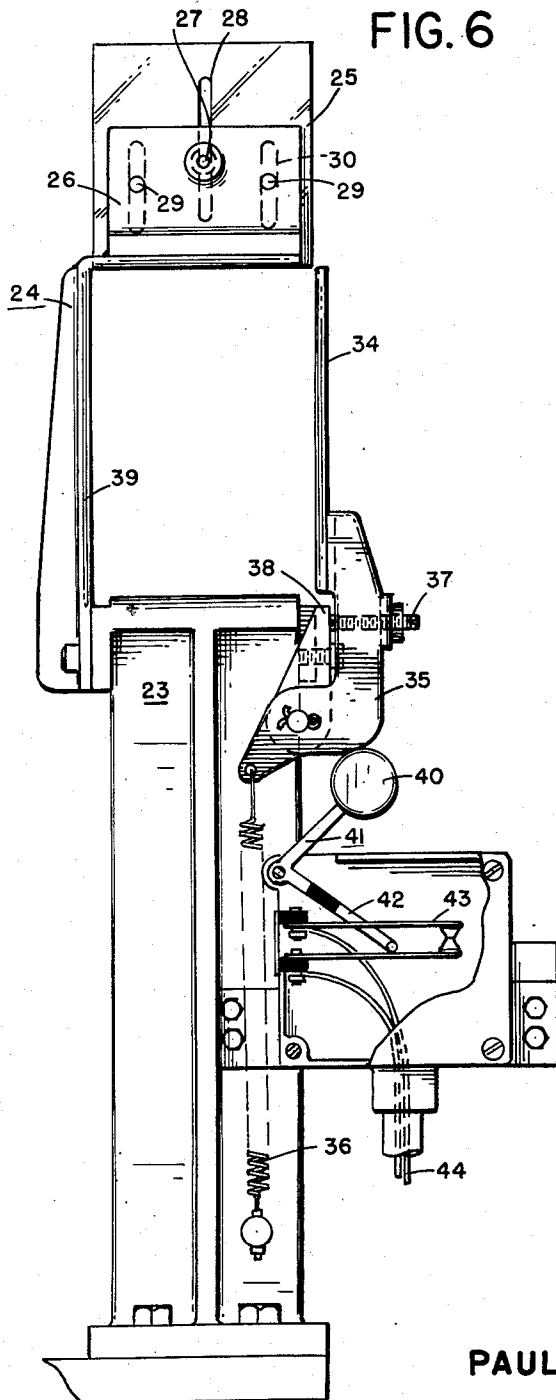
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METHOD AND APPARATUS FOR SEALING CARTONS

Filed Dec. 23, 1950

6 Sheets-Sheet 3



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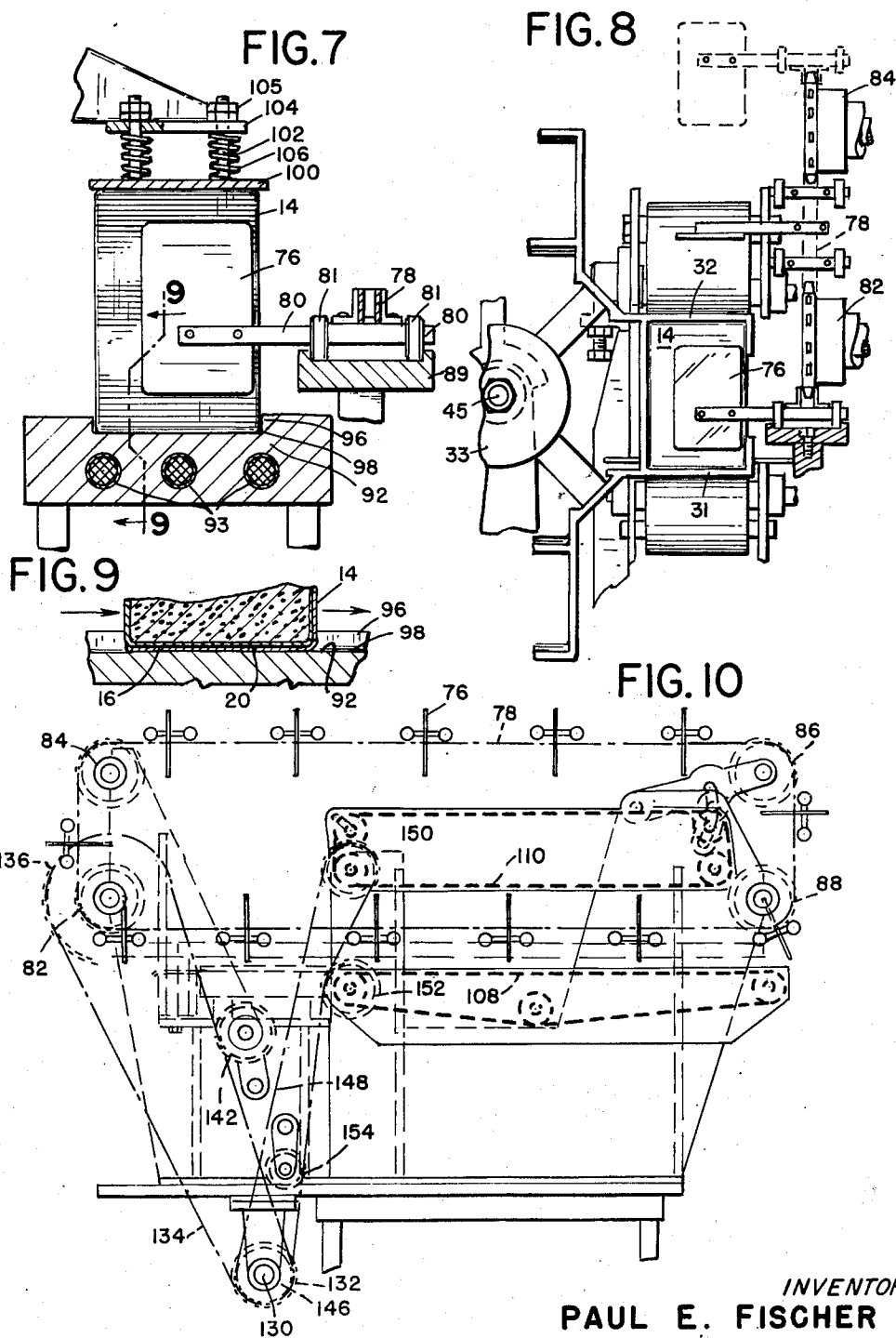
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2,696,245

METHOD AND APPARATUS FOR SEALING CARTONS

Filed Dec. 23, 1950

6 Sheets-Sheet 4



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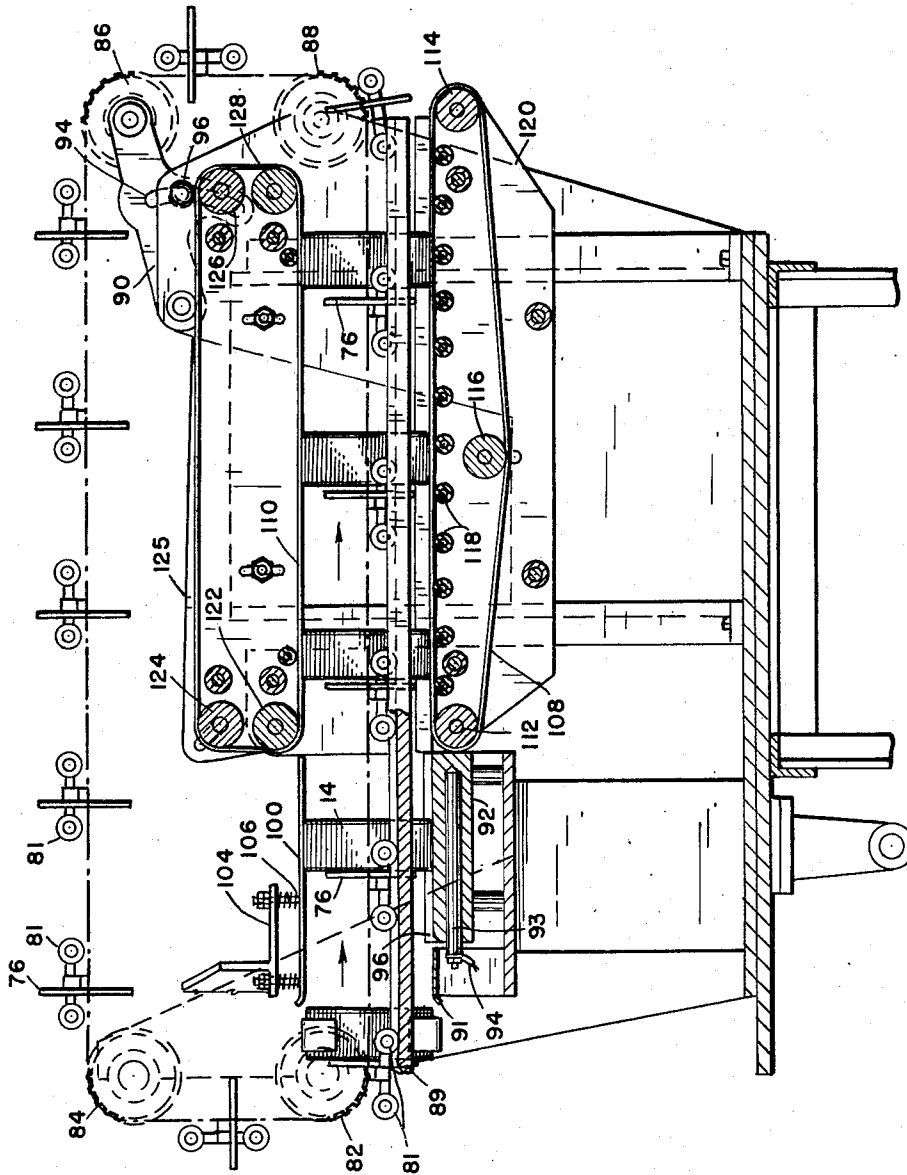
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METHOD AND APPARATUS FOR SEALING CARTONS

Filed Dec. 23, 1950

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FIG. 11



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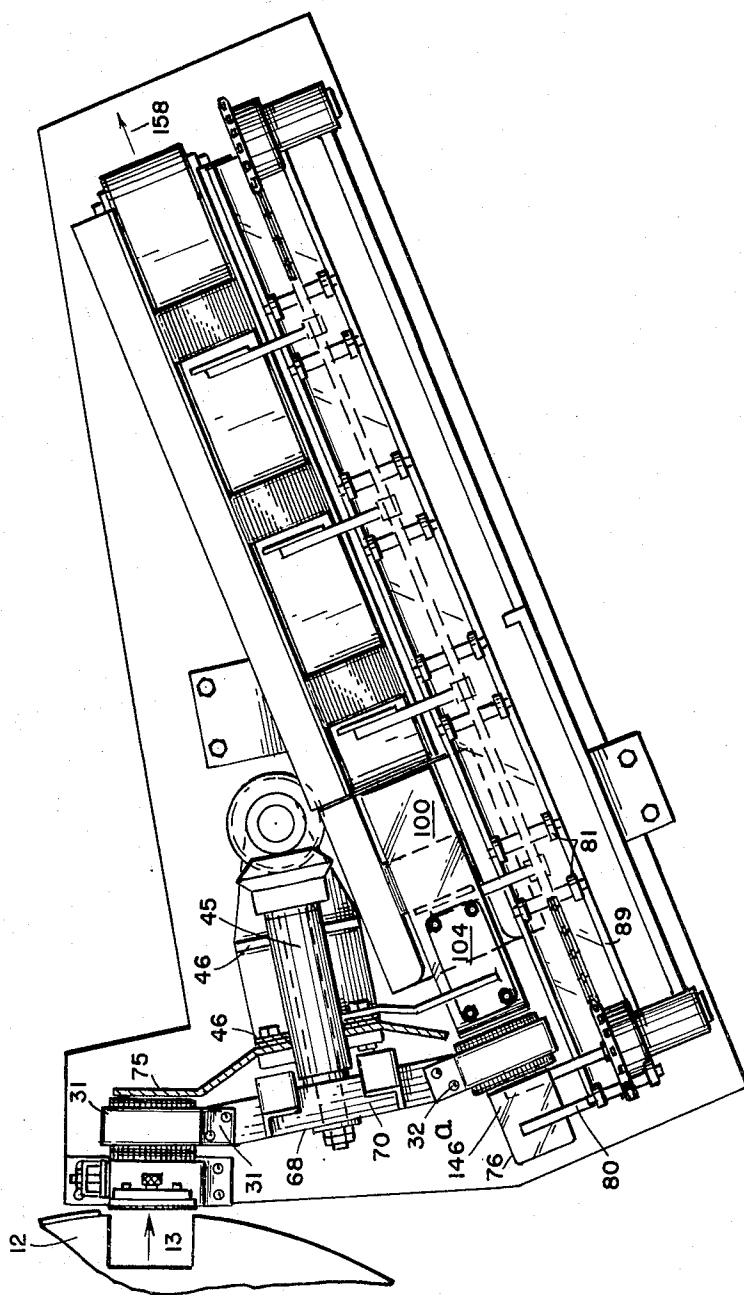
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METHOD AND APPARATUS FOR SEALING CARTONS

Filed Dec. 23, 1950

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FIG. 12



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2,696,245

METHOD AND APPARATUS FOR SEALING CARTONS

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Application December 23, 1950, Serial No. 206,461

17 Claims. (Cl. 154—42)

This invention relates to packaging machinery for closing containers and more particularly to a machine and method for sealing a carton by uniting the top closure elements of the container with a covering closure flap.

An object of the invention is to provide an improved method and mechanism for sealing closed cartons having non-rigid side walls and having a top closing flap with a layer of thermoplastic adhesive on the underside overlying folded and sealed top closure elements, by the application of heat and pressure to seal the top closing flap over the folded closure elements obtaining a smooth and tight integral seal between the carton and flap without disturbing the folded and sealed underlying closure elements and without deforming the carton side walls.

A further object of the invention is to provide an improved mechanism for receiving a carton having the closing elements folded and for sealing the top closure flap to the carton by simultaneously pressing the flap to the carton and pulling it away from its line of attachment to the carton to provide a smooth uniform integral seal between the flap and the carton.

A further object of the invention is to provide a mechanism which will receive a carton, having its closure elements folded, hold closure elements in closed position while inverting the carton, slide the carton in an inverted position over a heated sealing plate pressing the carton against the plate to seal a top cover flap over the closure elements, and thereafter permit the flap to cool while continuing pressure on the flap subsequently discharging the sealed carton.

Other objects and advantages will become apparent from the following specification, taken in connection with the attached drawings, in which:

Figure 1 is a perspective view of the carton sealing machine embodying the features of the present invention and a closing machine from which cartons are received;

Fig. 2 is a perspective view of a carton of the general type which may be sealed by the machine;

Fig. 3 is a rear elevation of the carton sealing machine;

Fig. 4 is a sectional view taken along line 4—4 of Fig. 3;

Fig. 5 is an enlarged fragmentary sectional view showing the position of the carton with respect to the holders;

Fig. 6 is a front elevation of the carton holding deadbox, illustrating in detail the safety cutout switch;

Fig. 7 is an enlarged fragmentary sectional view taken from the rear of the machine showing in detail the manner in which heat and pressure are applied to the carton flap;

Fig. 8 is a fragmentary rear elevation of the mechanism illustrating the manner in which the cartons are removed from the mechanism for inverting them;

Fig. 9 is a sectional view taken along line 9—9 of Fig. 7, illustrating the carton being slid on the heated sealing block;

Fig. 10 is a schematic side elevation of the carton sealing mechanism, illustrating the various driving connections;

Fig. 11 is a side elevation of the carton sealing mechanism showing the path of the carton through the mechanism;

Fig. 12 is a plan view of the mechanism, illustrating

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the path of the carton with respect to the closing machine with which it may be associated.

The machine illustrated, which embodies the preferred form of the present invention, performs the function of sealing the final flap of a container after the other closing elements have been folded and sealed. A mechanism for closing the other folding elements may be found in the co-pending patent application, Serial No. 206,464, filed concurrently herewith, Carton Closing Machine, which constitutes the preferred mechanism for use with the present invention. However, other closing machines may be used. The drawings show schematically in Fig. 1, the closing mechanism of the type disclosed in the above-mentioned co-pending application. The closing machine comprises a turret 12 having a series of pockets 13 along the circumference which hold filled cartons. The turret operates in the well known manner, being indexed to carry the cartons through a series of stations. The cartons are received into the turret at the point marked Station R, and at each succeeding station the carton top receives an additional folding step by folding devices, not shown, until closed and sealed. The carton is closed and ready for ejection when it reaches the discharge station marked Station D, opposite the sealing machine. It will be understood that the invention is not to be limited to use with a closing machine of the turret type, but may receive cartons from any machine which satisfactorily completes the series of closing operations.

To distinguish the turret mechanism, which folds and seals the closure elements, from my invention which seals only the top closure flap, I shall refer to the former as a closing mechanism, and to the present invention as a sealing mechanism. The carton 14 is shown in Fig. 2 as it is received from the closing machine, having a portion of its closure elements folded and sealed but with the top closure flap unsealed.

The carton 14 is preferably a semi-rigid carton, such as may be formed of laminations of thermoplastic adhesive and metallic foil. The top closure flap 16, which lies over the other closure elements 18, is hingedly attached to a side wall 19 of the carton and has a coating 20 on its underside of adhesive, preferably thermoplastic adhesive. Sealing this top flap to the body of the package over the other closing elements completes the closure of the container. It will readily be seen that a smooth finished closure of this last flap is extremely important, both to the appearance and to the impermeability of the package. Further, a package having a poor closure of the folding elements under the final flap may be made attractive and be given a tight closure by a perfect closure of the top cover flap. To seal the cover flap to the carton, heat and pressure must be simultaneously applied to soften the thermoplastic and force the flap against the carton top to cause adherence. The cover flap is of thin material, such as metallic foil, and is easily wrinkled or torn when the thermoplastic is soft, requiring a careful application of pressure, and the carton has walls which will easily buckle under stress thereby preventing the application of any sizeable forces from the end of the carton. The present invention takes into account these factors and accomplishes a smooth integral seal without damage to the carton.

Referring now to the sealing mechanism, and the accompanying closing machine, Figs. 1 and 4, the numeral 21 designates the ejector plate of the turret pocket which is carried on a rod 22 slidably carried by the turret and which is reciprocated by a rocker arm 15 pivoted by the action of a cam 17. The cam is constantly rotated by mechanism, not shown, to eject the carton from the machine each time the turret indexes a closed carton to Station D. The rod moves to the right by the action of the cam, when the pocket of the turret is in line with the deadbox 24 to push the carton from the turret pocket into the deadbox.

The dead box (Figs. 4 and 6) is a rectangular frame carried on a support 23 between the turret and sealing machine and in which the carton resides between the time when it has been ejected from the closing machine and when it will be moved into the sealing machine.

The height and width of the deadbox walls are the same as the height and width of the carton so that the carton will be snugly held.

As the carton is pushed into the deadbox, the cover flap 16 skims under an adjustable blade 25 (Fig. 4) which smooths the cover flap down flat on the top of the carton. The blade is adjustably carried on a bracket 26 mounted on the deadbox, having a bolt 27 which extends through a vertical slot 28 in the blade. A pair of guide pins 29 on the bracket extends through vertical slots 30 in the blade.

As the new carton is pushed into the deadbox from the turret, the preceding carton in the deadbox is pushed between the upper and lower spring holder arms 31 and 32 which hold the box on the inverter wheel 33. The forward edges of the deadbox, as well as the edges of the spring holder arms of the inverter wheel, are rounded (Fig. 5) in order that the carton may easily pass without damaging the carton edges.

Referring to Fig. 6, the safety switch of the deadbox is shown in detail. If a misshapen, irregular or enlarged carton comes through, it would damage the sealer and the safety switch is provided to eliminate this danger. The side wall 34 of the deadbox is carried on a pivotally mounted bell crank 35 and is held in upright position by a spring 36 connected between the arm and the support 23. An adjustable stop bolt 37 in the arm strikes a lug 38 on the support and fixes the upright position of the side wall. The bolt is adjusted until the distance between the movable side wall 34 and the opposite fixed side wall 39 is equal to the width of the carton. A shoulder on the bell crank bears on the upper arm 40 of a switch breaker bell crank 41, the lower arm 42 of which abuts the spring contact of a breaker switch 43. The switch, by means of electrical leads 44 to the power supply, completes the circuit to the driving motor, which is not shown.

Should the closing machine produce a misshapen, bent or over-sized carton as the carton enters the deadbox, it will force the movable wall 34 to the right, as shown in Fig. 6, causing the bell crank 35 to pivot bell crank 41 to open the switch contacts 43 and stop the drive motor, thereby preventing jamming and consequential damage to the machine.

The inverter wheel 33, as best shown in Figs. 1 and 3, is carried on a horizontal shaft 45 journaled in frame pieces 46. The wheel is indexed through 90° each time a carton is inserted into the holders. The indexing of the wheel may be accomplished by conventional drive mechanism, such as a Geneva drive, which is synchronized with the delivery of the cartons from the closing machine. When used with a turret type closing machine, as shown, the intermittent drive may be taken from the main turret and the inverter wheel will index each time the turret does.

An intermittently driven shaft 48 is connected to the main turret drive or to a separate Geneva drive, not shown. Bevel gear 56 on shaft 48 drives gear 58, vertical shaft 60 and bevel gears 62 and 64, the latter being mounted on the inverter wheel shaft 45.

The inverter wheel, Figs. 1, 3, and 12, is formed of radial spokes 66 which extend between the hub 68 on the shaft 45 and a rim 70. The spring holders 31 and 32 of the inverter wheel are attached to the rim extending outwardly and are at an angle with the plane formed by the wheel, as will be seen in Fig. 12. The holders are resilient to hold the cartons firmly between them and the ends 72 are bent inwardly to form a holder pocket for the carton. The space between the spring holders is slightly less than the height of the carton in order that the carton may be pressed therebetween while it is being carried. This prevents the carton from falling from the inverter turret, holds the carton in proper shape preventing spilling of contents while inverting, and also holds the closing elements of the carton in a closed position.

At the rear of the holder pockets, as viewed in Fig. 3, is a smooth semi-circular shield 75 which assists in holding the cartons in the pockets as the inverter wheel rotates and prevents the cartons from being pushed completely through the pockets from the deadbox.

The inverter wheel shown in the preferred embodiment is provided with four carton carrying pockets. However, any convenient number may be used, providing the drive mechanism which indexes the wheel is so arranged that an empty pocket will be indexed in front of the deadbox for each delivery of a carton. In the present mechanism,

since four pockets are used, the wheel is indexed 90° for each carton delivery.

After the carton has been indexed through two steps, or 180°, so as to be diametrically opposite the deadbox, it will have been completely inverted with the unsealed flap facing downwardly.

To remove the container from the inverter pocket, a series of transfer pusher plates or paddles 76 (see Figs. 1, 7, 8, 10, and 11) is transported on a chain 78 which is carried by a series of sprocket wheels 82, 84, 86, and 88. Laterally extending bars 80, secured to spaced links of the chain, support the plates. Four rectangularly arranged wheels 81 are attached to each bar and run in a guide track 89 (Figs. 7 and 11) to hold the plate vertical and normal to the chain in operation. The guide track runs only beneath the chain at its lower level where the pusher plates engage and transport the cartons. Chain sprocket 86 is mounted on a pivotal arm 90 having a slot 94 through which passes a stud 96 threaded into the frame. To adjust the chain to the proper tension, the arm is pivoted to the desired chain tension and there locked by tightening the stud. The chain is driven in timed relation to the inverter turret and the plates are so spaced that they will appear opposite a pocket on the inverter turret each time it is indexed, to push the carton out of the pocket.

As the plate contacts the face of the carton, Figs. 7, 8, and 11, the arrangement of the spring holders permits the lateral bars 80 to pass between them. The plate pushes the carton from between the spring holders over an intermediate supporting platform 91 and slides it over the heated sealing block 92.

It will be noticed that the carton is positioned so that the flap extends rearward with respect to the direction in which the carton is pushed, that is, the wall to which it is attached is the forward wall. The friction between the flap and the sealing platform exerts a tension on the flap, drawing it rearwardly over the closing elements, keeping it flat and unwrinkled. This position of the flap is shown in Fig. 9.

The sealing block is of metal, such as brass, and has a series of heating elements 93 mounted therein and evenly spaced for uniform heat. Leads 94 connect the elements to a source of electricity. The sealing platform has a slight depression the width of the carton which forms a channel 96 through which the carton slides. The sides of this channel have fillets 98 which soften the box material and slightly round the edges of the box. The block temperature is chosen so that, during the time of contact of the carton, the heat will penetrate the cover flap and soften the thermoplastic adhesive thereon but will not penetrate to the sealed underlying closure elements.

It will be noted that the box being inverted, the weight of the box and its contents bear against the flap pressing it tightly against the carton top to create a smooth lamination between flap and carton.

To aid this action, a pressure plate 100 presses against the upper end or bottom of the inverted carton. The plate is supported by pins 102 loosely carried in a frame piece 104. Nuts 105 threaded to the pins prevent them from pulling out of the frame piece and spiral compression springs 106 between the pressure plate and frame piece press the plate downwardly on the carton. The pressure plate exerts only a small pressure, auxiliary to the carton weight, as a semi-rigid carton will buckle under excess pressure. This pressure on the carton, in addition to the weight of the carton and contents, increases the friction which exists between the heater block and the carton flap, pulling the closure flap smooth. The flap becomes soft and pliable with the softening of the adhesive and the weight of the carton and contents presses the flap smooth and squeezes the softened thermoplastic adhesive into the pores to make a skin-tight, integral joint. Since the entire flap is in contact with the block, the other sealed elements are not disturbed by the action of sliding the inverted carton.

This pressure is continued as the carton is pushed over the heated sealing block and onto the lower pressure belt 108. A cooperating upper pressure belt 110 causes the carton to be pressed tightly therebetween to maintain the integral joint between the flap and carton, while the thermoplastic is cooling.

The lower pressure belt is carried by a driven roller 112 and an idler roller 114. An adjustable idler roller 116 at a mid-point tensions the belt. Support idler rollers

118. are arranged beneath the belt to prevent sag thereof from the weight of the carton. The rollers are journaled between two parallel frame plates 120, which extend slightly above the level of the belt providing guides for the cartons.

The upper pressure belt 110 passes over four rollers 122, 124, 126 and 128, rectangularly arranged, roller 122 being driven. Roller 124 is mounted on an adjustable shaft for purposes of adjusting the tension of the belt. These rollers are also carried between parallel mounting plates 125. The drives for the chain 78 and pressure belts 108 and 110 are illustrated in Fig. 9.

The arrangement of the sprockets and chains for driving the pressure belts and transfer chains is shown in Figs. 3 and 9, the chains being shown diagrammatically by alternate long and short lines. The main drive shaft 130 carries a sprocket 132. Chain 134 passes over this sprocket and over sprocket 136 on stub shaft 138, which carries the transfer chain sprocket 82 to drive the transfer chain. The sprockets and shafts are journaled on a frame member 140. A tightener sprocket 142 also engages the chains, being mounted on carrying arm 144 on the frame member. A second sprocket 146 on the drive shaft 139 carries chain 148 which passes over sprockets 150 and 152 mounted on the shafts which carry pressure belt rollers 122 and 112 to drive the upper and lower pressure belts. A tightener sprocket 154 carried on arm 156 also engages the chain.

The driving mechanism is so arranged that the belts travel at a faster linear speed than the chain carrying the pusher plates. Therefore, when the carton is pushed to the end of the sealing platform and is caught between the pressure belts, it begins moving at a greater speed. The plates which stay behind the cartons during their entire travel between the pressure belts begin to drop back when the cartons are picked up by the belts so that the distance between the plates and cartons continually increases, leaving a space between the carton and the plate when the carton reaches the ends of the pressure belts.

This permits clearance between the heel of the transfer plate and the carton. As the chain passes over the end sprocket wheel 88 and the plate is angularly swung around, the end of the sprocket brings the heel of the plate around, as is shown in Fig. 8. Provision of the clearance between the plate and the carton prevents this heel from striking the carton and prevents disturbance of the position of the carton as it is cooling between the pressure belts while the adhesive is still soft. This helps insure a tight seal between the flap and the carton.

The upper pressure belt does not extend quite as far to the right as the lower, as shown in Figs. 9 and 10, to permit space for the paddles to pass upwardly. When the cartons have been sealed and cooled and reach the end of their travel along the lower pressure belt, they drop off the belt to the right to be carried away by conveyor mechanisms which are not shown.

It will be noted from the plan view of Fig. 12 that containers are delivered at a point which lies directly in line with their path of delivery from the top closing turret. This is accomplished by placing the spring holders 31 and 32, as described above, on the inverter to extend at an angle with the plane of the wheel 70, thereby permitting the path of travel of the cartons through the sealer and pressure belts to be at an angle to the path of the cartons when they are discharged from the closing machine. The two paths intersect at the point of delivery of the sealed carton indicated by the arrow.

The operation of the mechanism is believed clear from the foregoing explanation. However, a brief summary may be helpful in understanding the objects and principles of my invention.

Cartons which have been filled, but remain unclosed and unsealed, are injected into the pocket 13 of the turret 12 of the closing machine at station R. The turret is indexed to move the carton through a series of closing stations in the direction indicated by the arrows in Fig. 1. When the carton reaches station D, the closure elements will have been folded and sealed and the carton will be in the condition illustrated in Fig. 2, the top closure flap 16 requiring sealing to the top of the carton. As the turret indexes the carton to station D, the inverter wheel 33 simultaneously indexes a vacant holder pocket to a position opposite the deadbox 24. The closed carton is ejected from the turret and into the deadbox,

thereby pushing the carton which previously rested in the deadbox into the holder pocket. The inverter wheel is rotated through 180° to turn the carton to an upside-down position. At that point a pusher plate 76, carried

5 downwardly on its supporting chain 78, passes between the holder arms 31 and 32 on the inverter wheel as shown in Fig. 8. The plate thus forces the carton out from between the holder arms, pushing it over platform 91 onto the heated-sealing block 92 (Fig. 9). The weight of the carton and of its contents, combined with the auxiliary downward pressure applied by plate 100, press the top closing flap tightly to the carton. The direction of movement is such that the sidewall of the carton to which the flap is attached is forward. Therefore, the flap sliding on the heater block will be drawn tightly back from its line of attachment, removing wrinkles from the flap. The downward pressure upon the flap, combined with the slipping frictional action between the flap and the block, force the pliable flap tightly against the top of the carton over the other closure elements. The heat of the block has softened the thermoplastic adhesive and the pressure forces it into the crevices and pores of the carton material, thereby obtaining an integral lamination between the closure flap and carton top. As the carton continues to be pushed by the plate 76, it is carried off the sealing block and between the upper and lower sealing belts 110 and 108. The pressure sealing belts, aided by the weight of the carton and contents, hold the closure flap tightly against the carton until the thermoplastic adhesive cools and solidifies. The belts, traveling at a higher speed than the pusher plates, cause an increasing gap between the plate and carton. As the carton drops off the end of the lower belt, the pusher plate swings around the end sprocket 88 without striking the carton.

10 Thus it will be seen that I have provided a successful mechanism for sealing the overlapping flap to the top of a carton. The mechanism is well suited for sealing carton flaps constructed of fragile and pliable materials which are easily crinkled or torn, such as metallic foil. I have provided a device which will prevent distortion of the shape of the flap, both while the thermoplastic coating is being heated and cooled, thereby obtaining an unimpregnable integral closure seal.

The mechanism is especially suited to closing cartons which have side walls lacking rigidity because the top closure flap can be sealed firmly against the carton without danger of collapsing the walls.

The device inverts the carton and seals the flap without disturbing the sealed closure elements underneath and yet forms an extremely smooth closure which will be attractive in appearance and add substantial strength and increased impermeability to underlying closure elements.

While the invention is susceptible of various modifications and alternative constructions, I have shown in the drawings and have described in detail the preferred embodiments. However, it is to be understood that I do not thereby intend to limit the invention to the specific form disclosed, but intend to cover all modifications and alternative constructions falling within the spirit and scope of the invention as expressed in the appended claims.

I claim as my invention:

1. A machine for sealing a closed carton comprising a mechanism for inverting the carton, a closing plate having a flat upper surface, and transferral mechanism sliding the carton along said plate in its inverted position so that the weight of the carton bears against the closing flap.

2. A machine for sealing a closed carton comprising means to invert the carton, a flat upwardly facing surface over which the carton may be transported, a transferral mechanism for sliding the carton in its inverted position over the surface with the weight of the carton and its contents forcing the closing elements into sealing contact, and means for exerting an auxiliary downward pressure upon the carton as it is being moved over said surface.

3. A machine for sealing a closed carton having an adhesive coated closing flap attached to a sidewall and overlying the folded closure elements, comprising means for inverting the carton to a position with the closing flap facing downwardly, a flat plate over which the carton may be slid, and means for transporting the carton in said position over the plate in a direction such that the friction between the flap and plate draws the closing flap over the closure elements.

4. A machine for sealing a filled and closed carton having adhesive coated closure elements folded over the contents comprising means for inverting the carton, means associated therewith for holding the closing elements in their folded state preventing discharge of the contents while the carton is being inverted, a flat sealing surface over which the cartons may be slid, and means removing the carton from said holding means and sliding the carton over said surface, the weight of the contents compressing the closing elements.

5. A machine for sealing a filled carton having adhesive coated closure elements folded over the contents comprising means receiving the carton in an upright position, means for moving the carton through a semi-circular arc about a horizontal axis, a flat surface positioned at the end of said arc, and a conveying device sliding the carton over said surface to seal the folded closure elements compressed by the weight of contents and carton into an integral closure.

6. A machine for sealing a carton having adhesive coated closure elements folded over the contents comprising an inverter element rotating about a horizontal axis and adapted to receive and hold a carton, means delivering the carton to the inverter, a supporting surface over which the carton may be slid, and mechanism adapted to remove the cartons from the inverter after it has been rotated to an inverted position and transport them over the supporting surface to compress the closure elements.

7. A machine for sealing a carton having adhesive coated closure elements folded over the contents comprising an inverting turret wheel rotating about a horizontal axis, spring holders peripherally mounted to extend outwardly and spaced to form carton receiving pockets between them, means inserting the carton between the holders in an upright position, a sealing plate having a flat upwardly facing surface, means forcing the carton from between said spring holders when the wheel has inverted the carton and sliding it over the sealing plate to seal the closure elements.

8. A machine for sealing a carton having folded closure elements and a thermoplastic adhesive coated closure flap overlying said elements comprising an inverter wheel having a carton holding pocket on the periphery and rotatable about a horizontal axis, means for inserting the closed carton into said pocket at one side of the wheel, a plate having a flat heated upwardly facing sealing surface on the other side of the wheel, means for removing the carton from the wheel and laterally pushing it over said sealing surface after the carton has been rotated through 180° to soften the thermoplastic adhesive and seal the closure flap over the closure elements.

9. A machine for sealing a closed carton having thermoplastic coated closure elements comprising means to invert the carton, a flat upwardly facing heated sealing surface, means for sliding the carton in inverted position over said surface to soften the thermoplastic adhesive and compressibly seal the closure elements.

10. A mechanism for sealing a closed carton having a thermoplastic adhesive coated flap overlying the closure elements comprising means for inverting the carton, means for holding the flap in overlying position while the carton is being inverted, a heated sealing surface over which the carton may be slid to soften the thermoplastic adhesive, means exerting a lateral pressure on the carton to move it over the sealing surface, and means exerting a downward pressure on the carton to force the flap and closure elements into integral relationship.

11. A mechanism for sealing a closed carton formed of laminations of carton material and thermoplastic adhesive comprising means for inverting the carton, a heated sealing block having an upwardly facing channel through which the carton may be slid to soften the ther-

moplastic adhesive of the contacting carton surfaces, said channel having a flat bottom for contacting the carton top and having rounded sides for contacting and rounding the edges of the carton, and means to force the carton in inverted position through the channel.

12. A mechanism for sealing a carton top having thermoplastic coated closure elements, comprising in combination a sealing plate having a heated surface, pusher means for sliding the carton along the plate with the closure elements in contact with the surface to soften the thermoplastic adhesive, a compression means for applying pressure to the closure elements while the thermoplastic hardens, and means for moving said compression means at a greater rate of speed than said pusher means.

13. A mechanism for sealing a container having thermoplastic coated closure elements comprising a heated sealing plate in a substantially horizontal position, a series of spaced pusher plates for pushing successive cartons in a path over the plate having their closure elements in sliding contact therewith, and spaced pressure belts positioned at the end of the plate to carry the cartons between them in said path and applying pressure thereto while the adhesive solidifies, and means for moving said belt at a greater rate of speed than said plates to space the cartons from the paddles.

14. A machine for sealing the top of a carton comprising an inverter turret rotatable about a horizontal axis and having a pair of holder arms extending outward from the turret spaced so as to form a carton pocket therebetween, means positioned beside the turret to insert a carton between the holder arms, a heated sealing plate positioned diametrically opposite the inserting means, and a paddle adapted to pass between the holder arms to push the carton from between the arms and over the heated plate to seal the carton top.

15. A machine for sealing a carton with thermoplastic ejected along a first path from a closing machine, comprising an inverter turret carrying carton holders for receiving the carton from the closing machine, the turret being rotatable about an axis forming an angle with said first path, means for rotating the turret through 180° to invert the carton, a heated sealing plate, means for removing the carton from the turret and sliding it on end over the heated plate along a second path forming an angle with the turret axis, and means for applying pressure to the heated carton end while the adhesive cools, and carrying it along said second path to said first path.

16. The method of sealing a closed carton having top closure elements coated with a thermoplastic adhesive which comprises inverting the carton, placing the inverted carton on a heated surface, and placing the carton in inverted position on an unheated surface until the thermoplastic adhesive solidifies.

17. The method of sealing a closed carton having a flap connected to a side wall and overlying closure elements with a layer of thermoplastic adhesive therebetween, which comprises inverting the carton, sliding the carton across a heated surface with said flap-connected wall foremost to draw the flap over the closure elements and press the flap to the closure elements, and removing the carton from the heated surface and pressing the flap to the carton until the adhesive cools.

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