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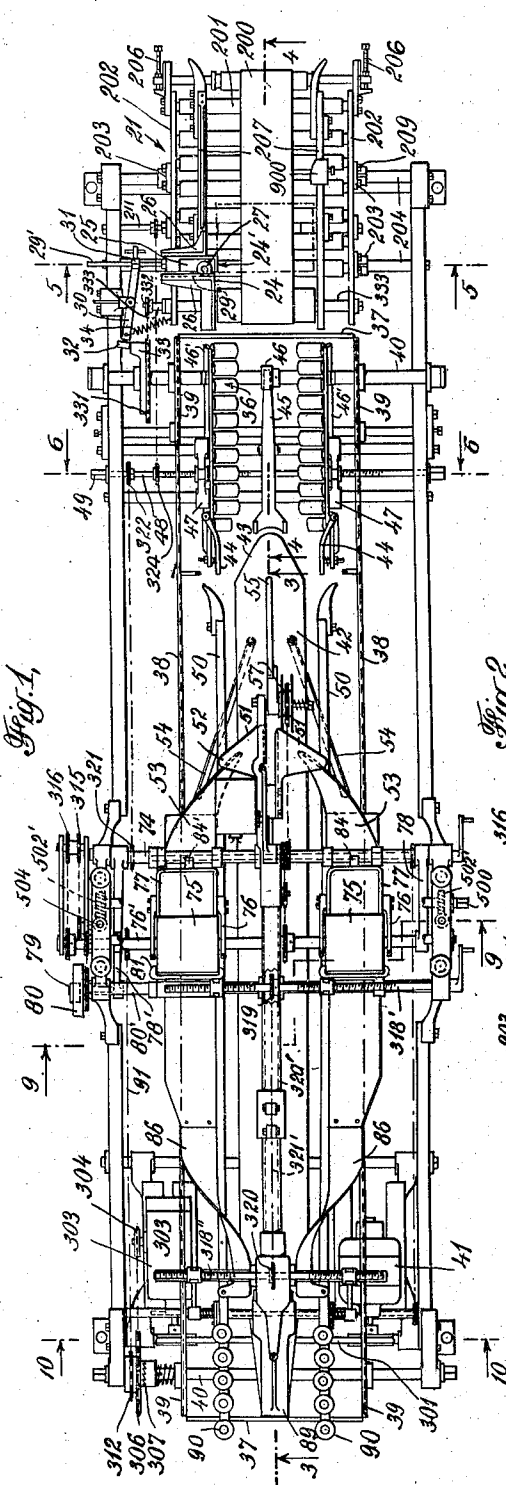
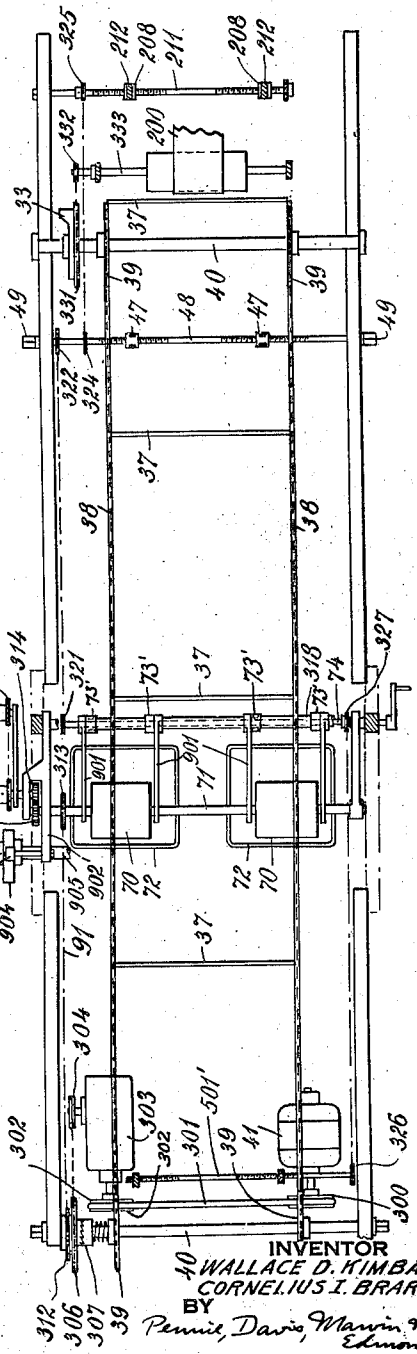
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2,095,258

CARTON CLOSING MACHINE

Filed May 16, 1935

7 Sheets-Sheet 1



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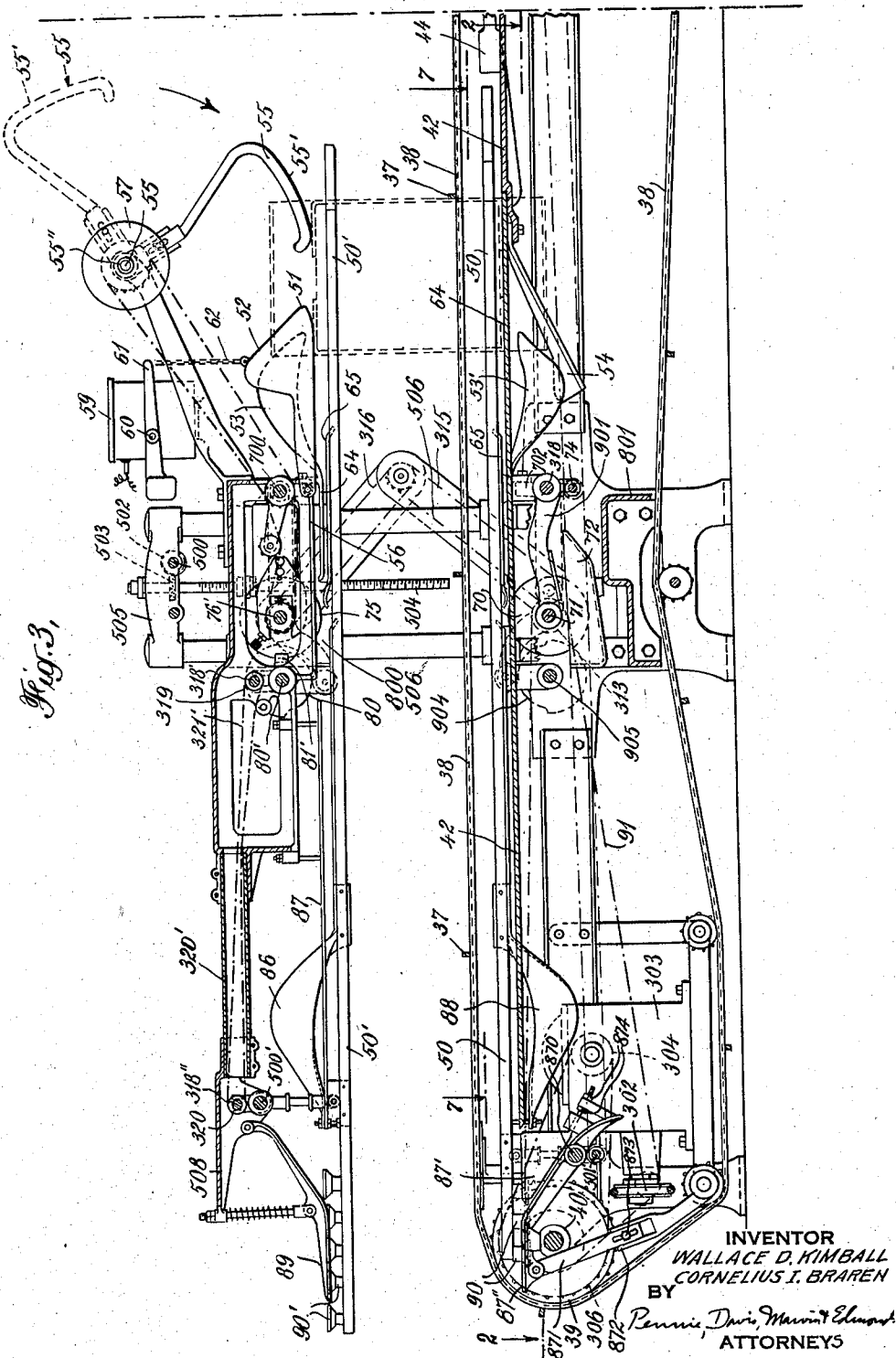
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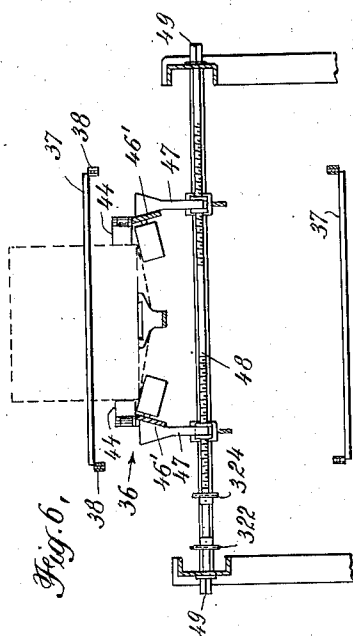
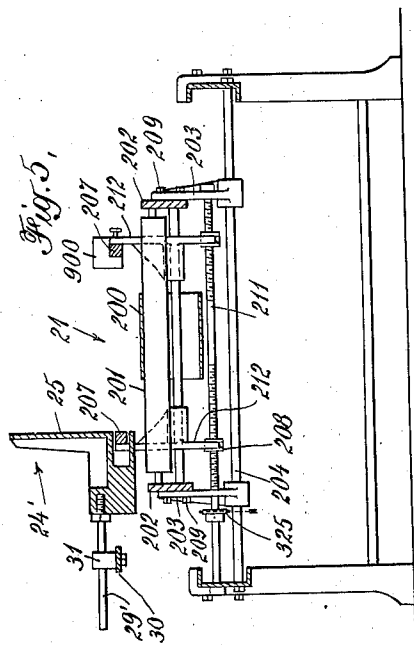
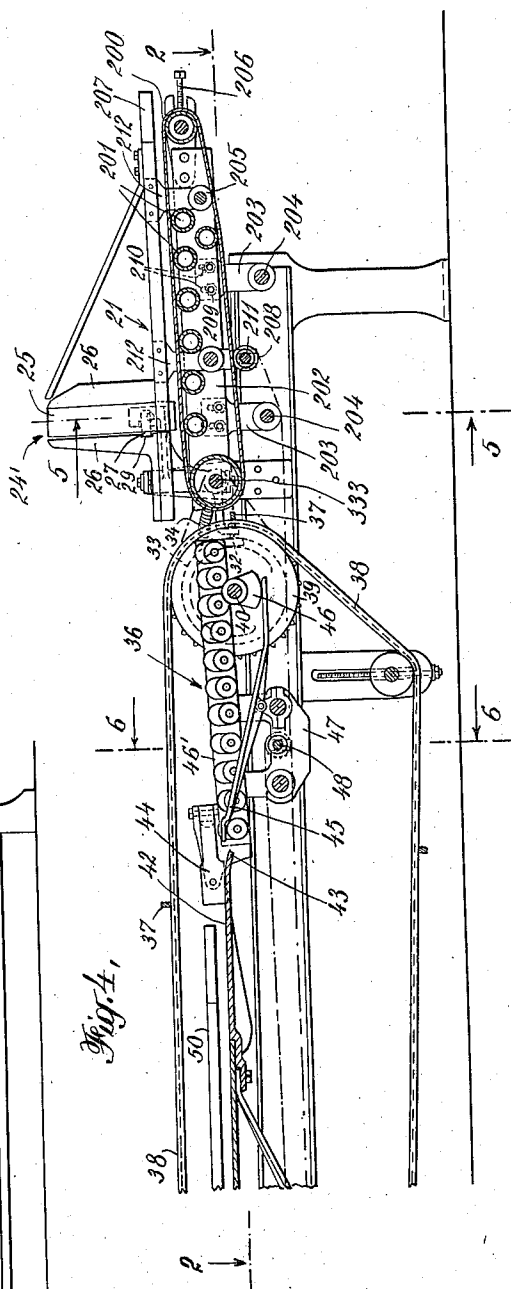
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Filed May 16, 1935

7 Sheets-Sheet 3



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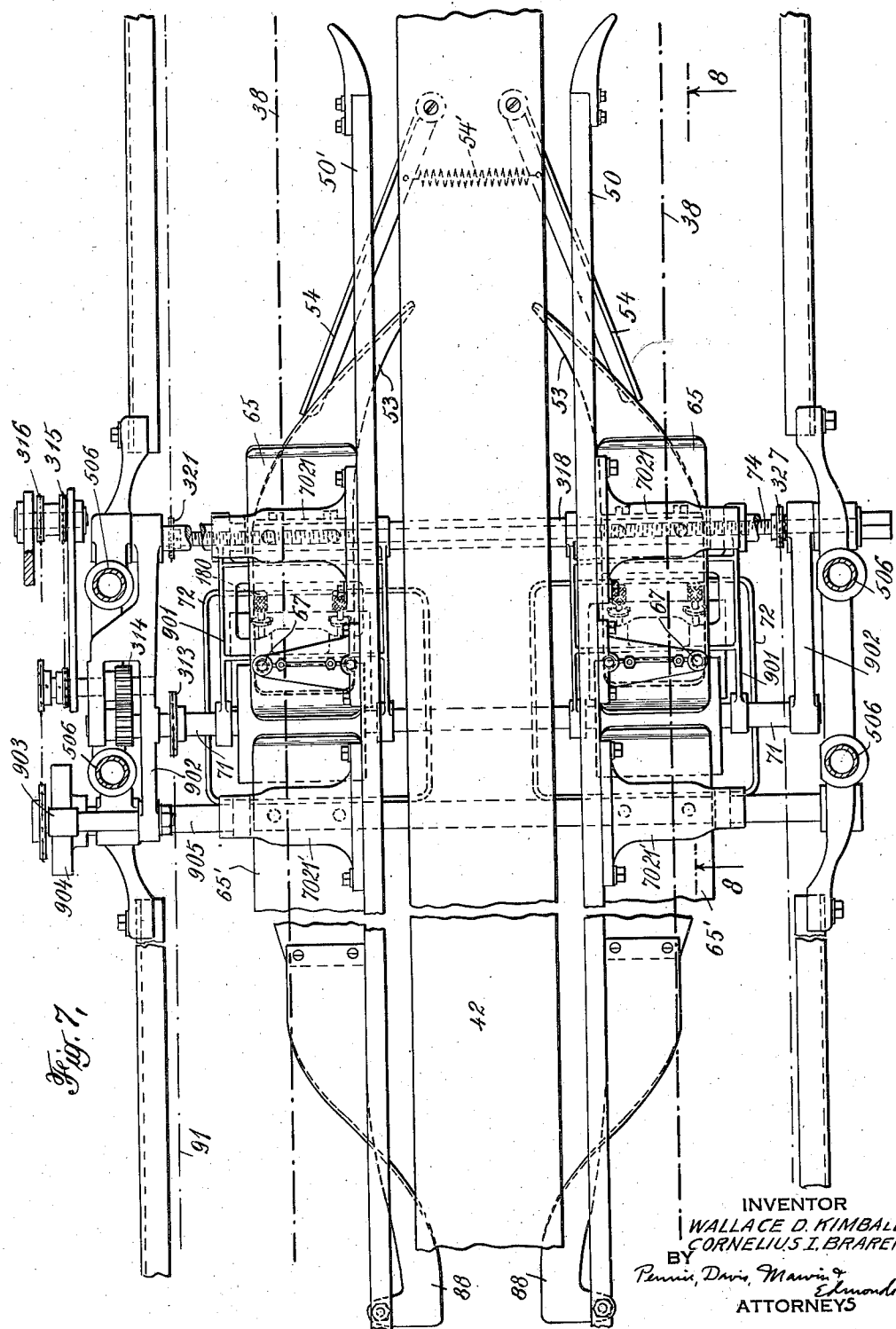
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CARTON CLOSING MACHINE

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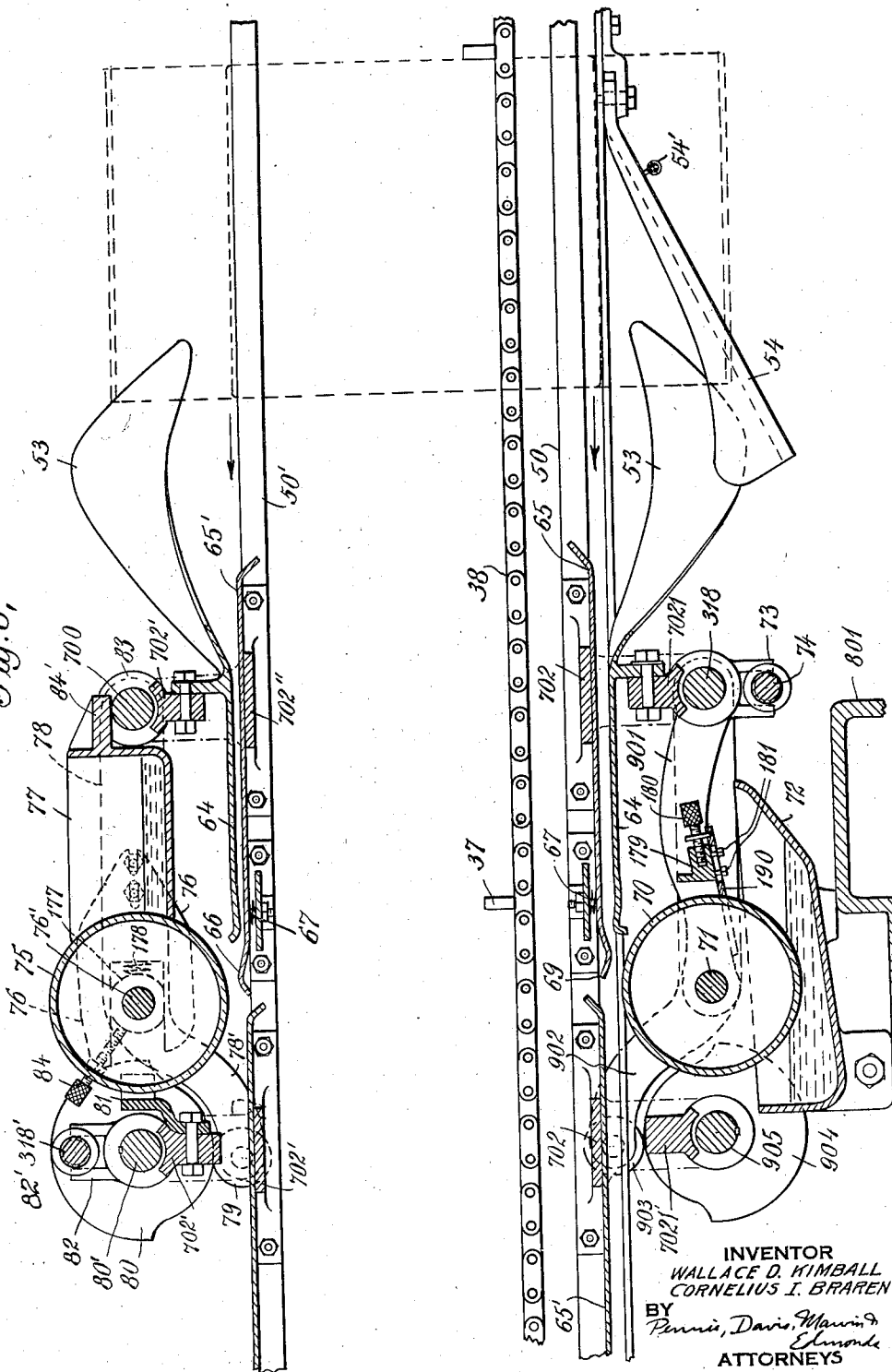
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CARTON CLOSING MACHINE

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Fig. 8,



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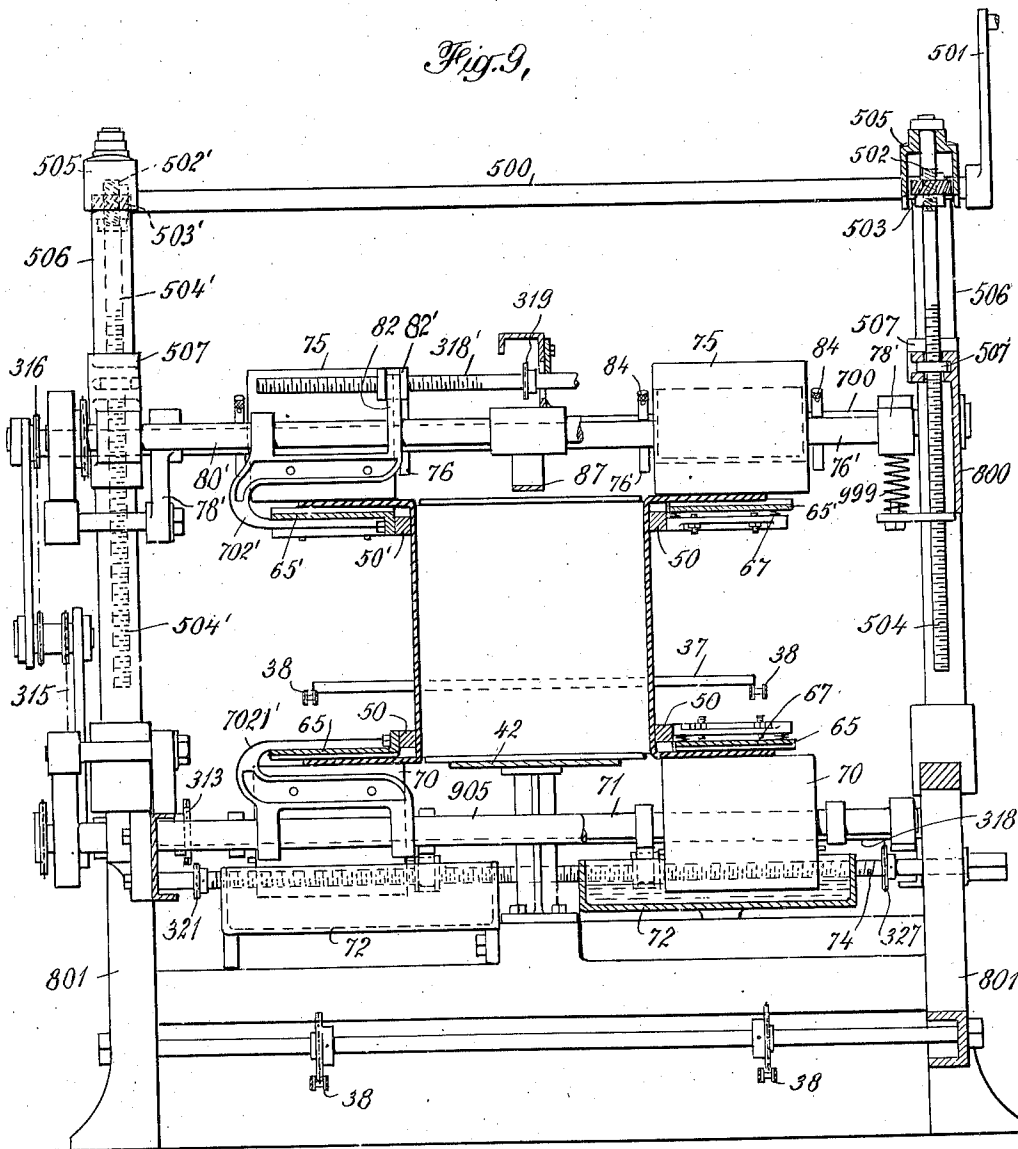
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Fig. 9,



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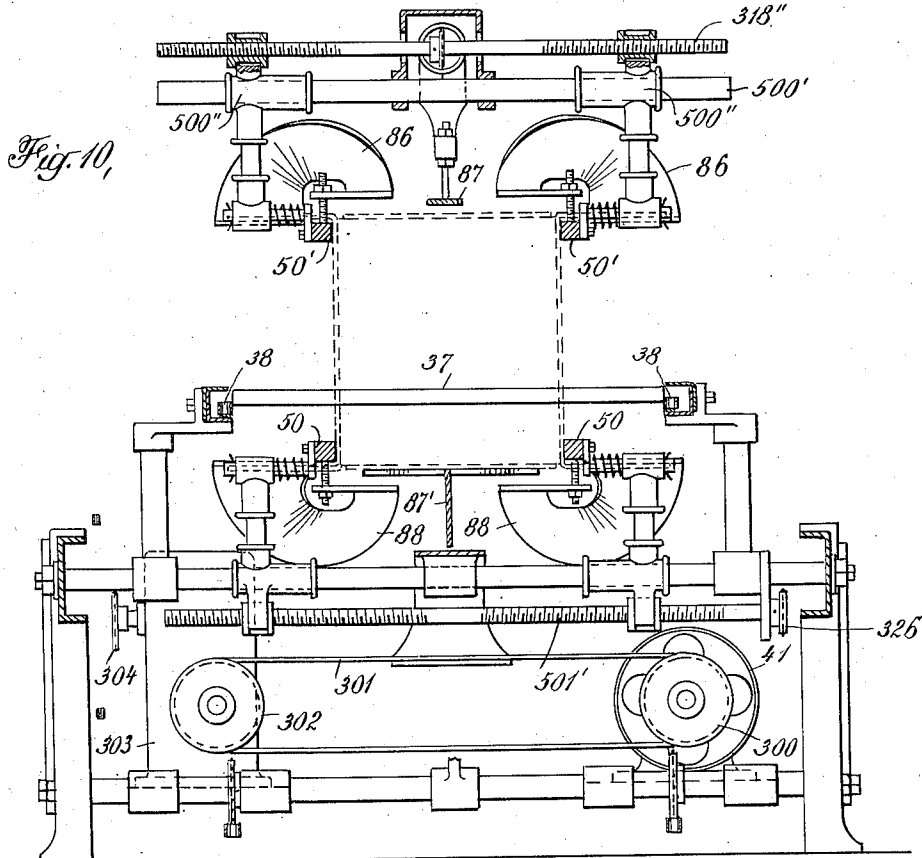


Fig. 11,

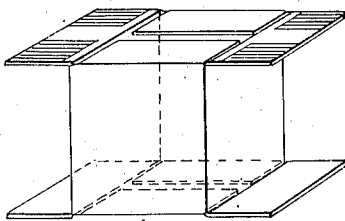


Fig. 12

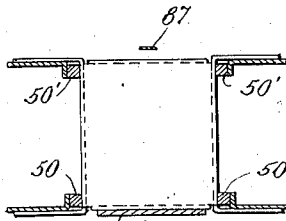


Fig. 13

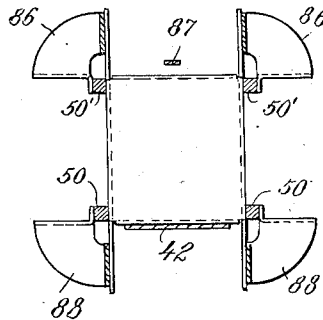


Fig. 14,

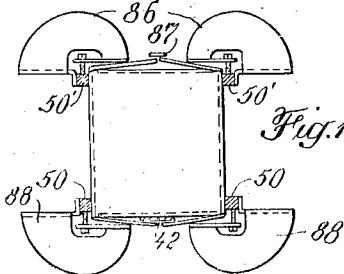
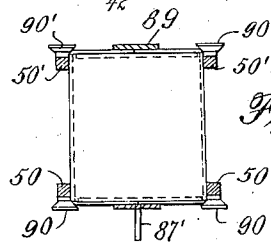


Fig. 15



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2,095,258

CARTON CLOSING MACHINE

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Application May 16, 1935, Serial No. 21,790

10 Claims. (Cl. 93—6)

This invention relates to apparatus for sealing cartons, and particularly to carton-sealing apparatus of the type which operates upon filled cartons supplied to it with all the flaps closed in order to protect the contents in transit, and which automatically and unattended opens the flaps, renders them adhesive, closes them again, and seals and initially "sets" them, thereby completely packaging the contents.

The general object of the present invention is to provide a substantially improved machine of this general type albeit without rendering it more complex, more bulky, or more expensive to construct or operate than the subsistent machines.

A particular object of the invention is to provide a machine of this type which will be more productive, more rapid, accurate, cleanly, and safe in operation than heretofore; and which will be flexible in operation, that is, adjustable in its operating parts so as to be capable of handling filled cartons of widely varying sizes, and sealing, or packaging all sizes with equal rapidity and effectiveness.

Accordingly, the present entirely automatic, unattended machine comprises improved means for delivering the cartons to the machine, improved means for successively and automatically admitting the cartons to the operation thereupon of improved flap-unfolding mechanism, improved adhesive applying mechanism, improved flap re-folding mechanism, and improved flap "setting" mechanism.

Other aims and features of improvement of the present invention will become manifest from the following description of the presently-preferred embodiment of the improved machine, taken in connection with the accompanying drawings, but the invention is limited in its embodiments and features only by the scope of the sub-joined claims. In these drawings,

Fig. 1 is a top plan view of the entire machine;

Fig. 2 is a horizontal section on line 2—2 of Figs. 3 and 4;

Fig. 3 is an enlarged vertical, fragmentary section on line 3—3 of Fig. 1;

Fig. 4 is a vertical fragmentary section on line 4—4 of Fig. 1;

Fig. 5 is a vertical section on line 5—5 of Figs. 1 and 4;

Fig. 6 is a vertical, fragmentary section on line 6—6 of Figs. 1 and 4;

Fig. 7 is a horizontal, fragmentary section on line 7—7 of Fig. 3;

Fig. 8 is a vertical, fragmentary section on line 8—8 of Fig. 7;

Fig. 9 is a vertical, enlarged section on line 9—9 of Fig. 1;

Fig. 10 is a vertical, enlarged section on line 10—10 of Fig. 1;

Fig. 11 is a diagrammatic perspective showing a carton with the flaps in the condition that they occupy just before the flap re-closing operation commences;

Fig. 12 is a similar view of the first step in the re-closing process;

Fig. 13 is a view of a successive step;

Fig. 14 is a view of a further step, and

Fig. 15 is a view of the final step in re-closing.

The closed, unsealed cartons approach by gravity the right-hand end of the machine, in Figs. 1 and 2 and most of the rest of the figures, and first enter it in close succession, the rearward ones pushing the frontward ones ahead to a feeding-mechanism or table 21. The cartons do not enter the rest of the sealing machine in contacting arrangement, however, but are fed in in uniformly spaced relation by a trigger mechanism later described. The table 21 has, normally, sufficient leftward and downward inclination to cause the filled cartons to advance in closely adjacent succession until they meet a shoulder 24 offset out into the path of the cartons from the right guide 207. There they stop until a pusher, or timed-piston 24' pushes them out into the stream again. The table 21 comprises an endless-travelling belt-member 200; supporting rollers 201 rotatably mounted between side-frames 202 and forming a unit; brackets 203 supporting the unit on cross bars 204; belt guide-rollers 205; belt tensioning devices 206, and flaring-end carton guiding bars 207. The bars 207 have adjusting means for varying their lateral positions by spacing them farther apart or closer together to receive varying sizes of cartons. This is accomplished by the double-threaded screws 211 carrying nuts 208 engaging the arms 212 which support the bars 207. The vertical height of the table can also be varied by means of the bracket, and bolts 209 and slotted bolt-holes 210. By these means, the elevation of the rear end above the front end can be varied at will.

The pusher or piston-group 24', comprises a timed, retractable member 25 mounted between two guides 26, and carrying a roller 27 mounted to travel in a groove 29 on the shoulder 24. A rod 29' is rigidly attached to the retractable member by one end and intermediate this end and the other, a centrally pivoted lever 30 is flexibly, but fixedly, attached by one end by means of the pivoted clamp 31. The other end of the lever 30

bears a cam-follower 32 and is held in engagement with a cam disc 33 by means of a coil spring 34. Thus, the member 25 is, in a timed relation with the movement of the cartons through the rest of the machine, alternately protruded against the stalled cartons to force one out into motion again, and retracted to allow the next to pass on to hit the shoulder 24, whence it is released to pass on in a spaced relationship to the preceding carton. A movable block 300, adjustable lengthwise, prevents the cartons canting diagonally and so escaping the shoulder 24 and forces at least one corner of each carton to contact the shoulder 24 so as to be in proper position for timed, spaced feeding.

From the table 21, the carton is transported onto a roller table 36, where the rear face is engaged sooner or later by one of a plurality of driving-bars 37 rising behind the cartons in timed relation to the descent of the successive cartons onto the roller table. A number of these driving-bars are mounted at their ends in uniformly spaced relationship upon a pair of endless chains 38, one on either side of the machine. These sprocket-chains pass over suitable sprocket-wheels 39 at either end of the machine, mounted on shafts 40. The spacing of the driving bars is sufficient to accommodate the maximum size of carton made, and to carry even these through the machine in spaced relation from each other. The endless chains are driven continuously, as long as the machine is running, in the same direction at a uniform speed by an electric motor 41 through the gearing shown, and later described.

The rollers of roller-table 36 are inclined in two directions: the longitudinal plane of the rollers is inclined at substantially the same downward angle as is the table 21 when raised to its upper position, and the two banks of rollers, one on either side of the center line, have their axial-planes convergent or inclined toward each other, to permit the bottom outer or side flaps of the carton to undergo their initial re-opening by dropping slightly, enough to permit the tongue 43 of a supporting table 42 to enter between the outer, partly opened side flaps, and the inner, closed end flaps, when assisted as hereinafter described. Flaring guides 44 receive the carton as it advances and properly center it with respect to tongue 43 and guide it theretoward to make it center on the tongue. These guides 44 also prevent the carton's walls bulging outwardly at the bottom and so prevent the carton contents such as cans from tipping. The tongue 43 is somewhat flexible and so adjustable as to height.

When the cartons are filled with canned goods or similar heavy material, the inner, or end flaps as well as the outer, may be forced downwardly somewhat, and the transverse center-line of the carton may bulge downwardly, although the edges all lie above point 43, and the center may interfere with the forward movement of the carton onto the upper surface of the supporting table 42. To meet such a contingency, a pivoted lifting bar 45 for slightly raising the down-sagging center of the carton is provided and is adapted to be operated in timed relation to the forward movement of the cartons by a cam 46 on a shaft 40 so as to raise the front end of the bar 45 by depressing its lower end so that the center of each carton is given a slight lift just as it approaches the tongue of the supporting table, the lift occurring as it advances with its edges all lying above the tongue 43. The forward end of the lifting bar is bifurcated as shown in order to straddle

the partially open bottom side flaps and be sure of engaging them properly while lifting the central sagging portion of the carton onto the point 43. The elevation of the forward end of the bar 45 is so timed in relation to the advance of the driving bars that lift of the center occurs just as the center approaches the point 43, the outer edges of the carton lying above point 43, all around, due to their resting on the high outer ends of the rollers 36. Although the lifting bar engages across the bottom side flaps, nonetheless the forward, inside edges of these depending side flaps are pressed tightly against the bottom underside of the table to prevent their sagging. The carton as a whole is not lifted appreciably, only the sagging central portions being raised sufficiently to clear the point 43, and the advancing carton is carried to rest on its inner or end flaps on the table, the immediate recession of the lifting bar allowing the rear parts of the outer flaps to drop back onto the inclined rollers for a while, the front parts being located as above.

In order to adjust the lateral spacing of the rollers to thereby vary the initial downward opening of the outer flaps whereby to facilitate entering the carton on the table, and to adapt the apparatus to receive cartons of different transverse dimensions, the two groups of rollers are mounted in separate frames 46' on depending arms 47 mounted on a double threaded screw 48 having operating ends 49 for socket wrenches. Each frame 46' carries a resiliently mounted flaring guide 44.

The carton is now being slid forward, resting by its closed bottom end, or inner, flaps on the smooth flat surface of the supporting table, by means of the driving bars 37, and is centered by a pair of longitudinal guide bars 50 bearing against the cartons just above the supporting table. The outer flaps, top and bottom, due to the resiliency of the carton-material, usually have a tendency to spring away from the carton, but to meet the contingency that they do not, points 51 of a pivoted unfolding head 52 are arranged to enter the opening of the partially sprung open flaps, and the diverging surfaces of this head thereupon force them farther open into such a position that they can not fail to take, or engage against a pair of upper flap levellers, or unfolders 53. Though the bottom outer flaps have a tendency to fall of their own accord into a substantially vertical position as soon as they leave the rollers, and thus by gravity get into proper position to be engaged by the bottom flap unfolders 53, similar to the upper ones, yet in order to positively assure that if they do not so fall open, they will notwithstanding be operated upon by the unfolders, a pair of flaring members 54 is provided and pivotally supported by the supporting table as shown in Figures 7 and 8. The members 54 are connected by a spring 54' which holds the free ends of these members in contact with the outer surfaces of the unfolders 53' regardless of lateral adjustment of the unfolders.

The rear top inner flap has a tendency to spring up and be torn off and in order to maintain the rear top inner flap positively closed so that it will pass beneath the unfolding head, a rotary flap holder 55 is provided and driven in timed relationship with the approach of each carton. It comprises essentially a re-curved member 55' rigidly mounted on a sleeve 55'' journaled on a shaft 55''' driven in timed relationship to the carton driving bars. It may be adjusted radially to accommodate different sizes

of cartons, but always lies on the center line. The unfolding head 52 is slotted centrally to permit the flap holder to rotate through it to hold down the inner flaps and thus prevent their being torn off or folded reversely by the folding head. The lower surface of the folding head is extended rearwardly in the form of a foot 56, and this with the head and a fin 87, keeps the inner top flaps closed as the carton passes through the machine.

The mounting of the flap holder 55' includes a clutch 57 which is capable of automatic disengagement when the holder meets a resistance above a predetermined amount, to thereby prevent damaging the carton.

The unfolding head is provided with means for automatically stopping the whole machinery in case a damaged or improperly conditioned carton approaches the head. The conveying parts of the machine are driven by an electric motor 41, and in the controlling circuit of this motor is provided an automatically operating switch 59, which is opened and closed by a shaft 60 carrying a weighted arm 61. The pivoted unfolding head is held up at one end by a chain 62 on arm 61. If the flaps are in such an abnormal position as to force the head upwardly too far, the weight opens the switch and stops the motor and thus the entire machine.

The unfolders 53 for the top outer flaps and 53' for the bottom outer flaps comprise relatively wide, rigid plates formed into skew, or warped, surfaces, being generally triangular or pointed members, and are curved inwardly at their pointed outer ends in such a way as to "take" on the flaps coming from the unfolding head 52 and the flaring members 54. The carton being slid along by the driving bars, the respective flaps are pushed outwardly into fully horizontal position by the respective unfolders, in order that adhesive may properly be applied to the inner surfaces thereof.

The unfolders are extended rearwardly as flat guide plates 64 by which the flaps are held horizontal. To meet cases where the resiliency of the carton-material is not sufficient to keep the flaps in contact with the bottom surface of the unfolders, plates 65 and 65' are provided, and form, with the plates 64, slots in which the flaps are guided. The plates 65' and 65 are mounted on the carton guiding top and bottom bars 50' and 50 at one end, and the other end is curved towards the glue roller as shown at 66 and 69 and resiliently mounted at 67, as and for the purpose hereinafter explained.

Adhesive, such as a suitable carton-glue, is applied to the inner surfaces of all the outer, or side, flaps. More particularly, it is applied to the top flaps by passing them between the fixed but resiliently supported semi-cylindrical surface 66 and an adhesive-carrying roller 75, vertically movable for a purpose hereinafter explained. It is applied to the bottom flaps by passing them between similar bottom instrumentalities, comprising surface 69 and an adhesive-roller 70. These instrumentalities are located on both sides of the machine in the path of the advancing horizontal flaps. The lower rollers 70 are mounted on a floating shaft 71 supported on a goose-neck 901 journaled on a shaft 318. The shaft 71 also passes through a lifter-bar 902 carrying a follower 903, rolling on a cam 904, mounted on a shaft 905, and the lower part of the peripheries of the rollers 70 dip into adhesive in adhesive containers 72 and thus carry off a thin film of adhesive onto the underside of the outer carton

flaps. The shaft 71 is positively driven by sprocket-and-chain drive 91.

In order to prevent adhesive coming onto the contents of the cartons if the flap were coated its full length, including the center, with the adhesive, the adhesive is not applied to the entire longitudinal surface of any of the flaps, but only at the end corners, thus leaving the center of the outer flaps, that is, the region opposite the gap between the inner flaps, uncoated with adhesive. To this end, means are provided for rotating the shaft 905 bearing the cam 904 from the original source of power, to thereby raise or lower the adhesive rollers at properly timed intervals in relation to the passage of the flaps underneath them. Both lower rollers are normally in the "up" position, and are lowered when the center of the flaps reaches them to thus leave the center of the flap blank and free from adhesive. The cam 904 is fixed to its shaft 905 but the rollers 70 are splined to and laterally slidable on their shaft 71 to permit lateral adjustment of the rollers, the plates 64, the lower unfolders 53, the guides 50, etc., by means of double screw threaded shaft 74, for various widths of cartons. The frame elements 800 are vertically adjustable to accommodate various heights of cartons. The lateral adjustment of the parts is accomplished through lateral movement of the brackets 7021 which carry the plates 64, the lower unfolders 63 and the lower guide bars 50. The brackets 7021 are slidably carried on a cross shaft 318 by means of integral sleeves 73' which fit between the goose-neck 901 as shown in Figure 2. Thus lateral movement of the brackets 7021 is transmitted to the rollers 70 by the goose-neck 901 and to the brackets 7021', carrying the plates 65' through the guiding bars 50. The brackets 7021 are moved laterally by the manually operable double threaded screw shaft 74 through the nuts on this shaft engaged by the yokes 73 on the brackets 7021.

Referring now more particularly to the upper adhesive-applying rollers 75, these rollers are mounted at either side of the machine, alongside and over the path of the carton flaps on a shaft 76' carried from shaft 700 by bars 78. Adhesive receptacles 77 are provided, and one end thereof supported on shaft 76' by a fork 76, the other end having a lug 84' resting on a shaft 700. One of the bars 78 terminates in a goose-neck bar 78' carrying a cam-follower 79 adapted to be operated by a cam 80. The cam 80 is fixed on a shaft 80'. Ears or yokes 82 are provided similar to yokes 73 and for a similar purpose, as is the adjusting screw-shaft 318'. The roller shaft can be adjusted by means of the knurled screw 84.

All the adhesive rollers are driven at a linear speed equal to the speed at which the driving rods advance and drive the cartons through the machine; and the shape of the cams 80 and 904 is such that, during one-half of each revolution thereof, each of the rollers is brought into contact with the outer carton flaps, and during the other half of their revolution, they are out of contact, being positively moved away from and out of contact with the center of the flaps. The extent of the glue-spots can be varied by varying the shape of the cams. The shaft 76' is resiliently supported by a spring 999 attached by one end to frame 800, this spring serving to hold the cam-follower 79 in contact with the cam 80.

The upper adhesive applying rollers, and the folding finger, the folding head, the safety switch, the upper unfolders, the presser foot, the guide

plates and slots, and all the other mechanism above line 2—2 of Fig. 3, are suspended and solely supported, for operation and vertical adjustment, in a single central frame. The frame, as shown in Fig. 9, and in longitudinal section in Fig. 3, is of a generally rectangular construction and comprises a base 801 and two pairs of vertical side posts 506 connected by heads 505. Provision is made for vertically adjusting the mechanism carried by the frame. As shown, this adjustment mechanism comprises an overhead shaft 500 adapted to be rotated by a crank handle 501 and carrying a helical gear 502 meshing with a helical gear 503 on a screw-shaft 504, and a substantially duplicate mechanism 502', 503', and 504', is arranged on the other side of the machine. All the overhead mechanism is carried by a pair of elements 800 at either side of the machine slidably connected by collars 507 to posts 506 and adjustably movable up and down by the nuts 507' carried in recesses in the elements 800 and engaging the screws 504, 504'.

Lateral adjustment of the upper rollers 75 and receptacles 77 is provided for by a mechanism comprising a double screw-threaded shaft 318' journaled in the elements 800 and driven by a hand crank. Brackets 702' depending from cross shaft 80' and laterally movable by yokes 82 engaging nuts 82' on shaft 318', have yokes 81 engaging the end surfaces of rollers 75 for laterally moving the rollers, the guides 50' carried by the brackets 702' and 702'', the plates 65' carried by the guides 50' and the unfolders 53 carried by the brackets 702''. The yokes 76 and receptacles 77 are moved laterally by the rollers 75, the receptacle supporting tabs 84' sliding on the shaft 700. Shaft 318' is connected by sprocket-and-chain 319 to shaft 318'' for laterally adjusting the refolders 86 simultaneously with the adhesive applying means.

The shaft 76' for the upper rollers bears a collar 177, and a spring 178 is arranged between it and the base of the fork 76. A set screw 84 is threaded through the front end of the fork 76 and bears on the collar so that screwing in pushes the shaft 76' closer to the open side of the receptacle and thins the film on the roller; and screwing out has the opposite effect.

The arm 901 of the lower adhesive applying system bears a rigid member 179 into which is screwed a set screw 180 and member 179 also bears two spaced bolts 181. A doctor blade 190 has a slot fitting over the bolts and an arm screwed onto the screw 180. Screwing in the screw thins out the film, and screwing out, vice versa.

The cartons are dragged along by the driving bars past the adhesive applying region of the machine and towards a portion of the machine where the flaps are re-folded together. The upper flaps, as they pass out from the adhesive applying location, may, due to the resiliency of the carton material, spring upwardly somewhat, and even may close shut again themselves, but to provide for cases in which they may not do so, the flaps are engaged and positively turned inwardly and closed again by refolders 86, each comprising a rigid, warped plate arranged as shown best in Fig. 10, and attached rigidly at one end to the upper guide bars 50'. These top plates thus lie underneath the flaps and converge towards the far end of the machine, the converging portions curving first upwardly and then downwardly, the effect being to first move the gummed top flaps upwardly into a vertical position, as shown

in Fig. 13, and then to the substantially closed position shown in Fig. 14, where the refolders are shown on top of the flaps.

The bottom outer carton flaps are refolded in a similar manner by a somewhat similar construction. The flaps engage a pair of lower refolders 88 made similar to the upper ones, but reversely, which cause the bottom flaps to move inwardly from their horizontal position shown in Figs. 10, 11, and 12, first to the vertically downward position shown in Fig. 13, and then into the closed position shown in Fig. 14. Inasmuch as the two upper refolders 86 are moved by the same double-threaded screw 318'', through guides 50', and the sleeves 500'' on the guide shaft 500' shown in Fig. 10, they are adjusted laterally by the same means; and since the two lower refolders 88 are similarly moved by the same double threaded screw 501' as shown in Fig. 10, they are adjusted laterally by the same means.

As the cartons leave the exit end of the table 42, they are supported as shown in Figs. 3 and 10, by a central fin 87' and thereafter pass onto a central exit plate 87''. This plate 87'' serves to receive the cartons from the supporting table or platen 42 with the cartons resting upon their outer bottom flaps which have now been refolded into contact with the inner bottom flaps. Plate 87'' comprises a flat, substantially horizontally-extending surface spaced from the end of supporting table 42 and a surface sloping downwardly at the front end of the horizontally-extending surface which is provided with an extension which is pivoted at 870 to the frame of the machine. It is important that plate 87'' be adjusted to the proper height with respect to table 42 and for that purpose it is supported at its outer end by means of a bar 871 which is made in two sections which are slidable connected together at 872. By loosening nuts 873 the elevation of plate 87'' can be adjusted. Fin 87' is mounted on the extension of plate 87'' below pivot 870 and the elevation of this fin can be adjusted relative to this plate and to supporting table 42 by means of nuts 874.

A presser foot 89 is resiliently pivotally mounted on the frame 508 over plate 87'' over which the now closed but "unset" cartons pass when they leave the refolders, and applies pressure along the center line of the upper side flaps.

The guides 50 and 50' bear conical shaped rollers 90 and 90' at their far ends at the sides of the carton passageway, and, as shown best in Fig. 15, these rollers serve to press on the outer parts of the top and bottom side flaps so that if they are spaced apart they will be forced towards one another until their inner edges meet along the center line of the carton as it passes out of the machine, and since the glue already has partially set, the flaps stay abutted properly until they reach the pressing machine.

The driving, or power transmission, system of the machine comprises an electric motor 41, having a pulley 300 carrying a belt 301 driving a pulley 302 on a reduction gear set 303 which bears a sprocket wheel 304, Fig. 2. A shaft 40 is mounted across the left end of the machine, and bears a sprocket 306, chain-connected with sprocket 304. A clutch 307 is provided on the shaft between the sprocket 306 and a sprocket 39. A similar sprocket 39 is provided at the other end of the machine, and one of the drive chains 38 is connected between them. A similar sprocket-and-chain system 38 is provided on the other side of the machine.

A sprocket 312 is also provided on the shaft 40, and drives a sprocket 313 on the lower adhesive roller shaft 71, and through spurs 314, drives the upper adhesive roller shaft 76', by means of a vertically movable sprocket-and-chain system 315, 316, driving shaft 76'. A hand-operated shaft 318' carrying the nut 82' for sliding the upper adhesive rollers 75 laterally, bears a sprocket 319 connected by chain with sprocket 320 to move the refolders 86 laterally. A sprocket 321 on the end of the hand driven shaft 74 drives the system for adjusting rollers 36 laterally by means of a sprocket 322 on shaft 48, and a sprocket 324 on shaft 48 drives the shaft 211 which acts through the parts 208 and 212 to adjust the guide bars 207 laterally. The plunger operating cam is rotated by a shaft 40, on which is also mounted a sprocket 331 for driving a sprocket 332 on a shaft 333 which drives the initial conveyor belt 200. A sprocket 326 on shaft 501' is driven from a sprocket 327 on shaft 74 to adjust lower bars 50 carrying member 90 and 88 laterally.

The chain 321' connecting sprocket 320 with sprocket 319 is encased in a tube 320' to prevent chain grease, dirt, etc. from dropping down onto the carton or the contents of the carton, and for preventing foreign matter damaging the chain.

In operating the machine, the cartons advance in succession, with their flaps closed but unsealed, over the conveyor table from the filling station. The cartons are fed one at a time by the trigger group into the flap manipulating and adhesive applying portion of the machine, through which they are slid, at constant speed, on the supporting table, resting on their closed inner, or end flaps. While in this position, both the upper and lower outer, or side flaps are first unfolded, and then gummed. After this, the gummed flaps are automatically refolded and pressed into closed position and sealed tightly around all edges. The finished packages are then fed to a sealing pressure applying machine, not shown.

The machine is adapted to receive and operate upon the maximum size of carton made, and, also, by means of provisions for moving and adjusting the various heretofore fixed parts, is adapted to operate upon all sizes of cartons smaller than this maximum size. The machine is so completely automatic that it is adapted to be installed by itself in an out-of-the-way location, such as an isolated floor, and the cartons to be sealed or "packaged", are fed down to it by gravity from a floor above, and the completed packages are fed out of it to the delivery room ready for immediately leaving the premises, if desired.

We claim:

1. A machine for sealing filled cartons, comprising means for receiving a carton resting on its bottom flaps with its bottom flaps closed but unsealed, means for advancing the carton off said carton receiving means, carton supporting means in advance of said carton receiving means inclined in the direction of travel of the carton and having surfaces sloping from the sides of the carton towards the center thereof so as to support the carton with its outer bottom flaps partially open, a supporting table in advance of said carton supporting means having a tongue adapted to enter above the partially open outer bottom flaps and engage the inner bottom flaps to support the carton and its contents and leave both outer bottom flaps free, vertically rotatable,

bifurcated lifting means for lifting the center of the carton, while the edges rest on said carton supporting means, above the table level, onto said supporting table, means for opening said outer flaps outwardly into substantially horizontal position, means for applying adhesive to said open flaps, and means for thereafter folding said flaps against the inner bottom flaps to thereby seal the bottom of the carton.

2. A machine for sealing filled cartons comprising means for receiving a carton resting on its bottom flaps with its bottom flaps closed but unsealed, means for advancing the carton off said carton receiving means, carton supporting means in advance of said carton receiving means inclined in the direction of travel of the carton and having surfaces sloping from the sides of the carton toward the center thereof so as to support the carton with its outer bottom flaps partially open, a supporting table in advance of said carton supporting means having a tongue adapted to enter above the partially opened outer bottom flaps and engaging the inner bottom flaps to support the carton and its contents and leave both outer bottom flaps free, vertically rotatable bifurcated lifting means for lifting the center of the carton, while the edges rest on said carton supporting means, onto said supporting table, means for opening said outer bottom flaps, means for thereafter applying adhesive to the carton flaps, and means for folding the outer bottom flaps against the inner bottom flaps to thereby seal the bottom of the carton.

3. A machine for sealing filled cartons comprising means for receiving a carton resting on its bottom flaps with its bottom flaps closed but unsealed, means for advancing the carton off said carton sealing means, carton supporting means in advance of said carton receiving means inclined in the direction of travel of the carton and having surfaces sloping from the sides of the carton toward the center thereof so as to support the carton with its outer bottom flaps partially open, a supporting table in advance of said carton supporting means having a tongue adapted to enter above the partially opened outer bottom flaps and engaging the inner bottom flaps to support the carton and its contents and leave both outer bottom flaps free, a bifurcated lifting member for lifting the center of the carton, while the edges rest on said carton supporting means, onto said supporting table, means for opening said outer bottom flaps, means for thereafter applying adhesive to the carton flaps, and means for folding the outer bottom flaps against the inner bottom flaps to thereby seal the bottom of the carton.

4. In a machine for sealing filled cartons resting on their bottom flaps with said flaps closed but unsealed, means for unfolding the outer bottom flaps for the purpose of applying adhesive, means for applying adhesive to the bottom flaps, and means for thereafter closing the outer bottom flaps against the inner bottom flaps, said flap unfolding means comprising a table for receiving the carton resting on its inner bottom flaps with its outer bottom flaps below the table, means for advancing the carton along said table, a pair of unfolding members one on each side of said table for engaging the outer bottom flaps and opening them, the outer ends of said unfolding members being spaced from said table, means for adjusting said unfolding members to accommodate cartons of different widths, and means for guiding said outer bottom flaps onto

said unfolding members as they approach the same comprising a pair of bars each pivoted at one end to said table, and yielding means for holding the opposite ends of said bars against said unfolding members thereby causing said bars to be adjusted simultaneously with the adjustment of said unfolding members.

5. In a machine for sealing filled cartons, a table extending lengthwise of the machine for supporting the cartons resting on their inner bottom flaps with their outer bottom flaps below the same, means for propelling the cartons along said table, means for opening said outer flaps, means for applying adhesive to the carton flaps, means for refolding the outer bottom flaps toward closed position as the carton approaches the end of the supporting table, and a supporting plate spaced from and beyond the end of said table for receiving the carton resting upon its outer bottom flaps, said plate being vertically adjustable with respect to the supporting table.

6. In a machine for sealing filled cartons, a table extending lengthwise of the machine for supporting the cartons resting on their inner bottom flaps with their outer bottom flaps below the same, means for propelling the cartons along said table, means for opening said outer flaps, means for applying adhesive to the carton flaps, means for refolding the outer bottom flaps toward closed position as the carton approaches the end of the supporting table, a supporting plate spaced from and beyond the end of said table for receiving the carton resting upon its outer bottom flaps, said plate being vertically adjustable with respect to the supporting table, and a vertically positioned fin member associated with said plate, and means for adjusting the height of said fin.

7. In a machine for sealing filled cartons, a table extending lengthwise of the machine for supporting the cartons resting on their inner bottom flaps with their outer bottom flaps below the same, means for propelling the cartons along said table, means for opening said outer flaps, means for applying adhesive to the carton flaps, means for refolding the outer bottom flaps toward closed position as the carton approaches the end of the supporting table, and a plate pivoted adjacent the end of the supporting table and spaced therefrom to receive the carton resting upon its closed bottom flaps, and means for adjusting the height of said pivoted plate.

8. In a machine for sealing filled cartons, a table extending lengthwise of the machine for supporting the cartons resting on their inner bottom flaps with their outer bottom flaps below the same, means for propelling the cartons along said table, means for opening said outer flaps, means for applying adhesive to the carton flaps, means for refolding the outer bottom flaps toward closed position as the carton approaches the end of the supporting table, and a plate having a flat substantially level surface and a downwardly sloping forward surface, said plate being pivoted near the end of said supporting table, and a supporting bar pivoted adjacent the outer end of said plate, said bar having co-acting slidably adjustable sections for adjusting

the height of the plate with respect to said supporting table.

9. In a machine for sealing filled cartons, means for receiving a carton resting on its bottom flaps with its bottom flaps closed but unsealed, carton feeding means for advancing the carton off said receiving means including guides for directing the carton adjustable as to width, carton supporting means in advance of the carton receiving means inclined in the direction of travel of the carton and having surfaces sloping from the sides of the cartons toward the center thereof so as to support the carton with its outer bottom flaps partially open, and having guides above each of said sloping surfaces, said sloping surfaces and said guides being adjustable as to width, a supporting table in advance of said carton supporting means for conveying the carton through the machine resting on its inner bottom flaps, adjustable guides for coacting with the sides of the carton as it advances along said table, flap unfolders for opening the carton flaps adjustable to accommodate different widths of carton, gluing devices disposed on each side of said table and adjustable for different widths of carton, flap refolders for refolding the carton flaps adjustable for different widths of carton, and means for compressing the sides of the carton opposite the hinges of the flaps as the outer flaps are folded into contact with the inner flaps, said means being adjustable for different widths of carton, means operatively connecting the adjusting means for the gluing devices and flap unfolders with the adjusting means for said inclined carton receiving means and the adjusting means for said feeding device guides thereby permitting simultaneous adjustment thereof to accommodate cartons of different widths, and means for operatively connecting said adjusting means for the carton guides and said compressing means for the corners of the carton so as to cause said devices to be simultaneously adjustable for cartons of different widths.

10. In a machine for sealing filled cartons comprising means for receiving a carton resting on its bottom flaps with its bottom flaps closed but unsealed, carton feeding means for advancing the carton off said carton receiving means including guides for directing the carton thereon, carton supporting means in advance of said carton receiving means inclined in the direction of travel of the carton and having surfaces sloping from the sides of the carton toward the center thereof so as to support the carton with its outer bottom flaps partially open and having guides for positioning the carton on said sloping surfaces, a supporting table in advance of said carton supporting means, means for propelling the carton along said table, and means for opening, gluing and closing the carton flaps as it moves along said table, and means for simultaneously adjusting said sloping surfaces and the guides thereof and the guides for said feeding device to accommodate cartons of different widths.

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