

Aug. 22, 1961

R. WINKLER ET AL

2,996,859

APPARATUS FOR PACKING AND BOXING ENVELOPES

Filed Nov. 18, 1958

6 Sheets-Sheet 1

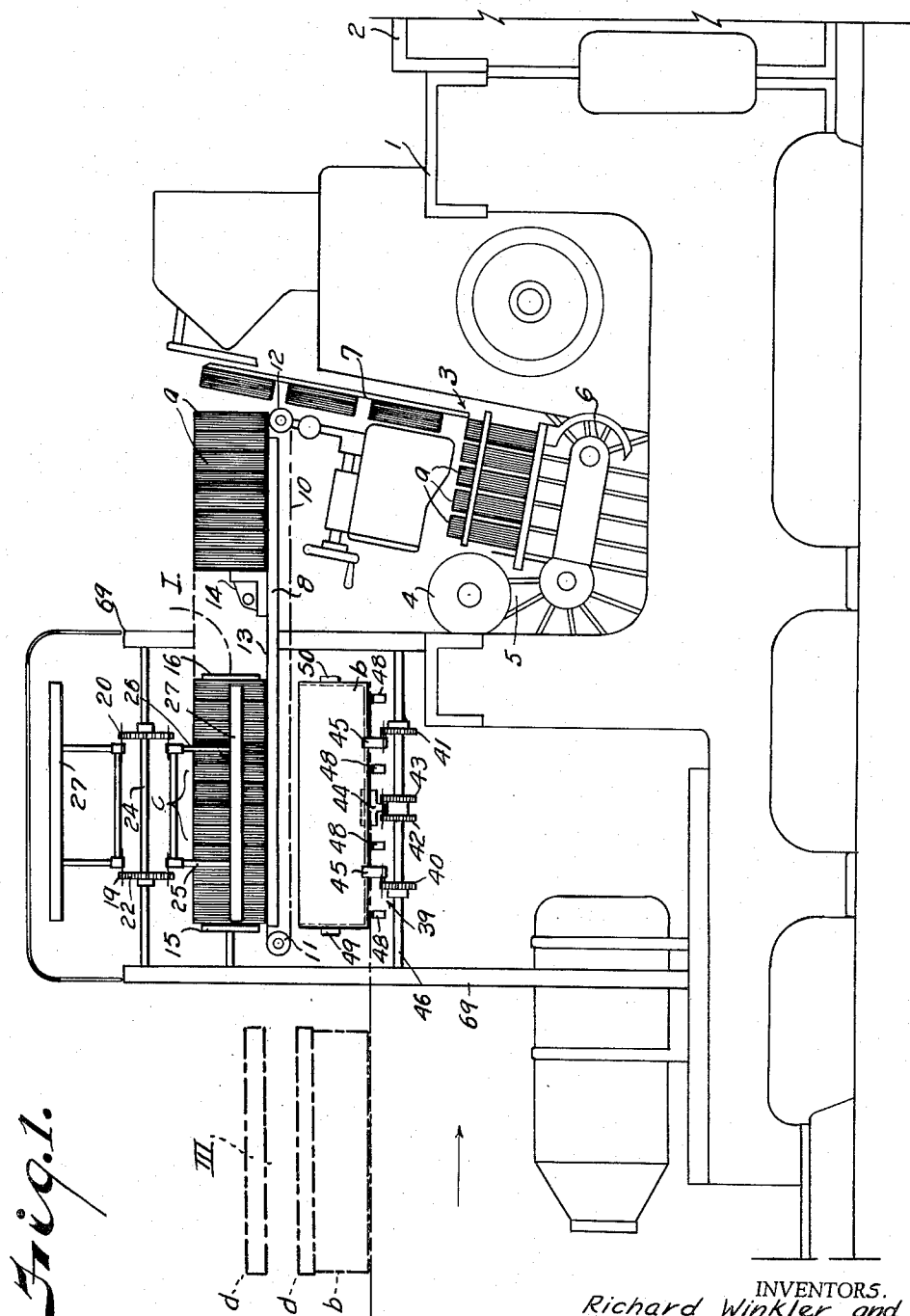


Fig. 1.

INVENTORS.
Richard Winkler and
Kurt Dunnebier
BY
Paul E. Mulleudore

ATTORNEY

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R. WINKLER ET AL

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6 Sheets-Sheet 2

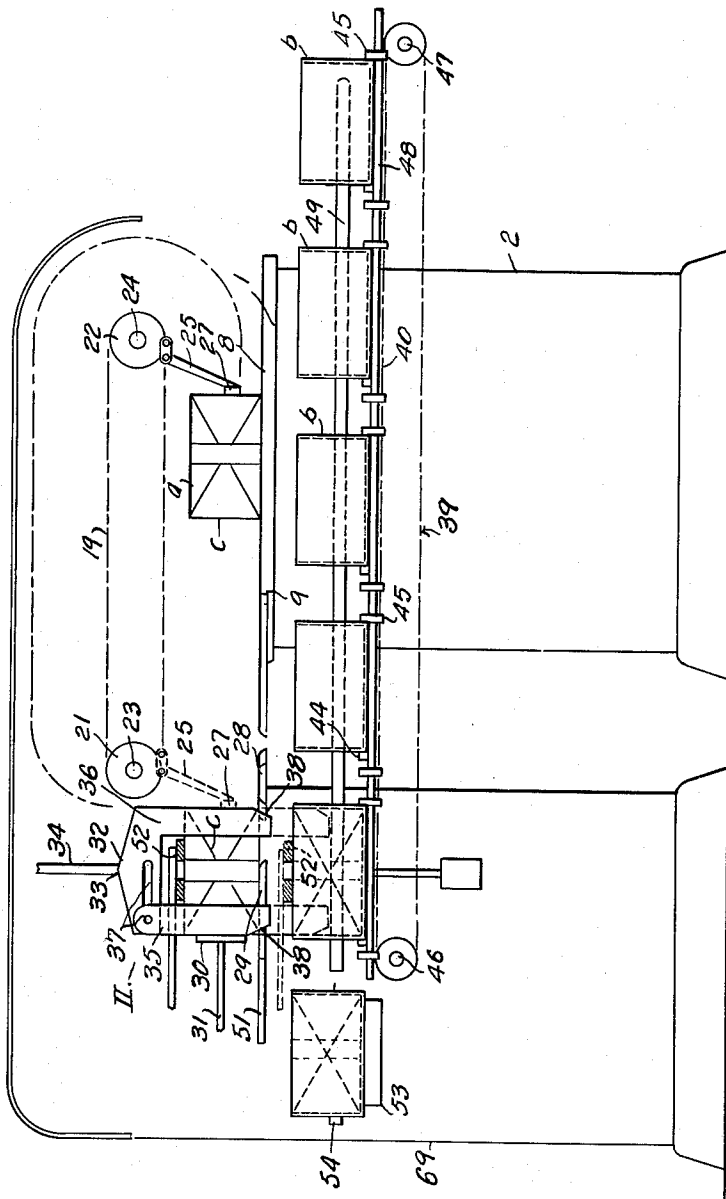


Fig. 2.

INVENTORS.
Richard Winkler and
Kurt Dunnebier
BY
Paul E. Mullendore
ATTORNEY

Aug. 22, 1961

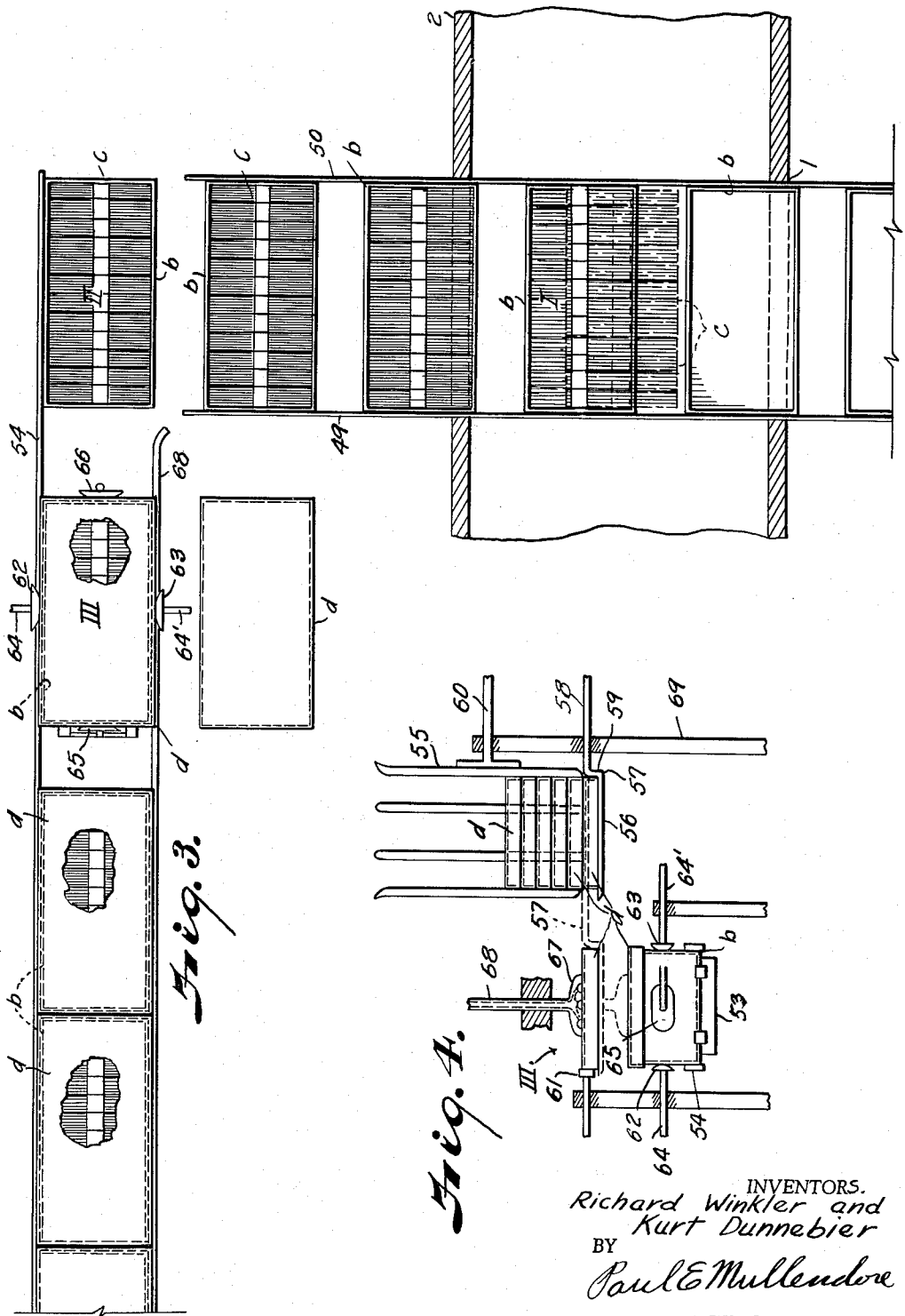
R. WINKLER ET AL

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INVENTORS.
Richard Winkler and
Kurt Dunnebier

BY

Paul E. Mullendore

ATTORNEY

Aug. 22, 1961

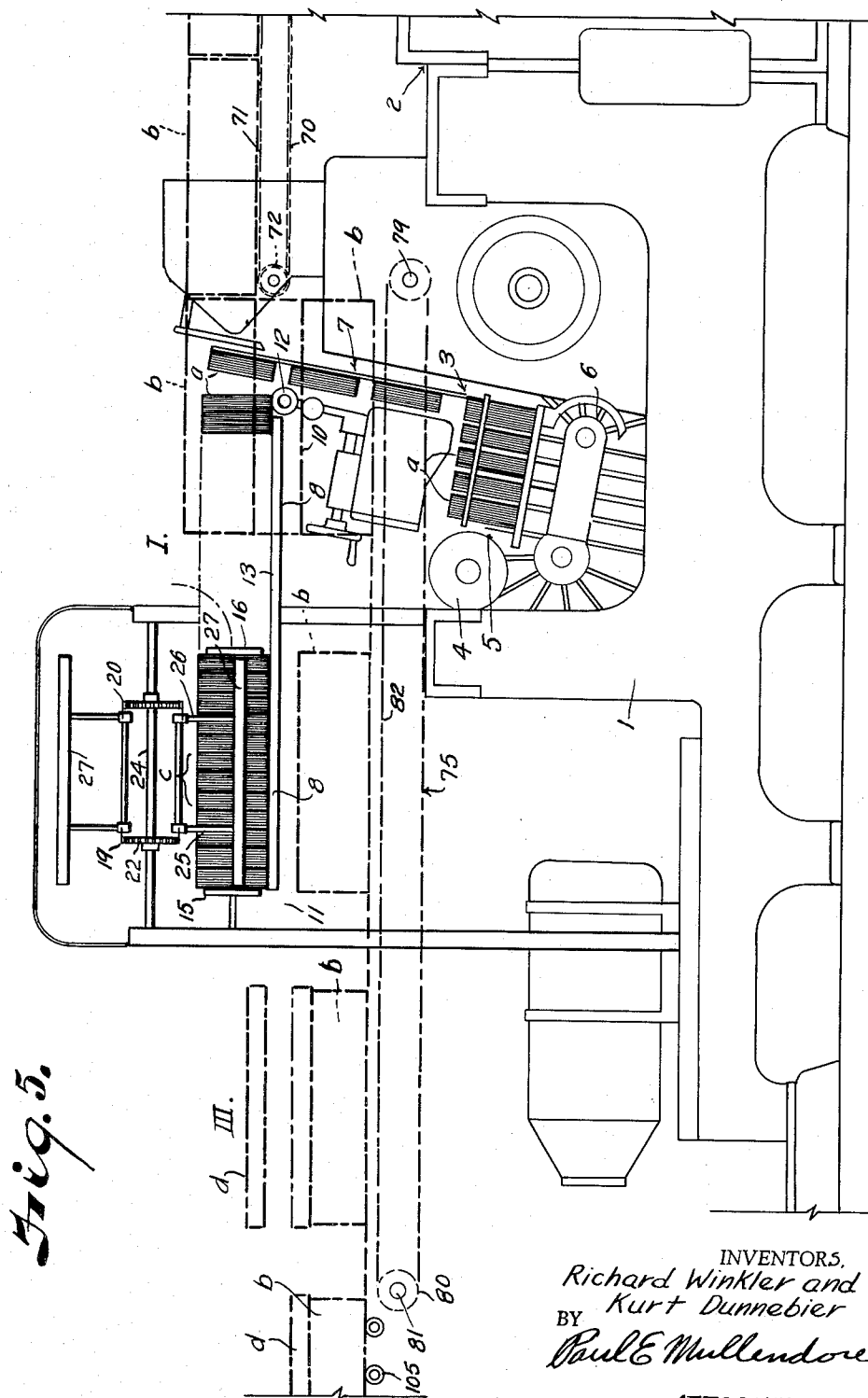
R. WINKLER ET AL

2,996,859

APPARATUS FOR PACKING AND BOXING ENVELOPES

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INVENTORS,
Richard Winkler and
BY Kurt Dunnebie
Paul E. Mullendore

ATTORNEY

Aug. 22, 1961

R. WINKLER ET AL

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Fig. 6.

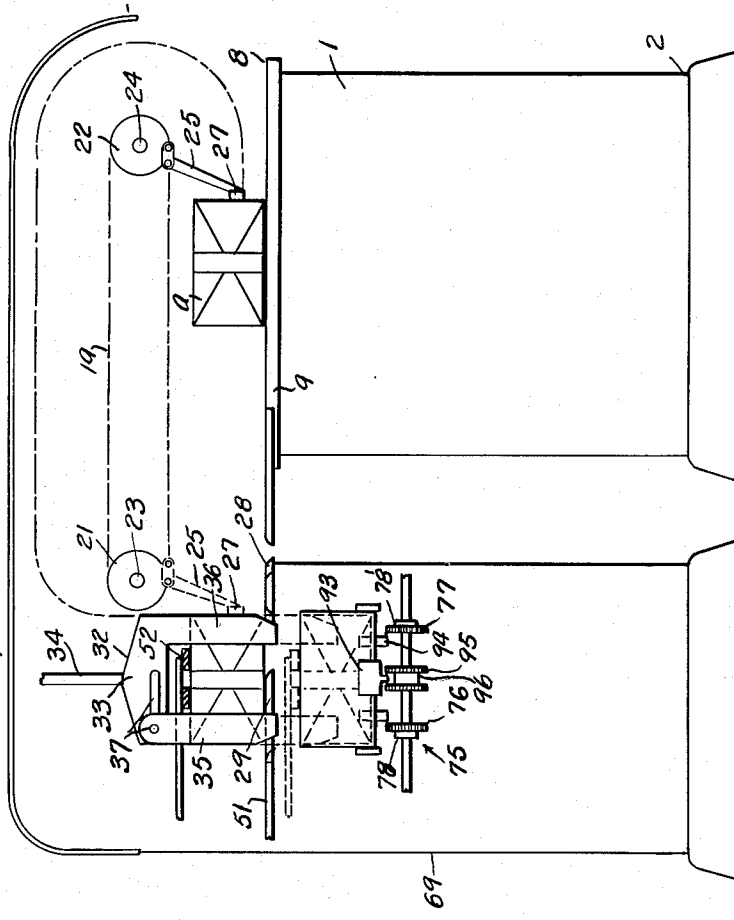
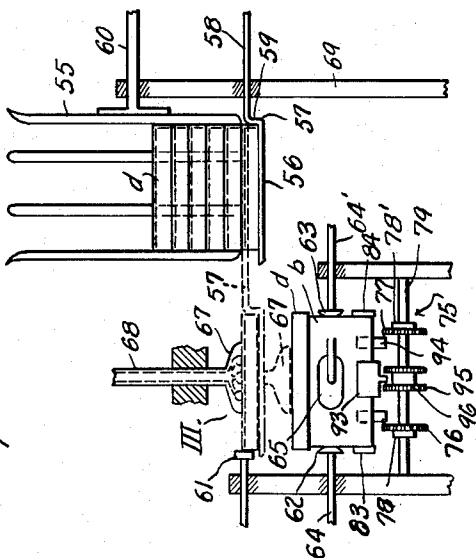


Fig. 9.



INVENTORS.
Richard Winkler and
Kurt Dunnebier
BY
Paul E. Mullendore
ATTORNEY

Aug. 22, 1961

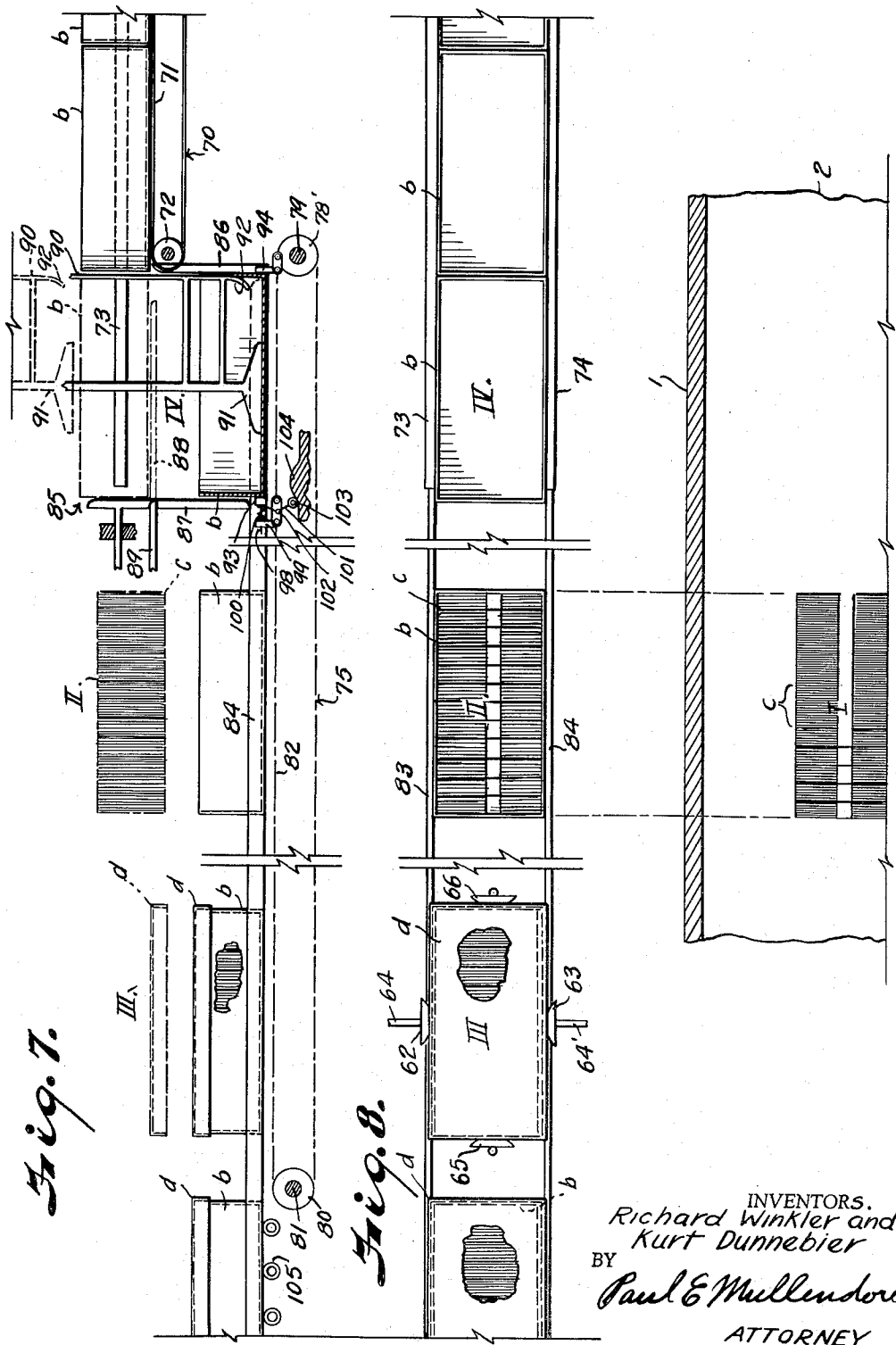
R. WINKLER ET AL

2,996,859

APPARATUS FOR PACKING AND BOXING ENVELOPES

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6 Sheets-Sheet 6



INVENTORS.
Richard Winkler and
Kurt Dunnebie
BY
Paul E. Mullendor
ATTORNEY

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2,996,859

APPARATUS FOR PACKING AND BOXING ENVELOPES

Richard Winkler, Rengsdorf, near Neuwied, and Kurt Dunnebier, Wollendorf, near Neuwied, Germany, assignors to Berkley Machine Company, Kansas City, Mo., a corporation of Missouri

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Claims priority, application Germany Nov. 20, 1957
9 Claims. (Cl. 53—124)

This invention relates to an apparatus for packing and boxing envelopes upon delivery from an envelope making machine.

Prior to the present invention, the operator of an envelope making machine which delivers the envelopes in precounted packs or as banded packages would examine the envelopes for quality, remove the faulty envelopes, pack the envelopes in cartons or boxes, and apply the lids. However, with the recent improvements in envelope making machines and the greatly increased speeds at which such machines can be operated, the operator is no longer physically able to handle all of these operations and to also supply the machine with blanks from which the envelopes are formed.

It is, therefore, a principal object of the present invention to reduce the work load on the operator by providing a mechanical apparatus for handling the boxes, packing the envelopes in the boxes, placing the lids on the boxes, and removing the boxes after packing. The operator is thus relieved of the packaging procedures, so that he has ample time to inspect the completed product and to keep the envelope making machine supplied with blanks.

Other objects of the invention are to provide a packing and boxing apparatus that may be used as an attachment to an existing envelope making machine; to provide packing and boxing mechanisms which are especially adapted to the delivery mechanism of conventional envelope making machines, as well as to the banding mechanism, if the machine is equipped therewith; and to provide a packing and boxing apparatus having the filling and lid closing sections on the side of the envelope machine opposite from the operator, and with the box and lid conveyors extending parallel with the envelope making machine.

In accomplishing these and other objects of the invention, improved structure has been provided, the preferred forms of which are illustrated in the accompanying drawings, wherein:

FIG. 1 is a side view of the delivery end of an envelope making machine which delivers the envelopes in banded packs, and showing the apparatus of the present invention associated therewith.

FIG. 2 is an end view of the apparatus shown in FIG. 1 and looking in the direction of the arrow.

FIG. 3 is a diagrammatic plan view of the apparatus, particularly illustrating the relation of the different operating stations.

FIG. 4 is a fragmentary view showing the mechanism for automatically feeding lids and for placing the same on the boxes after packaging of the envelopes.

FIG. 5 is a side elevational view of the delivery end of an envelope making machine equipped with the modified form of the invention.

FIG. 6 is an end view of the structure shown in FIG. 5 and looking in the direction of the arrow.

FIG. 7 is a diagrammatic side elevational view of the carton handling apparatus of the modified form of the invention.

FIG. 8 is a diagrammatic plan view showing the loca-

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tion of the carton handling mechanism relatively to the envelope making machine.

FIG. 9 is a fragmentary view of the mechanism for supplying the lids and applying the lids to the cartons of the modified form of the invention.

Referring more in detail to the drawings:

1 designates the delivery end of an envelope making machine 2 wherein finished envelopes are delivered to a counting and banding mechanism 3 of the type disclosed in our copending application for patent on Apparatus for Counting and Banding Envelopes and the Like, Serial No. 604,878, now U.S. Patent No. 2,917,884. The finished envelopes are carried from the machine to a rotor 4 for counting and depositing a definite number of finished envelopes in pockets 5 of a conveyor 6 to form bundles or packs "a" that are carried by the conveyor to a banding mechanism 7, where the packs are individually wrapped with a strip or band and discharged onto a rack indicated at 8 and which extends in the longitudinal direction of the machine 1 and along which the packs are moved one after another. The operator of the machine works along one side of the envelope making machine, facing the rack 8, and examines the envelopes and packs for quality. If any faulty packs are found, the operator will remove those packs and allow the acceptable packs to be moved along the rack 8. The station for inspection is indicated by the Roman numeral I in FIG. 3.

As above stated, it was formerly the operator's duty to remove the banded packs of envelopes from the rack 8, place them in a box, and apply a lid to the box, after which the boxes were stacked or carted away. It was also the duty of the operator to move along the operator's side of the machine and replenish and maintain the stack of envelope blanks from which the finished envelopes are made. Recent improvements in envelope making machines have increased the output capacity thereof to such an extent that it is physically impossible for the operator to perform all of these duties. Inspection of the finished envelopes and replenishing the blanks for feeding the machine must be performed by the operator, and to relieve the operator from other duties, we have provided an apparatus by which the cartons or boxes are mechanically conveyed to a packing station II at which a given number of banded packs are automatically inserted into a carton and the carton moved to a station III where the lid is applied.

The apparatus for carrying out the present invention includes a lateral extension 9 at the end of the rack 8, and which extension projects from the side of the envelope making machine opposite the operator's side (see FIG. 3). The envelope packs "a" are conveyed along the rack 8 by an endless belt 10 running over rollers 11 and 12 at the opposite end of the longitudinal portion of rack 8, with a run 13 of the belt extending along the top of the rack. The packs "a" in sufficient number to be deposited in a carton "b" collect on the run 13 of the belt against a stop 14 that moves therewith. When a sufficient number of packs have been grouped against the stop 14 and inspected by the operator, the operator removes the stop 14, whereupon the group "c" of packs "a" may continue on the rack 8 until they are stopped by a transverse end guide 15. The operator will then place the stop 14 on the belt to start collecting a second group of packs. Upon contact with the guide 15, a similar transverse guide 16 comes into position for engaging the opposite end of the group of packs, as shown in FIG. 1, to compress the length of the packs until they are substantially of a length to fit within the lengthwise direction of a carton "b."

The group of packs is then moved laterally along the

lateral extension 9 to the packing station II. This is effected by means of a pair of chains 19 and 20 that operate over pairs of sprockets 21 and 22 on shafts 23 and 24. The shafts 23 and 24 are carried above the level of the rack 8 to permit passage of the group "c" of packs below the lower runs of the chains 19 and 20. Fixed to the chains 19 and 20 are arms 25 and 26 carrying pusher bars 27 having a length to move freely between the side guides 15 and 16 and push all of the packs in the group "c" together along the lateral extension 9 and onto a fixed plate 28 that cooperates with a slide or trap 29 (FIG. 2) to support the group "c" of packs when they reach the packing station II.

When the group of packs is properly positioned in the station II, they engage a stop 30 (FIG. 2) which is suitably carried by rods 31. The rods 31 are adjustably supported to position the stop 30 according to the length of the envelopes. When the packs of envelopes reach the end of their travel, they are detained by the slide 29 until an empty carton or box "b" is in position thereunder. Positioned over the station II is a plunger 32 having spaced apart sides 33 arranged to be reciprocated by a vertical rod 34 so that the sides 33 engage the endmost packs of the group of packs, to hold the length of the group "c" and assure entrance into an empty carton "b," as later described.

The sides 33 include two parts 35 and 36 connected with the plunger head 32 by bolt and slot connections 37 to conform with the inside width of a carton "b." The sides of the plunger head are also adjustably carried from the rod 34 to conform to the inside length of the carton "b." The parts 35 and 36 form depending guards that are adapted to fit into the corners of the carton "b." The lower ends of the members 35 and 36 are beveled as indicated at 38 to assure entry thereof into the open top of a carton.

The empty cartons are carried by a transverse conveyor 39 including outer endless chains 40 and 41 and a pair of closely spaced intermediate chains 42 and 43 (see FIG. 1). Each of the inner chains 42 and 43 is equipped with spaced apart strikers 44 to engage in front of each carton and the chains 40 and 41 have strikers 45 that engage behind each carton "b" to push the cartons in spaced apart timed relation into the packing station II. The sprockets carrying the conveyor chains 40—41 and 42—43 are carried on shafts 46 and 47. The cartons "b" slide upon guides 48 and between side guides 49 and 50.

When a group "c" of packs is in position over the slide 29, the slide 29 is retracted by means of a rod 51 and the plunger 32 descends to carry beveled ends 38 of the parts 35 and 36 thereof into the corners of one of the cartons "b." However, just prior to movement of the plunger 32, a stripper 52 moves horizontally into position between the plunger head 32 and the top sides of the group "c" of packs, so that when the slide 29 is retracted, the stripper 52 descends to move the group of packs into the empty carton "b." After the stripper 52 has completely pushed the packs into the empty carton, it returns to its original position, followed by the plunger head 32, ready to receive the next group of packs that are being advanced by the pusher bar 27. The filled carton "b" is then advanced from off the end of the chain conveyor 39 and onto a longitudinal rack 53, similar to the rack 8, where the filled carton is advanced to the lid applying station III. The packs of envelopes are stopped in proper position on the rack 53 by engagement thereof with a longitudinal guide or stop 54 (FIGS. 2, 3 and 4).

The lid applying mechanism is best shown in FIG. 4. The supply of lids "d" is stacked between vertical guides 55 for support on an upper plate portion 56 of a slide 57. The slide 57 also includes an offset plate portion 58, with the offset 59 providing an abutment engaging the bottommost lid "d" that is supported on the plate portion 56 of the slide 57 when the slide is in retracted position.

The stack support is carried at a level above the path of travel of the filled cartons "b" on an arm 60, so that the slide 57 will carry the lowermost lid "d" over the top of the filled carton "b" then contained in the station III by contact thereof with the offset 59. The lid will be stopped in proper position over the carton by a stop 61. During movement of the slide 57, the plate portion 58 is in position to support the stack of lids. The filled carton will be momentarily stopped in the station III and the sides compressed by side pushers 62 and 63 which are reciprocally carried in the frame on rods 64 and 64'. The ends of the carton are also engaged by end pushers 65 and 66 that swing into position for engaging the ends of the carton. The pushers thus described push the walls of the carton slightly inward at the top thereof, to assure passage of the depending sides of the lid of the carton, as now to be described.

The lid, when engaged by the stop 61, is below a suction head 67 that is carried on a tubular shaft 68 and through which suction is drawn to grip the lid thereto. The suction head 67 then supports the lid while the slide 57 is retracted, after which the suction head 67 carries the lid downwardly onto the carton, so that the sides thereof telescope the sides of the carton. When the lid is in place, the vacuum will be suspended and the suction head 67 will be returned to its original position, after which the side and end pushers 62—63 and 65—66 are retracted and the filled carton, with the lid thereon, is carried away by the conveyor that forms a part of the rack 53. A guide 68 cooperates with the guide 54 to keep the packed cartons therebetween.

The drawings for simplicity are more or less diagrammatic and have been simplified by omitting parts of the apparatus which may be positioned in the background, and separate figures are used to illustrate those parts. It is to be understood that the mechanisms described are all supported on a frame 69 which may be separate from the framework of the envelope machine 2. The driving connections have also been omitted for simplicity, since suitable driving mechanisms are well known to those skilled in the art of envelope machinery.

In the form of the invention above described, the cartons may be placed upon the conveyor 39 by the operator, since the conveyor extends from the operator's side of the envelope making machine.

In the modified form of the invention, shown in FIGS. 5 to 9, inclusive, the feed of the cartons is mechanical. In this form of the invention, the carton feed, packing and lid applying stations may run parallel with the envelope making machine on the side opposite the operator. The mechanisms for inspecting, conveying and covering the cartons are identical to the corresponding mechanisms of the first described form of the invention, and the previous description and reference characters are applicable to those parts of the modified form illustrated in FIGS. 5 to 9, inclusive. The difference is in the direction of the carton feed and that the carton feed takes place automatically.

The carton conveyor 70 in this form of the invention includes an endless belt 71 operating over a roller 72 for carrying the cartons "b" from a remote source and between guides 73 and 74 alongside the envelope making machine at a level above a conveyor 75. The conveyor 75 includes two spaced apart outer chains 76 and 77 (FIGS. 6 and 7) operating over sprockets 78 and 78' on a shaft 79 that is positioned below the roller 72. The chains also operate over sprockets 80 on a shaft 81. The sprockets are arranged so that the upper runs 82 of the chains are in position to move the cartons between guides 83 and 84 located below the level of the rack 8 and the lateral extension 9 thereof to permit the empty cartons "b" to be carried into position for receiving the gathered packs of envelopes "c" in the station II, in exactly the same manner and with the same apparatus as employed in the preferred form of the invention.

Located at the terminal end of the conveyor 70 and over the runs 82 of the conveyor 75 is a carton transfer station IV wherein cartons are transferred from the conveyor 70 to the conveyor 75 by a mechanism 85. The mechanism 85 includes fixed vertical guides 86 adjacent the roller 72 and which cooperate with movable stop guides 87 that are spaced therefrom a distance to accommodate the length of a carton therebetween and to guide the carton when being transferred from the conveyor 70 to the conveyor 75. Movable horizontally into the space between the guides at the level of the upper run of the conveyor 70 is a slide 88 that is adapted to be reciprocated by a rod 89. The slide 88 is operated in timed relation with a vertically reciprocal gate 90 and a suction head 91 that is connected therewith. After a carton has passed onto the slide, the gate 90 moves downwardly therein and across the path of a following carton on the conveyor 70. The suction head 91 also moves with the gate and engages the bottom of a carton supported by the slide 88 to support and hold the carton while the slide 88 is being retracted. After retraction of the slide 88, the suction head continues its movement to carry the carton onto the lower conveyor 75. During this movement, the following carton is held back by the gate 90. The suction head 91 and gate 90 are then raised to their original position. As soon as the suction head 91 has returned above the level of the slide 88, the slide returns to its original position, shown in dotted lines, FIG. 7, to allow the following carton to be moved onto the slide as soon as the lower end 92 of the gate clears the end of the following carton. The carton, when positioned on the conveyor 75, is moved therealong between spaced apart dogs 93 and 94 that are carried by the upper run of central chains 95 operating over pairs of sprockets 96 on the shafts 79 and 81.

The dogs 94 are fixed rigidly to the links of the outer chains for engaging the rear end of the carton, but the dog 93 is carried on a stem 98 that is reciprocable in a lug 99 that is connected with links of the central chains. The dog 93 is adapted to press the carton under action of a spring 100 sleeved on the stem 98 and having one end engaging the lug 99 and the other end engaging a lever 101 that is pivoted to the links of the central chains as at 102. The free end of the lever carries a roller 103 that makes contact with a fixed cam 104.

When the roller 103 passes over the lobe 104 of the cam, the spring 100 is compressed to allow the stem 98 of the dog 93 to slide retractively in the lug 99, so that the carton "b" can be moved into position between the dogs 93 and 94, but as soon as the roller 103 passes the lobe 104 of the cam, the spring 100 is freed to press the dog 93 against the carton and the carton against the dogs 94, whereby the carton is gripped between the dogs and carried along with the chains of the conveyor 75. When the carton is advanced to station II, the pack "c" of envelopes is placed therein in exactly the same manner as described in connection with the first form of the invention. When the packs "c" are in position in the carton, the carton continues to the station III, where the lid is applied, after which the carton continues its movement onto a roller type offtake conveyor 105. The dog 93 is released from the front of the carton as the dog is carried around the axis of the shaft 81, but the dogs 94 retain their position to push the carton onto the rollers of the offtake conveyor.

In using the apparatus of the preferred form of the invention, the operator of the envelope making machine takes a station alongside the delivery end thereof to inspect the packs of envelopes as they gather on the rack 8. Any defective packs may be removed, preferably ahead of the stop 14, so that a sufficient number of packs can accumulate thereon to fill a carton before removal and replacement of the stop 14. On removal of the stop 14, the gathered packs pass into position to be engaged by one of the pushers 27, to carry the gathered group of packs along the lateral extension 9 and discharge them across the plate 28 onto the slide 29. The gathered

packs are stopped in proper position by the stop 30. The operator may supply empty cartons "b" to the conveyor 39, so that they are engaged between the lugs 44 and 45 and carried into position below the slide 29. The slide 29 then retracts and the stripper 52 and plunger head 32 come into play to push and guide the gathered packs of envelopes into the carton waiting to receive them. When the packs are in place in the carton, the plunger head and stripper 52 are retracted to their original positions, after which the slide 29 returns for receiving the following group "c" of packs.

The carton with the packs therein is advanced to station III, where the pushers 65-66 and 62-63 move into position to press the walls of the carton inwardly to facilitate application of the lid "d." The lid "d" is moved into position by the slide 57 and engaged by the suction head 67 which carries the lid into position for closing the carton. After application of the lid, the pushers 62-63 and 65-66 are retracted and the filled carton with the lid thereon is discharged.

The form of invention shown in FIGS. 5 to 9, inclusive, operates in the manner just described, with the exception that the cartons "b" are automatically delivered by the conveyor 70 onto the slide 88 (FIG. 7). The suction head 91 then moves into the open top of the carton, so that the suction head 91 engages the bottom thereof to support the carton upon withdrawal of the slide 88. After withdrawal of the slide 88, the suction head 91 continues its downward movement to carry the carton onto the upper runs of the chains comprising the conveyor 75, where it is gripped between the dogs 93, and 94. The gate 90, being connected with the suction head, moves downwardly therewith to stop the following carton on the conveyor belt 70 until the suction head 91 is retracted and the slide 88 is again in position to support the following carton. The empty carton is then advanced by the conveyor 75 to the station II where the carton "b" is packed, after which it is advanced to the station III where the lid "d" is applied, and after application of the lid "d," the lug 94 continues the movement of the carton onto the offtake conveyor 105, the spring pressed dog 93 having been withdrawn from the front of the carton incidental to its movement around the axis of the shaft 81.

From the foregoing, it is obvious that we have provided a simple apparatus for automatically boxing packs of envelopes and applying lids to the packed cartons, so as to relieve the work load on the operator of the envelope making machine.

What we claim and desire to secure by Letters Patent is:

1. In a machine for manufacture of envelopes and the like, a delivery table whereon the envelopes are delivered on edge in banded packs for inspection by the operator of the machine, means for gathering the packs upon the delivery table in face to face contact and in quantity for filling a carton, means for conveying empty cartons from a source of supply to the level of the delivery table, a movable support for receiving the foremost empty carton from the carton conveying means, a transfer conveyor below said support and extending through a packing station below the level of the delivery table, a suction head, means supporting the suction head above said movable support for reciprocation into the carton to seize the bottom of the carton for holding the carton during movement of the support out of carton-supporting position and to deposit the carton onto the transfer conveyor to carry the empty carton into the packing station, means for conveying the gathered packs from said table to a position over the packing station, guide means acting on ends of the gathered packs at the sides of said conveying means to compress the packs to a length less than the length of the carton in said packing station, means for moving the gathered packs as a unit into the carton while maintaining compression of the packs to leave the packs for self expansion within the carton, and means for conveying the filled carton from the packing station.

2. In a machine for manufacture of envelopes and the like, a delivery table whereon the envelopes are delivered on edge in banded packs for inspection by the operator of the machine, means for gathering the packs upon the delivery table in face to face contact and in quantity for filling a carton, means for conveying empty cartons from a source of supply to the level of the delivery table, a retractable slide for receiving the foremost empty carton from the carton conveying means, a transfer conveyor below the slide and extending through a packing station below the delivery table, a suction head, means supporting the suction head above the retractable slide for reciprocation into the carton to seize the bottom of the carton for holding the carton during retraction of the slide and to deposit the carton onto the transfer conveyor to carry the empty carton into the packing station, means for conveying the gathered packs from said table to a position over the empty carton in the packing station, fixed and movable guides acting respectively upon ends of the gathered packs to compress the packs to a length less than the length of the carton, a reciprocable plunger having side members in registry with the guides to descend over the gathered packs for maintaining compression on the packs while the plunger deposits the gathered packs as a unit into the empty carton, means for stripping the gathered packs from between the side members upon retraction of the plunger to leave the packs for self expansion in the carton, and means for conveying the filled carton from the packing station.

3. In a machine for manufacture of envelopes and the like, a delivery table whereon the envelopes are delivered on edge in banded packs for inspection by the operator of the machine, means for gathering the packs upon the delivery table in a quantity for filling a carton, means for conveying empty cartons from a source of supply to the level of the delivery table, a retractable slide for receiving the foremost empty carton from the carton conveying means, a transfer conveyor below the slide and extending through a packing station below the delivery table, a suction head, means supporting the suction head above the retractable slide for reciprocation into the carton to seize the bottom of the carton for holding the carton during retraction of the slide and to deposit the carton onto the transfer conveyor to carry the empty carton into the packing station, a retractable slide reciprocable over the packing station, means for conveying the gathered packs from said table onto the last named slide when said slide is over the empty carton in the packing station, fixed and movable guides acting on ends of the gathered packs to compress the packs to a length less than the length of the carton in said packing station, a reciprocable plunger over the packing station for depositing the gathered packs upon retraction of the said last named slide for depositing the gathered packs as a unit into the empty carton while maintaining compression of the packs, means for stripping the gathered packs from between the side members of the plunger when the plunger is lifted from the carton to leave the packs in the carton for self expansion in the carton, and means for conveying the filled carton from the packing station.

4. In a machine for manufacture of envelopes and the like, a delivery table whereon envelopes are delivered on edge in banded packs for inspection by the operator of the machine, means for gathering the packs upon the delivery table in face to face contact in a quantity for filling a carton, means for conveying empty cartons from a source of supply to the level of the delivery table, a retractable slide for receiving the foremost empty carton from the carton conveying means, a transfer conveyor below the slide and extending through a packing station below the delivery table, a suction head, means supporting the suction head above the slide for reciprocation into the carton to seize the bottom of the carton for holding the carton during retraction of the slide, a gate reciprocable with the suction head across the carton conveying means to hold back the following cartons, said suc-

tion head being adapted to deposit the carton on the transfer conveyor to carry the empty carton to the packing station, a retractable slide reciprocable over the packing station, means for conveying the gathered packs from said table onto the slide when the slide is over the empty carton in the packing station, guide means acting on ends of the gathered packs at the sides of the conveying means to compress the packs to a length less than the length of the carton in said packing station, a plunger reciprocable in timed relation with said last named slide and having side members in registry with the guide means to descend over the gathered pack upon retraction of the slide for pushing the gathered packs as a unit into the empty carton while maintaining compression of the packs, means for stripping the gathered packs from between the side members of the plunger when the plunger is lifted from the carton to leave the packs for self expansion in the carton, and means for conveying the filled carton from the packing station.

5. In a machine for the manufacture of envelopes and the like, means for packaging the envelopes into cartons, including a delivery table whereon the envelopes are delivered on edge, means for gathering the envelopes into a group upon the delivery table in face to face contact and in quantity to fill a carton, a conveyor movable along said table for moving the group of envelopes from said gathering position, a fixed guide extending transversely of the conveyor and in a position above the table to stop the group of envelopes, a movable transverse guide arranged to move into position at the rear of the group after passage of the group of envelopes to cooperate with the fixed guide for holding slidably the group of envelopes therebetween and provide a transverse passageway leading to a packing station, means for conveying empty cartons to the packing station below said transverse passageway, a reciprocable support at the packing station to support the group of envelopes thereon, a reciprocable plunger having spaced apart side members in alignment with the guides to enter the carton upon movement of the plunger for continuing the passageway into the carton, means for advancing the group of envelopes in said passageway between said guides and between said spaced apart side members of the plunger and onto the reciprocable support, a stripper movable between said guide members of the plunger upon retraction of said reciprocable support to move slidably the group of envelopes between said side members and into the empty carton, and means for removing the filled carton from the packing station upon retraction of the ends of said side members of the plunger.

6. In a machine for the manufacture of envelopes and the like, means for packaging the envelopes, including a delivery table whereon envelopes are delivered on edge, means for gathering the envelopes into a group upon the delivery table in face to face contact and in quantity to fill a carton, a conveyor movable along said table for moving the group of envelopes from said gathering position, a fixed guide extending transversely of the conveyor and in a position above the table to engage the foremost envelope of the group of envelopes, a movable transverse guide arranged to move into position after passage of the group of envelopes to cooperate with the fixed guide for holding the group of envelopes therebetween and provide a transverse passageway leading to a packing station, means for conveying empty cartons to the packing station below the level of said transverse passageway, a reciprocable support at the end of said passageway to support the group of envelopes thereon, a reciprocable plunger having spaced apart side members at the ends of the guides for holding the length of the group of envelopes and having ends projecting below the reciprocable support to enter the carton upon movement of the plunger and provide vertical guides for the group of envelopes into the carton, means for advancing the group of envelopes in said passageway between said guides and between said spaced

apart side members of the plunger and onto the reciprocable support, a stripper movable between said guide members upon retraction of said reciprocable support to move the group of envelopes between said side members and into the empty carton, and means for removing the filled carton from the packing station upon retraction of the ends of said side members of the plunger.

7. In a machine for the manufacture of envelopes and the like, means for packaging the envelopes, including a delivery table whereon the envelopes are delivered on edge in banded packs, means for gathering the packs of envelopes into a group upon the delivery table with the packs in face to face contact and in quantity to fill a carton, a conveyor movable along the table for moving the group of banded envelopes from said gathering position, a fixed guide extending transversely of the conveyor and in a position above the table to engage the foremost pack of the group, a movable transverse guide arranged to move into position after passage of the group of banded envelopes to cooperate with the fixed guide for holding the group of banded packs of envelopes therebetween and provide a transverse passageway leading to a packing station, means for conveying empty cartons to the packing station below the level of said transverse passageway, a reciprocable support at the end of the transverse passageway to support the group of banded packs of envelopes thereon, a reciprocable plunger having spaced apart side members at the ends of the guides for holding the length of the group of packs and having ends projecting below the reciprocable support to enter the carton upon movement of the plunger and provide guides for the group of packs into the carton, means for advancing the group of packs in said passageway between said guides and between said spaced apart side members of the plunger and onto the reciprocable support, a stripper movable between said guide members upon retraction of said reciprocable support to move the group of packs between said side members and into the empty carton, and means for removing the filled carton from the packing station upon retraction of the ends of said side members of the plunger.

8. A mechanism for packaging envelopes in a carton, including a table whereon the envelopes are delivered on edge, means for gathering the envelopes in a group with the envelopes in face to face contact and in a quantity for filling a carton, means for conveying an empty carton from a source of supply to the level of the delivery table, a movable support for receiving the empty carton from the carton conveying means, a transfer conveyor below said support and extending through a packing station below the delivery table, a carton gripping head, means supporting the carton gripping head above said movable support for reciprocation into a position to seize the carton for holding the carton during movement of the support

out of carton-supporting position and to deposit the carton onto the delivery conveyor to carry the empty carton into the packing station, means for conveying the group of envelopes from said table to a position over the packing station, guide means acting on ends of the gathered packs at the sides of said conveying means to hold the length of the group of envelopes to a length less than the length of the carton in said packing station, means for moving the gathered envelopes as a unit into the carton while maintaining guided movement thereof into the carton, and means for conveying the filled carton from the packing station.

9. A machine for packing envelopes in a carton, including a delivery table whereon the envelopes are delivered on edge, means for gathering the envelopes on the delivery table in a group with the envelopes in face to face contact and in a quantity for filling a carton, means for conveying an empty carton from a source of supply to substantially the level of the delivery table, a retractable slide for receiving the empty carton from the carton conveying means, a transfer conveyor below the slide and extending through a packing station, a carton gripping head, means supporting the carton gripping head above said retractable slide for reciprocation into a position to seize the carton for holding the carton during movement of the slide out of carton-supporting position and to deposit the carton onto the transfer conveyor to carry the empty carton into the packing station, a retractable slide reciprocable into the packing station, means for conveying the group of gathered envelopes from said table onto the last named slide when said slide is over the empty carton in the packing station, fixed guides acting on ends of the group of envelopes to hold the length of the group of envelopes to a size less than the length of the carton in said packing station, a reciprocable plunger over the packing station and having side members slidably movable over the gathered envelopes upon the last named slide for providing guides for guiding the envelopes as a unit into the empty carton upon retraction of the last named slide, means for moving the group of envelopes between the side members of the plunger and to leave the envelopes in the carton upon lifting of the side members from the carton, and means for conveying the filled carton from the packing station.

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