April 16, 1957 F. H. BELLOWS 2,788,627

MACHINE FOR FACILITATING INSERTION OF ENCLOSURES IN ENVELOPES

Filed Oct. 30, 1953 3 Sheets-Sheet 1

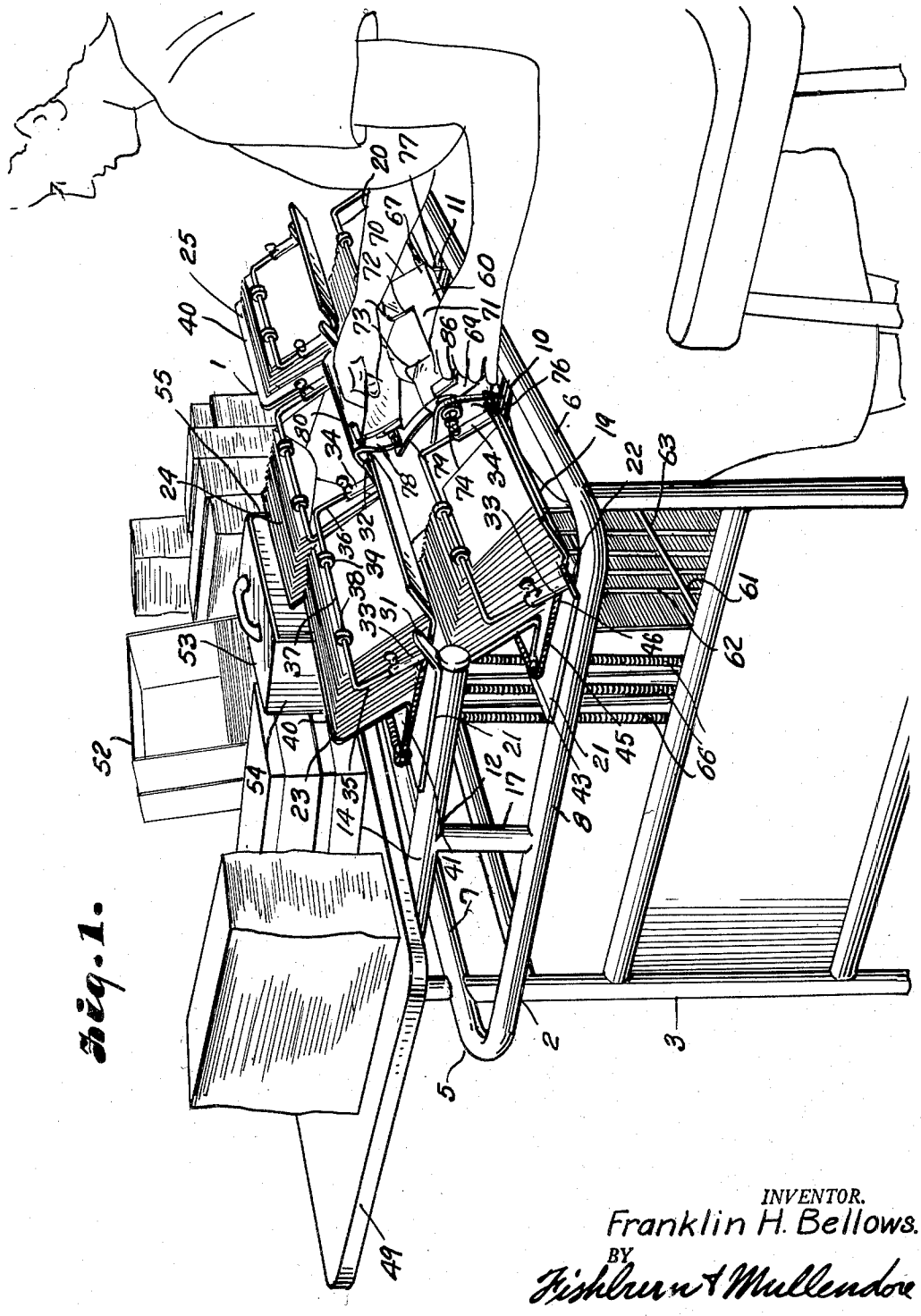


Fig. 1.

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Fig. 2.

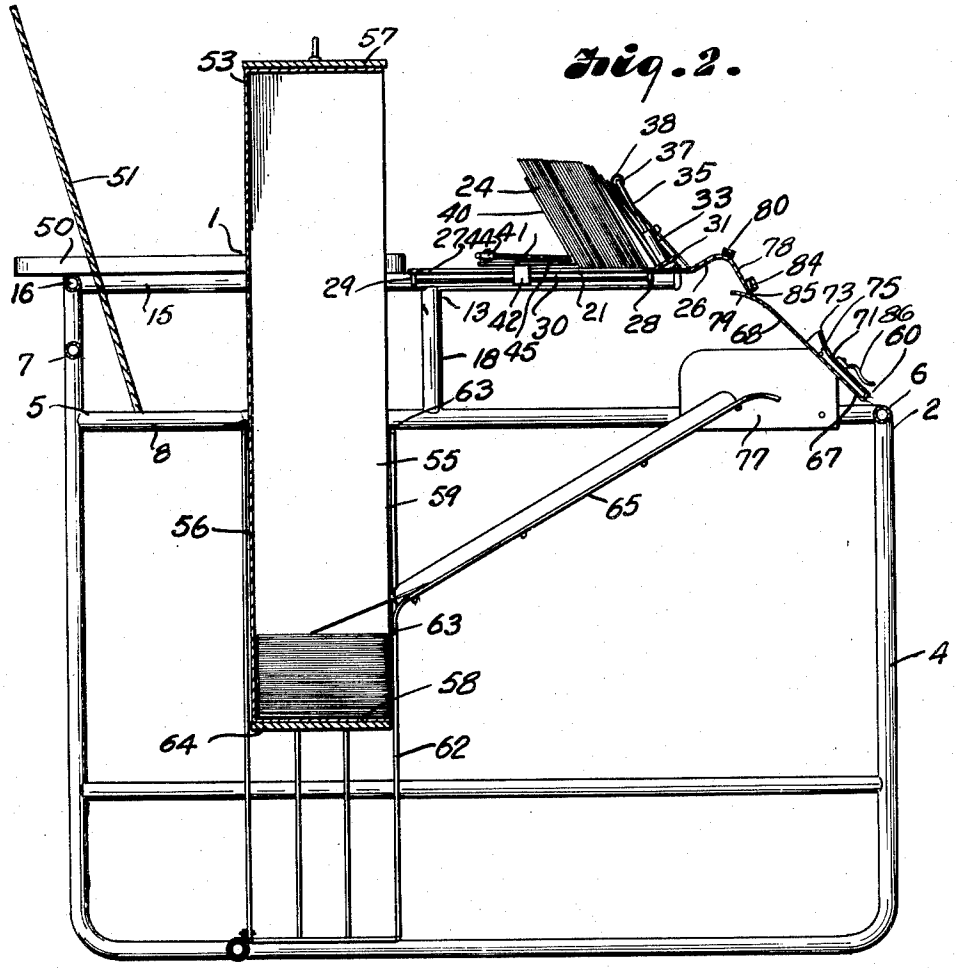
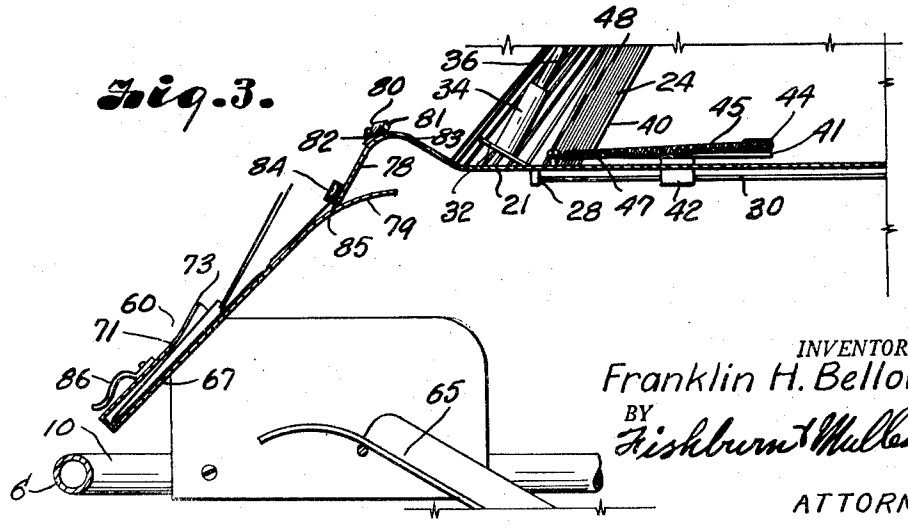


Fig. 3.



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Fig. 4.

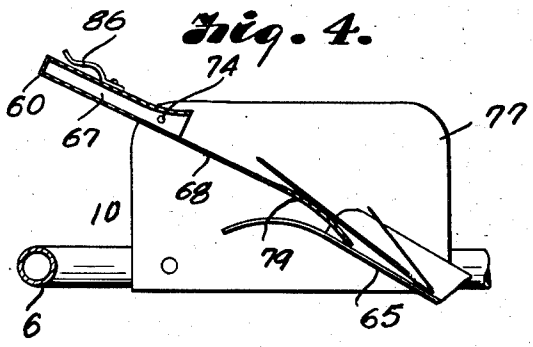


Fig. 5.

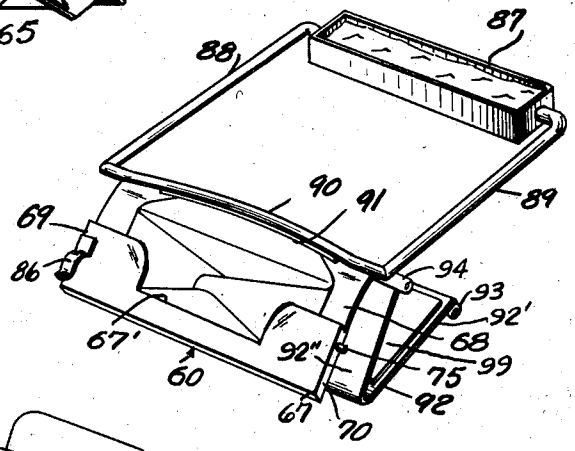


Fig. 6.

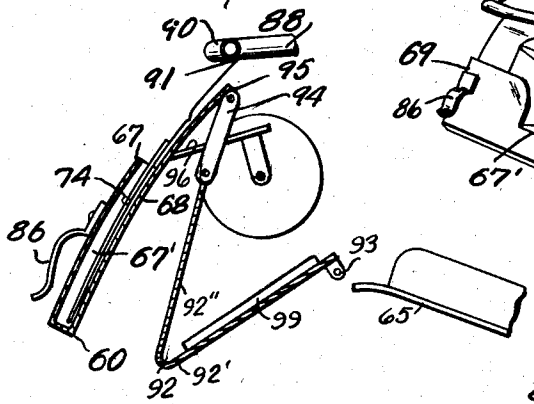


Fig. 7.

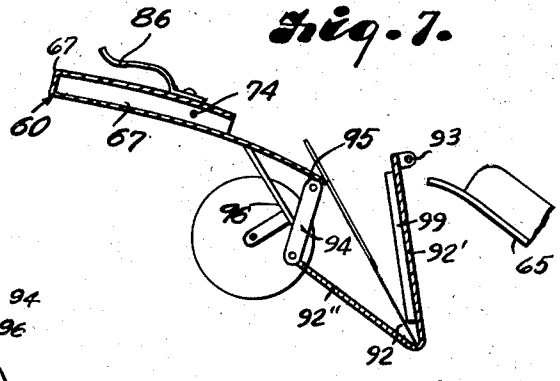
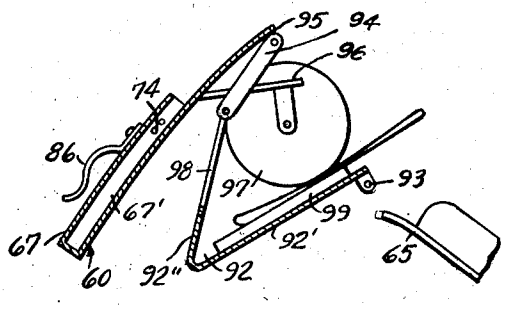


Fig. 8.



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MACHINE FOR FACILITATING INSERTION OF ENCLOSURES IN ENVELOPES

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Application October 30, 1953, Serial No. 389,446

10 Claims. (Cl. 53—390)

This invention relates to a manually operable machine for facilitating the assembling and insertion of enclosures into envelopes for mailing, for example in commercial advertising by mail.

The principal object of the invention is to devise a semi-automatic device of this character by which the number of assembled mailing pieces can be greatly increased over the number that can usually be accomplished by hand operation.

Other objects of the invention are to provide a machine with a support for a box of empty envelopes that may be pre-addressed in accordance with a mailing list and from which the envelopes are removed in order, filled with enclosures and delivered into a stacking box thereby retaining the filled envelopes in the order of the mailing list; to provide spring loaded means for supporting the stacking box whereby the stacked envelopes automatically move into a cage portion of the machine as the box is filled, thereby keeping the filled envelopes in orderly arrangement for convenient return to the empty carton from which the envelopes were originally removed; to provide the machine with a plurality of racks from which the enclosures are readily and individually removed when gathering and assembling them for enclosure in a mailing envelope; to provide a machine with an assembling unit for facilitating opening of the empty envelope when placed therein, ready to receive the gathered enclosures and to discharge the filled envelope into the stacking box; and when desired, to provide the assembling unit with means for moistening and effecting a pressure seal of the closure flaps of the envelopes.

It is also an object of the invention to provide a semi-automatic gathering and assembling machine that is of relatively simple and inexpensive construction and which permits an operator to gather and assemble the various enclosures with a minimum of effort.

In accomplishing these and other objects of the invention hereinafter pointed out, I have provided improved structure, the preferred form of which is illustrated in the accompanying drawings wherein:

Fig. 1 is a perspective view of a machine constructed in accordance with the present invention and which is shown in use to better illustrate the assembly operations.

Fig. 2 is a longitudinal section through the machine.

Fig. 3 is an enlarged section through the assembling unit showing the method of drawing an empty envelope thereinto for opening the closure flap.

Fig. 4 is a similar section showing discharge of the filled envelope from the assembling unit.

Fig. 5 is a perspective view showing a gum moistening mechanism in association with the assembling unit when gummed envelopes are used.

Figs. 6, 7, and 8 are diagrammatical views showing operation of the moistening pressure sealing mechanism.

Referring more in detail to the drawings:

1 designates a machine constructed in accordance with the present invention which includes a table-like frame

2 which may be formed of tubular material cut and shaped to provide side legs 3 and 4, carrying a substantially open rectangular table top 5 including front and rear rails 6 and 7 that are connected with the upper ends of the side legs and which are connected at the ends by side rails 8 and 9. Also connecting the front and rear rails are spaced apart intermediate rails 10 and 11.

Supported on the side and intermediate rails of the main frame are upper frame sections 12 and 13, each having side rails 14 and 15 interconnected by a back rail 16. The side rails 14 and 15 are shorter in length than the side rails 8 and 9 and have forwardly projecting ends supported from the side and intermediate rails by posts 17 and 18. The back portion of the frame sections 12 and 13 is supported by upward continuations of the rear legs of the main section of the frame.

Supported by the side and intermediate rails 8—9 and 10—11 at the respective sides of the machine and spaced rearwardly from the front rail 6 are racks 19 and 20. Each rack includes a horizontal plate 21 that is preferably removably attached to the side and intermediate rails by spring clips 22. Similarly supported at the upper level of the side rails 14 and 15 of the upper sections 12 and 13 of the frame, are similar racks 23, 24 and 25. The plate 21 of each rack has a forwardly projecting upwardly curved front portion 26 for a purpose to be later described. The plates each have central slots 27 extending in the fore and aft action of the machine, and projecting downwardly from the under side of each plate at the ends of the slots 27 are ears 28 and 29 carrying a guide rod 30. Formed on the end of each plate 21 at opposite sides of the upturned front portions 26, are upwardly inclined ears 31 and 32 carrying sockets 33 and 34 in which are adjustably engaged legs 35 and 36 of a transverse bar 37. The bar 37 mounts rollers 38 and 39, that engage the front pieces of stacks of inserts that are placed on the respective plates. The transverse bars are adjustably retained in a horizontal position relative to the size of the inserts by set screws 39 that are threaded through the wall of the sockets 33 and 34 to frictionally engage with the legs 35 and 36. Movably carried above each plate is a back rest 40, which inclines rearwardly substantially in accordance with the inclination of the sockets 33 and 34. Each back rest includes a rearwardly extending flange portion 41 along its lower edge, and depending from the under-side thereof is a lug 42 that is slidably mounted on a respective guide rod 30. Rotatably mounted at the rear corners of the flanges of the back rests are grooved pulleys 43 and 44, and operating in the grooves thereof is a coil spring 45 having its ends 46 and 47 extending forwardly and attached at the base of the sockets 33 and 34 as indicated at 48, the springs being stretched over the pulleys so that they apply pressure to the back rests and move the enclosures or the envelopes forwardly against the rollers 38 on the cross bars 37 as the envelopes are withdrawn as later described.

Also carried on the upper sections of the frame 12 and 13 at the rear portions thereof, are shelves 49 and 50 for supporting an ample stock of the enclosures or inserts that are placed within the respective racks, 19, 20, 23 and 25. Also carried by the frame between the shelves 49 and 50 is a support 51 for a box 52 of empty envelopes as shown in Fig. 1 so that a supply of envelopes is retained in convenient reach for insertion in the rack 24.

Slidably supported in the center of the machine and between the rack 24 and the box support 21 is a drawer-like envelope stacking box 53, having sides 54 and 55, a back 56, a top 57, a bottom 58, and an open front 59, the box 53 being of a size to accommodate the filled envelopes in stacked relation therein, which envelopes are discharged from an assembling unit 60 that is carried by

the main portion of the frame intermediate the racks 19 and 20 as later to be described.

The drawer-like box 53 is guidingly supported within a cage 61 having the front, rear and sides formed by vertical rods 62 that are connected by transverse rods 63 and which guide an elevator 64 therebetween. The rods 62 forming the front of the cage extend forwardly and upwardly to provide a sloping guide or chute 65 for carrying the envelopes from the assembling unit 60 into the drawer-like box 53. The box 53 is yieldingly supported in the elevator 64 which is resiliently supported in the cage; against weight of the box by coil springs 66 that are attached at their upper ends to the intermediate rails 10 and 11 of the main frame and at their lower ends to the side ends of the elevator 64. The springs have the proper tension so that as the filled envelopes are discharged into the box, the box gradually moves downwardly into the cage 61 under weight of the envelopes so as to retain the filled envelopes in orderly stacked relation.

The assembling unit 60 includes a trough-like member 67 having a back 68, ends 69 and 70, and front 71, the front and ends being of relatively less depth than the back to form a shallow pocket 67', in which the envelopes are inserted for receiving the enclosures. The front 71 is preferably provided with a cut-out portion 72 and the corners 73 are preferably curved outwardly to allow spreading of the insert opening of the envelope. The ends of the trough-like member have trunnions 74 and 75 that are journalled in brackets 76 and 77 which are attached to the forward ends of the intermediate rails 10 and 11 as shown in Fig. 1. The member 67 is thus adapted to pivot on the trunnions and swing backwardly to discharge the filled envelope onto the chute 65.

In order to automatically open the flap of the envelope as the envelopes are withdrawn from the rack 24, the forward edge of the upturned portion 26 of the rack 24 is provided with a downwardly curved extension 78 that overlaps the rearwardly curved upper edge 79 of the back portion 68 of the trough-like member so as to limit forward swinging movement of the trough-like member on its trunnions. Fixed to the ends of the extension 78 are flap opening fingers 80 that extend inwardly across the path of the envelopes as they are successively drawn from the rack 24. The rear edges 81 of the fingers are positioned nearer the forward face of the extension 78 than the front edges 82 so as to form cam-like under surfaces 83 which gradually raise and lift the closure flap of the envelope as the envelope is drawn downwardly over the extension 78.

Cooperating with the flap opening fingers are pressure fingers 84 that extend inwardly of the lower portion of the extension 78 to engage the opened flap of the envelope at a point just above the fold line thereof so as to hold the closure flap in retracted position when the back side of the envelope is drawn therefrom to permit insertion of the enclosures.

After insertion of enclosures, the trough-like member is swung retractively on its trunnions which movement withdraws the flap from under the pressure fingers and as the flap moves downwardly under the lower free edge 85 of the extension, the closure flap is automatically moved into contact with the back side of the envelope. When the trough-like member is moved to a position where the upper edge of the trough-like member strikes the chute, the filled envelope slides therefrom and down the chute into the drawer-like box 53.

In order to facilitate tipping of the trough-like member, the left hand end thereof is provided with a finger grip 86 that may be readily engaged by the left hand of the operator, while the right hand is used in completing insertion of the enclosures.

When envelopes are used in a machine having gummed sealing flaps and it is necessary to moisten and seal the gummed flaps, the machine may be provided with a gumming and pressure seal mechanism that is associated with the assembling unit 60 as shown in Figs. 5 to 8 inclusive. When this attachment is used, the member 26 is removed and a water box 87 is suitably mounted on the supporting frame of the machine preferably under the rack which supports the empty envelopes and which has tubes 88 and 89 connected with the respective ends thereof and with the ends of a transverse tube 90, that extends across the upward extension of the trough-like member 67 and which has a sponge element 91 that is mounted in a slot in the transverse tube 90 and in a position to engage the gum of the envelope as the envelope is moved into the trough-like member of the assembling unit as shown in Fig. 5.

In order to positively close the flap when the filled envelope is being discharged, a folding and envelope turning mechanism is inserted between the chute 65 and the trough-like member 67, the chute 65 being spaced from the trough-like member to accommodate a V-shaped pocket member 92 therebetween. The V-shaped pocket member 92 having one side 92' pivotally mounted above the chute on a cross rod 93. The opposite side 92'' is connected by links 94 with ears 95 that project rearwardly from the upward extension of the trough-like member as shown in Figs. 6, 7 and 8.

Mounted on a bracket 96 that projects rearwardly from the trough-like member is a pressure and ejecting member 97 having a circular periphery which operates through a slot 98 in the forward side 92'' of the pocket member 92 to cooperate with a pad 99 that is carried by the opposite side 92' of the pocket. In filling position of the assembling unit 60, the trough-like member is in the position shown in Fig. 6. When the envelope is filled and the trough-like member 67 is pivoted retractively on the trunnions 74 and 75, the link 94 rocks the V-shaped pocket member 92 to the position shown in Fig. 7 so that when the filled envelope slides out of the trough-like member 67, the closure flap side of the envelope slides downwardly into the V of the pocket member with the closure flap adjacent the pad 99.

When the rocking movement of the trough-like member is completed and its return movement is started, the pressure and ejecting member 97 passes through the slot 98 and presses against the envelope to effect sealing of the closure flap and as the member 97 continues movement, it ejects or sweeps the envelope out of the pocket member and onto the chute. This form of the invention is useful with the basic machine when the flaps are not to be sealed because the envelopes are delivered into the box 53 with the flaps facing downwardly incidental to reversal of the envelopes when being transferred by the member 92, and as the envelope is delivered to the box 53 by the chute 65 it drops from said chute onto the previously delivered envelope below the end of said chute whereby the flap on the previously deposited envelope does not interfere with deposit of a following envelope.

In using the machine constructed and assembled as described, the operator takes the position in front of the machine as shown in Fig. 1 and removes enclosures from the storage shelves and places the enclosures in the respective racks 19, 20, 23 and 25. The operator will also remove a supply of envelopes from the storage box which is supported at the back of the machine and places them in the rack 24. An envelope will be withdrawn from the rack 24 and move downwardly over the guide and under the flap opening fingers and deposited into the trough-like member. The operator will then remove an enclosure from each of the racks 19, 20, 23 and 25 and insert the gathered enclosures into the envelope which is being loosely retained in the trough-like member 67. During this operation the trough-like member is prevented from movement by the operator holding onto the finger grip thereof.

The filled envelope is then discharged by rocking the trough-like member 67 backwardly as shown in Fig. 4

to discharge the envelope onto the chute and into the open front of the stack container. As the envelopes are filled and deposited in the stack container, the stack container moves downwardly under the weight of the envelopes to keep the top of the stack below the end of the discharge chute. When the box containing the envelopes at the rear of the machine is emptied, the drawer-like container is withdrawn from the top end of the machine and the filled envelopes therein are removed and placed in the empty container ready for mailing. When the form of invention shown in Fig. 5 is used with the basic machine the part **26** is removed and the moistening mechanism applied. In this instance the transverse tube acts to open the envelope flap as the envelope flap is moved thereunder into the trough-like pocket **67**. When the enclosures are gathered from the various racks and assembled they are placed within the open envelope. The operator engaging the finger grip **86** swings the trough-like member backwardly to an inclined position shown in Fig. 7 so that the envelope slides therefrom into the pocket member **92** which through its link connection with the trough-like member has been pivoted or rocked upwardly to receive the envelope therein with the flap thereof facing downwardly as shown in Fig. 7. The trough-like member is now rocked to filling position. During this movement the pressure member **97** passes through the slot **98** of the pocket member **92** as the pocket member is pivoted rearwardly in the direction of the chute **65** by movement of the link connection **94**. When the member **97** contacts the envelope the pressure thereof cooperating with the pad **99** effects the seal of the closure flap of the envelope and final movement of the trough-like member **67** carries the member **97** away from the envelope in such a manner that it throws or sweeps the envelope into the chute **65**. Attention is here directed to the fact that relative resilience is provided between the pad **99** and the member **97**. This may be effected as described by using a resilient pad. This form of the invention may also be used with the basic machine when the moistening mechanism is removed because it has the further advantage of positively closing the flaps of the envelopes and delivering the envelopes into the box with the flaps downwardly.

From the foregoing, it is obvious that I have provided a semi-automatic machine to facilitate gathering and assembling enclosures and the placement of the enclosures in the envelope for mailing.

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

1. A machine to facilitate manual filling of envelopes including, a supporting frame, means on said frame for supporting a stack of envelopes and having a forwardly and downwardly extending guide across which the envelopes are individually withdrawn from the stack, a trough-like member having front and back portions fixed in spaced apart relation by a bottom portion to loosely contain an envelope therebetween and said back portion forming a continuation of the forwardly and downwardly extending guide of the stack support in one position of the trough-like member, means pivotally mounting the trough-like member on the support in said one position for receiving an envelope that is withdrawn over the guide, and means associated with the guide for opening the closure flap of the envelope and holding the closure flap in open position while the envelope is in said trough-like member and while enclosures are inserted into the envelope, said trough-like member being pivoted to another position to discharge the filled envelope therefrom.

2. A machine to facilitate manual filling of envelopes including, a supporting frame, means on said frame for supporting a stack of envelopes and having a forwardly and downwardly extending guide across which the envelopes are individually withdrawn from the stack, a trough-like member having front and back portions fixed in spaced apart relation by a bottom portion to loosely contain an envelope therebetween and said back portion forming a continuation of the forwardly and downwardly extending guide of the stack support in one position of the trough-like member, means pivotally mounting the trough-like member on the support in said one position for receiving an envelope that is withdrawn over the guide, means associated with the guide for opening the closure flap of the envelope and holding the closure flap in open position while the envelope is in said trough-like member and while enclosures are inserted into the envelope, said trough-like member being movable on its pivotal mounting to discharge the filled envelope, a container carried by the supporting frame, and a chute carried by the supporting frame in receiving relation with the trough-like member for conveying the discharged envelopes into the container.

3. A machine to facilitate manual filling of envelopes including, a supporting frame, means on said frame for supporting a stack of envelopes and having a forwardly and downwardly extending guide across which the envelopes are individually withdrawn from the stack, a trough-like member having front and back portions fixed in spaced apart relation by a bottom portion to loosely contain an envelope therebetween and said back portion forming a continuation of the forwardly and downwardly extending guide of the stack support in one position of the trough-like member, means pivotally mounting the trough-like member on the support in said one position for receiving an envelope that is withdrawn over the guide, means associated with the guide for opening the closure flap of the envelope and holding the closure flap in open position while the envelope is in said trough-like member and while enclosures are inserted into the envelope, said trough-like member being movable on its pivotal mounting to discharge the filled envelope, a container carried by the supporting frame, a chute carried by the supporting frame in receiving relation with the trough-like member for conveying the discharged envelopes into the container, and means yieldingly supporting the container on the supporting frame for downward movement relative to said chute under weight of the filled envelopes that have been deposited therein.

4. A machine to facilitate manual filling of envelopes including, a supporting frame, racks supported on the frame at upper and lower levels and in a position facing an operator's position, means associated with the racks for pushing the enclosures forwardly as the enclosures are withdrawn, an assembly unit pivotally mounted on the frame intermediate the lowermost racks, a rack intermediate the uppermost racks for containing a supply of empty envelopes, means for guiding the envelopes individually from the envelope supply rack into the assembly unit including means for opening closure flaps of the envelopes when the envelope is moved into the assembly unit, a container carried by the frame, means carried by the frame for receiving filled envelopes from the assembly unit and depositing the filled envelopes into the container when the assembly unit is pivoted away from receiving relation with said envelope supporting rack, said closure flap opening means including means for moistening gum on the closure flap of the envelopes, and flap closing and pressure applying means having an operative connection with the assembly unit for closing and sealing the closure flap when the assembly unit is pivoted to discharge position.

5. In a machine of the character described, a supporting frame, means on said frame for supporting a stack of envelopes and having a forwardly and downwardly extending guide across which the envelopes are individually withdrawn from the stack, a trough-like member having a back portion forming a continuation of the forwardly and downwardly extending guide of the stack support in one position of the trough-like member, means pivotally mounting the trough-like member on the sup-

port in said one position for receiving an envelope that is withdrawn over the guide, means associated with the guide for opening the closure flap of the envelope and holding the closure flap in open position while the envelope is in said trough-like member and while enclosures are inserted into the envelope, said trough-like member being pivoted to a second position to discharge the filled envelope therefrom, envelope inverting means in receiving relation with said second position of the trough-like member, operating means connecting the inverting means with the trough-like member for actuating the inverting means for movement of the trough-like member to and from said positions and racks on the supporting frame for retaining supplies of the enclosures.

6. A machine for facilitating the manual filling of envelopes including, a supporting frame, means on said frame for supporting a stack of empty envelopes and having a forwardly and downwardly extending guide across which the envelopes are individually withdrawn from the stack, a trough-like member having a back portion forming a continuation of the forwardly and downwardly extending guide of the stack support in one position of the trough-like member, means pivotally mounting the trough-like member on the support in said one position for receiving an envelope that is withdrawn over the guide, means associated with the guide for opening the closure flap of the envelope and holding the closure flap in open position while the envelope is in said trough-like member and while enclosures are inserted into the envelope, said trough-like member being movable on its pivotal mounting to discharge the filled envelope, a container carried by the supporting frame, a chute carried by the supporting frame in receiving relation with the trough-like member for conveying the discharged envelopes into the container, means yieldingly supporting the container on the supporting frame for downward movement relative to said chute under weight of the filled envelopes that have been deposited therein, and racks on the supporting frame for retaining supplies of the enclosures.

7. A machine for facilitating the manual filling of envelopes including, a supporting frame, racks supported on the frame at upper and lower levels and in a position facing an operator's position, means associated with the racks for pushing the enclosures forwardly as the enclosures are withdrawn, an assembly unit pivotally mounted on the frame intermediate the lowermost racks, a rack intermediate the uppermost racks and containing a supply of empty envelopes, means for guiding the envelopes individually from the envelope supply rack into the assembly unit including means for opening closure flaps of the envelopes when the envelopes are moved into the assembly unit, means carried by the frame for receiving filled envelopes from the assembly unit, means for moistening gum on the opened flaps, and means between the assembly unit and the receiving means for closing and applying pressure to seal the flaps.

8. A machine for facilitating the manual filling of envelopes including, a supporting frame, racks supported on the frame at upper and lower levels for carrying stacks of enclosures in position facing an operator's position, means associated with the racks for pushing the enclosures forwardly as the enclosures are withdrawn, an assembly unit pivotally mounted on the frame intermediate the lowermost racks, a rack intermediate the uppermost racks and containing a supply of empty envelopes, means for guiding the envelopes individually from the envelope supply rack into the assembly unit including means for opening closure flaps of the envelopes when the envelopes are moved into the assembly unit, means carried by the frame for receiving filled envelopes from the assembly unit, means for moistening gum on the opened flaps, and means between the assembly unit and the receiving means for closing and applying pressure to seal the flaps, said last named means being operated incidental to pivotal movement of the assembly unit.

9. In a machine for facilitating the manual filling of envelopes, a supporting frame, an assembly unit pivotally mounted on the frame for holding an envelope to be filled, envelope inverting means pivotally carried by the frame in position to receive the envelope from said unit, means pivotally connecting said unit with the inverting means for actuating the inverting means when the assembly unit is pivoted from receiving to discharge positions, and means on said unit for engaging and sweeping the filled envelope from said inverting means.

10. A machine for facilitating the manual filling of envelopes including a frame, racks on said frame in a position facing an operator's position for containing enclosures to be inserted in the envelopes, a rack on the supporting frame intermediate the first-named racks for containing a supply of empty envelopes, an assembly unit pivotally mounted on the frame in front of the last-named rack for holding an envelope withdrawn from the last-named rack while it is being filled with enclosures from the first-named racks, an open front container carried by the frame for receiving the filled envelopes in stacked position, envelope inverting means pivotally carried by the frame and pivotally connected with said unit for inverting filled envelopes discharged from the assembly unit when the assembly unit is pivoted from receiving to discharge positions, and means on said unit for engaging and sweeping the filled envelopes from said inverting means for advancement to said open front container when the assembly unit is pivoted to said receiving position.

References Cited in the file of this patent

UNITED STATES PATENTS

Re. 15,385	McCarthy	June 13, 1922
1,090,499	Poler	Mar. 17, 1914
1,886,119	Price	Nov. 1, 1932
2,273,252	Cummins	Feb. 17, 1942