

Feb. 11, 1936.

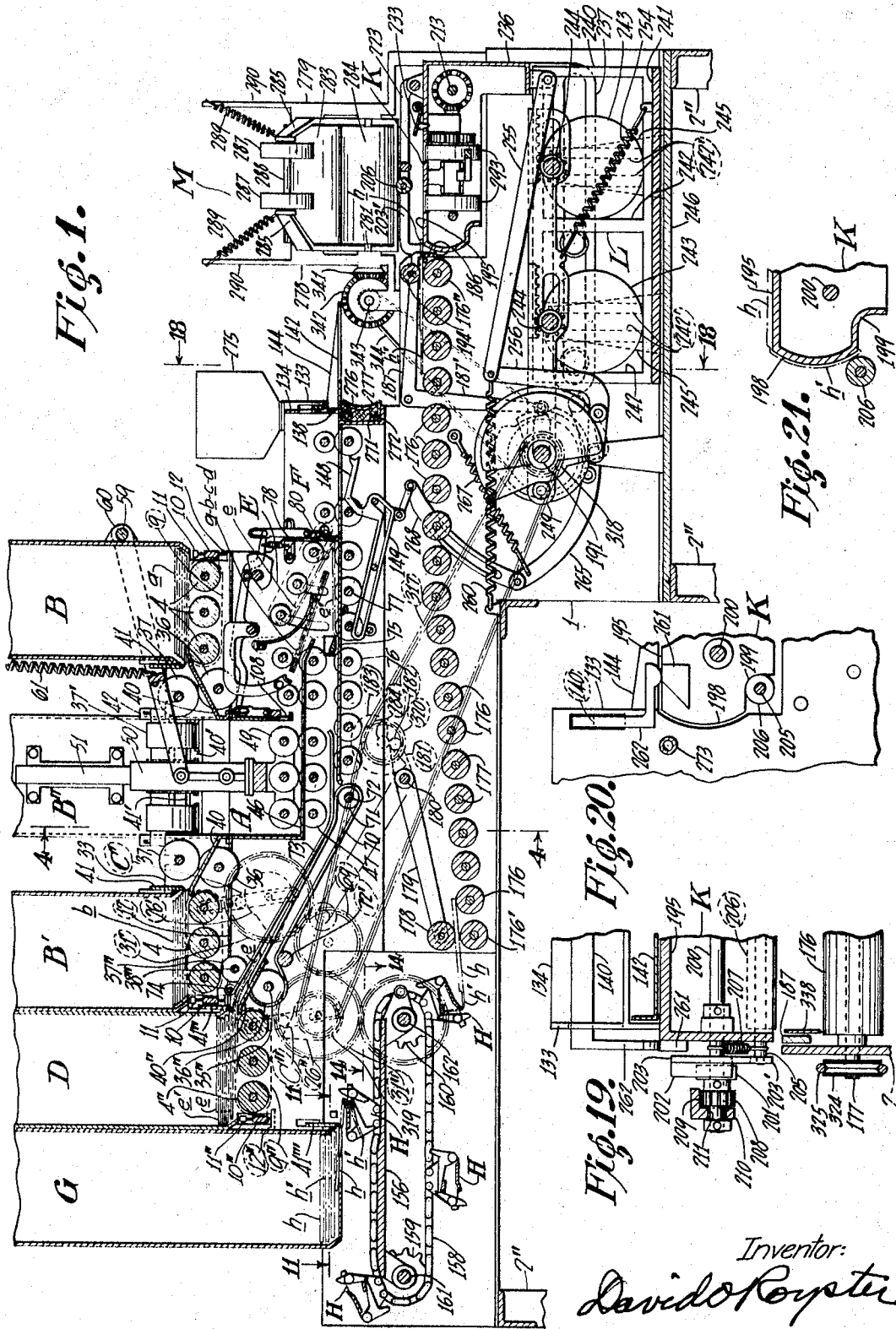
D. O. ROYSTER

2,030,656

MECHANISM FOR ASSEMBLING AND INSERTING INCLOSURES IN ENVELOPES

Filed Feb. 17, 1933

8 Sheets-Sheet 1



Feb. 11, 1936.

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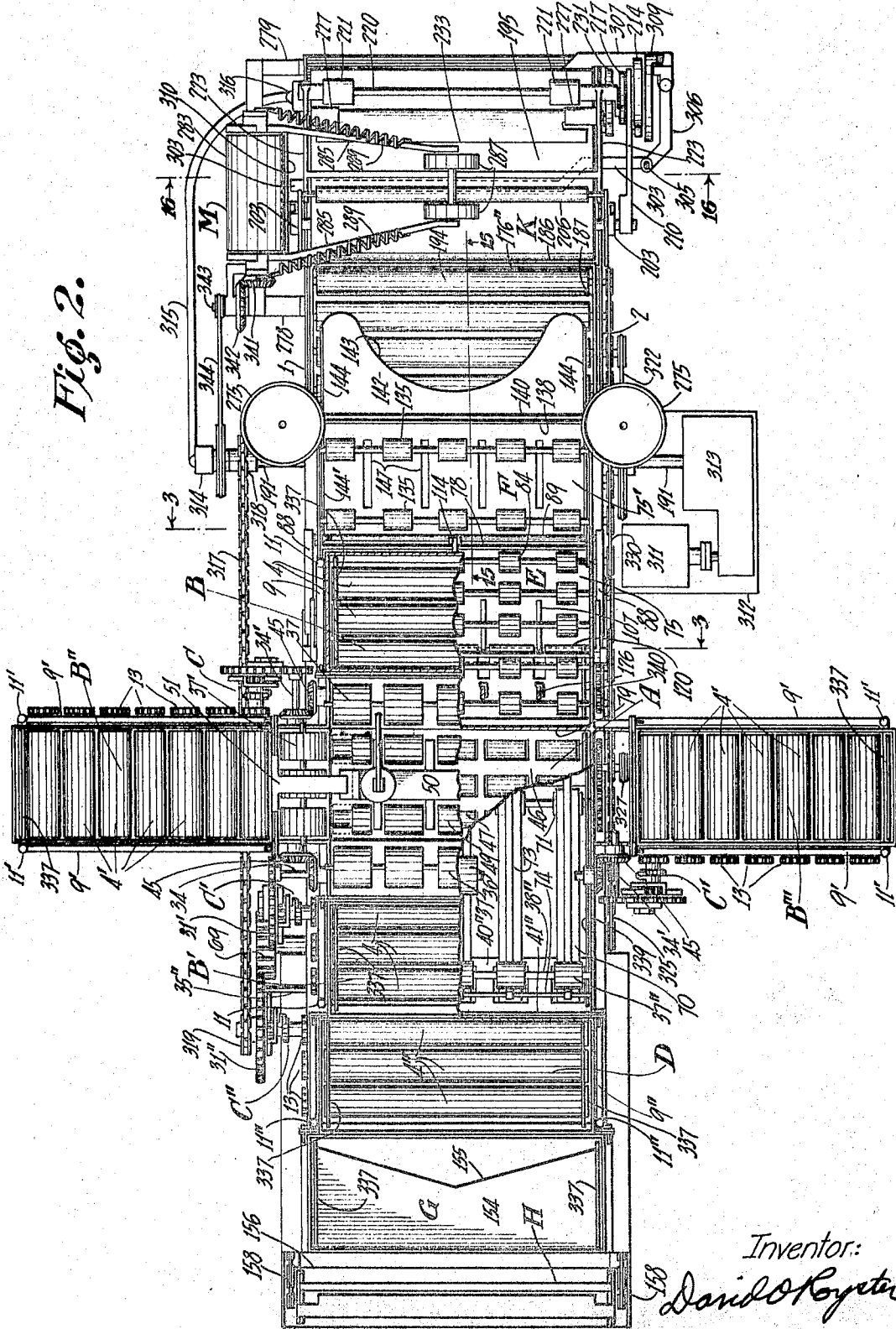
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Fig. 2.



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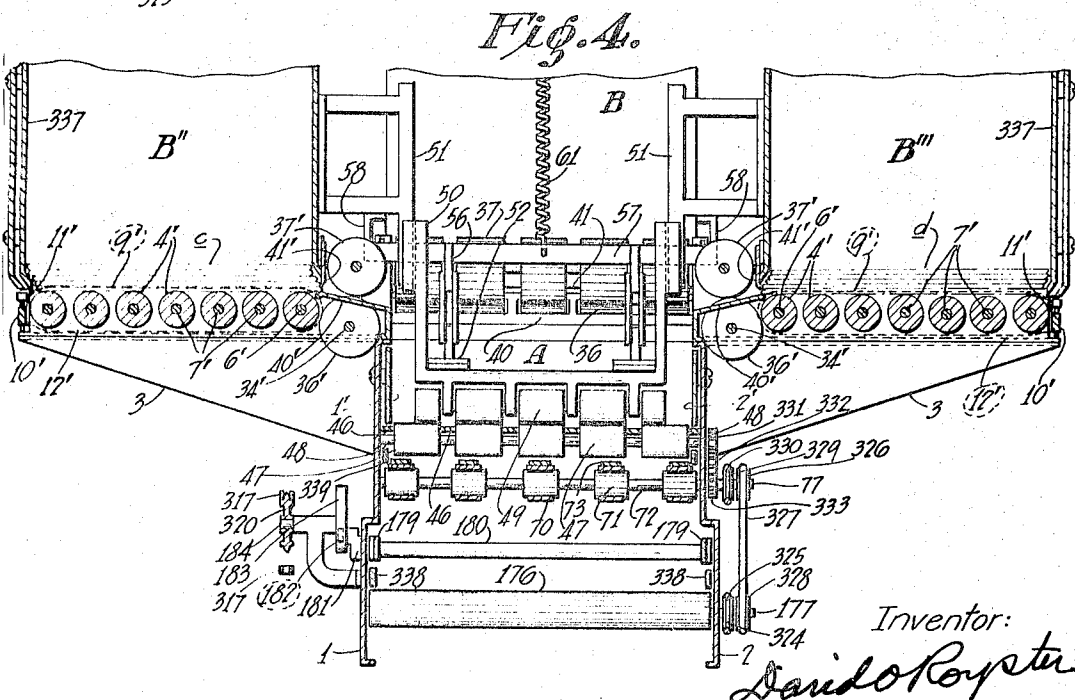
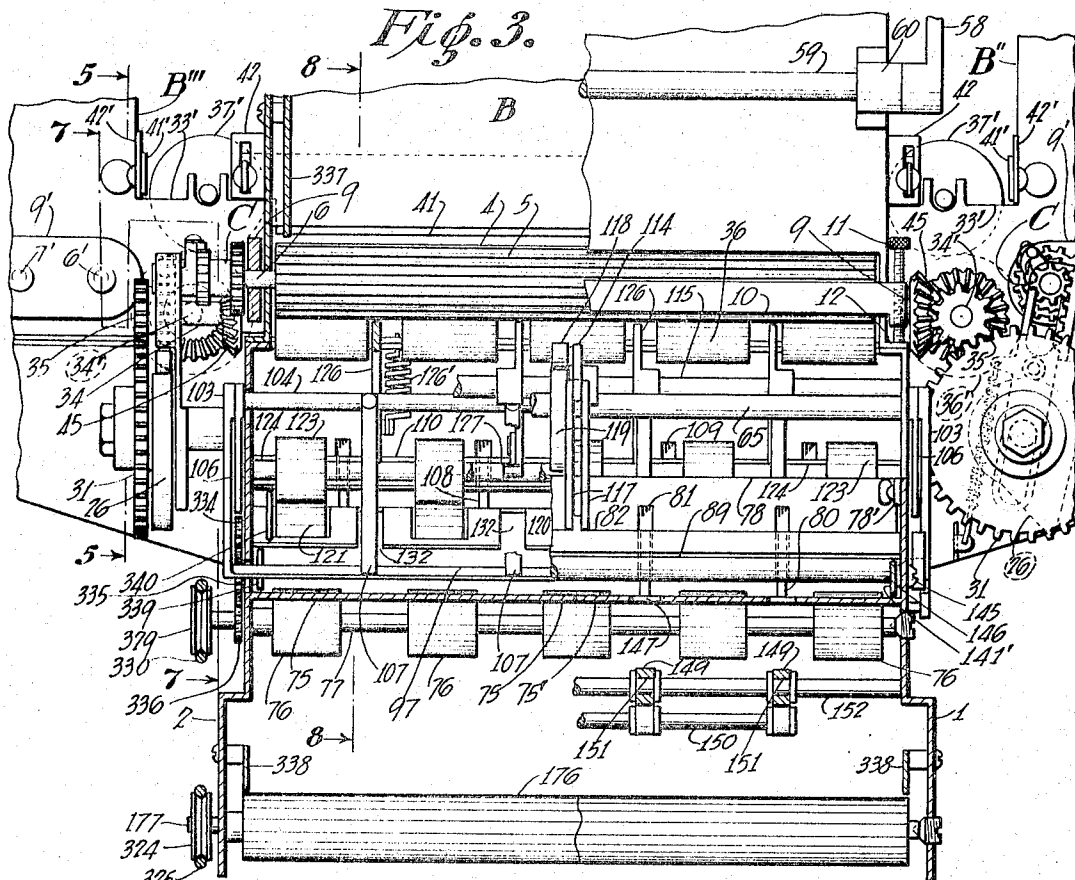
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MECHANISM FOR ASSEMBLING AND INSERTING INCLOSURES IN ENVELOPES

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Fig. 7.

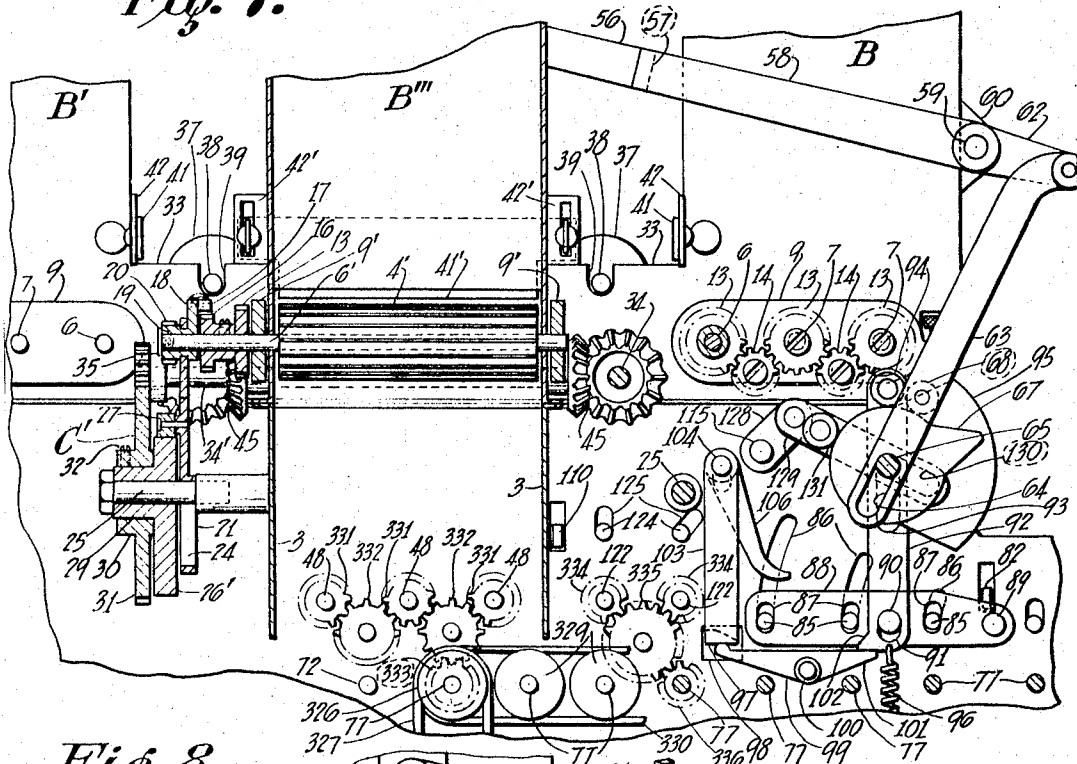
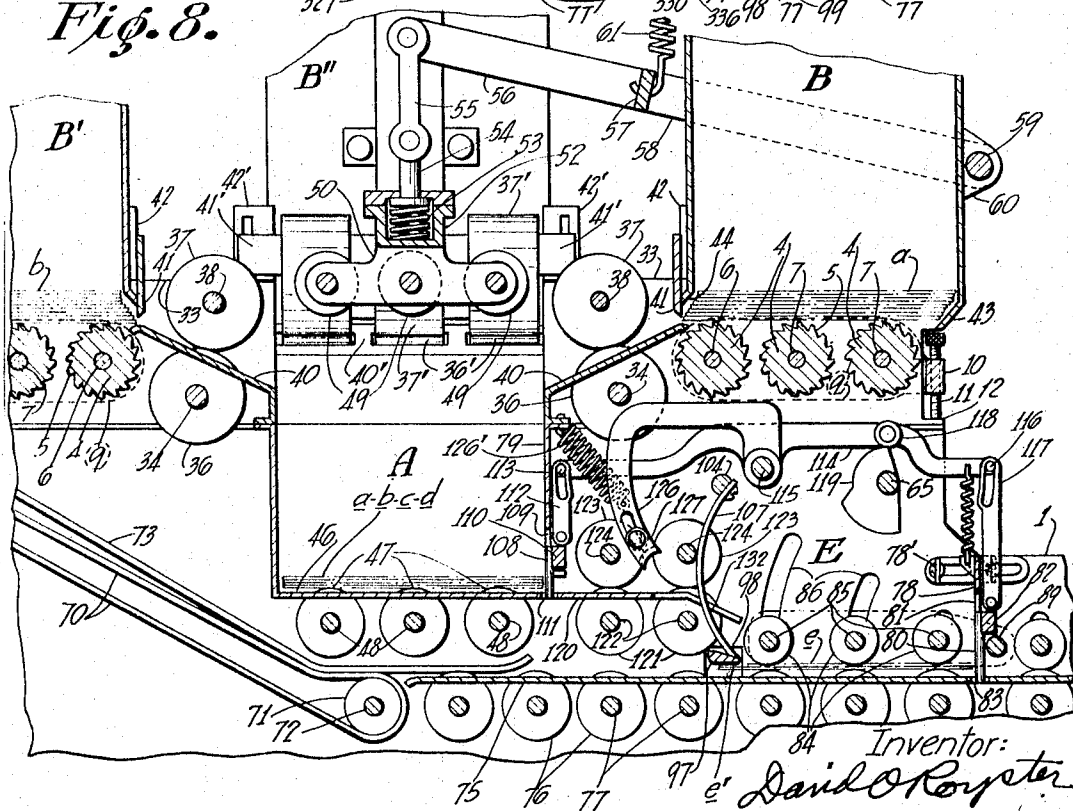


Fig. 8.



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Fig. 9.

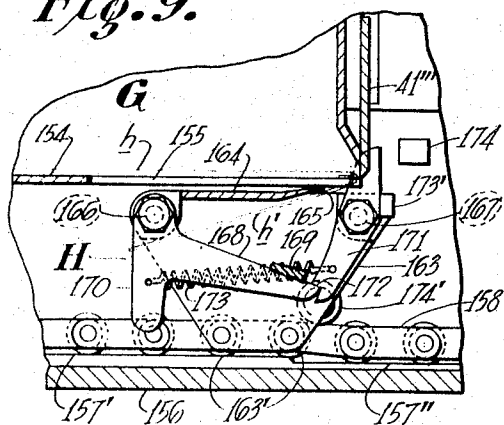


Fig. 10.

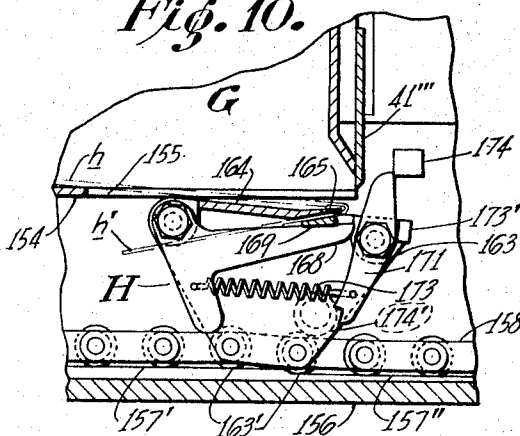
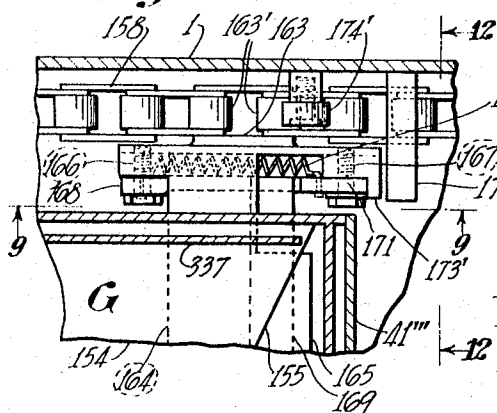


Fig. 11.



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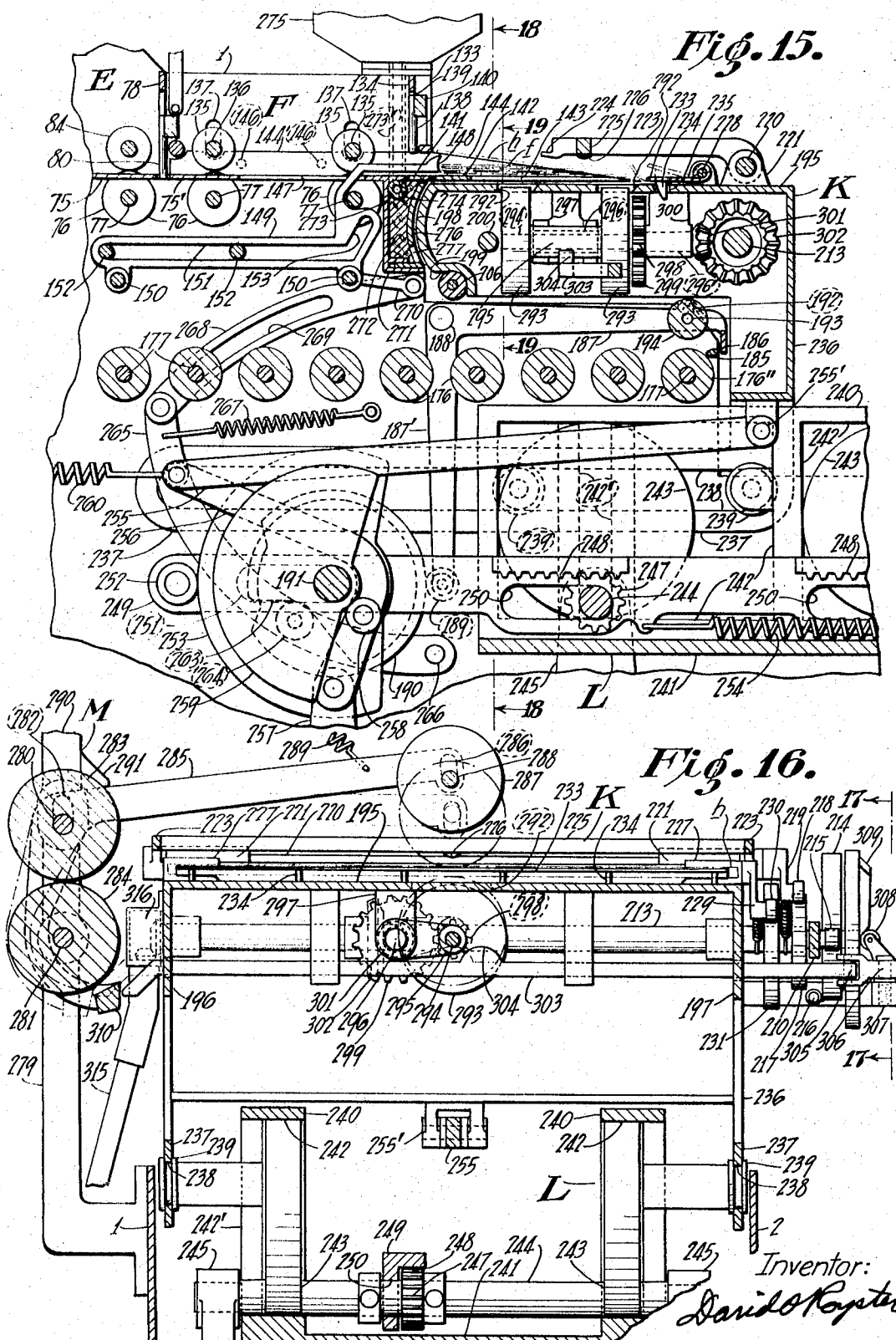
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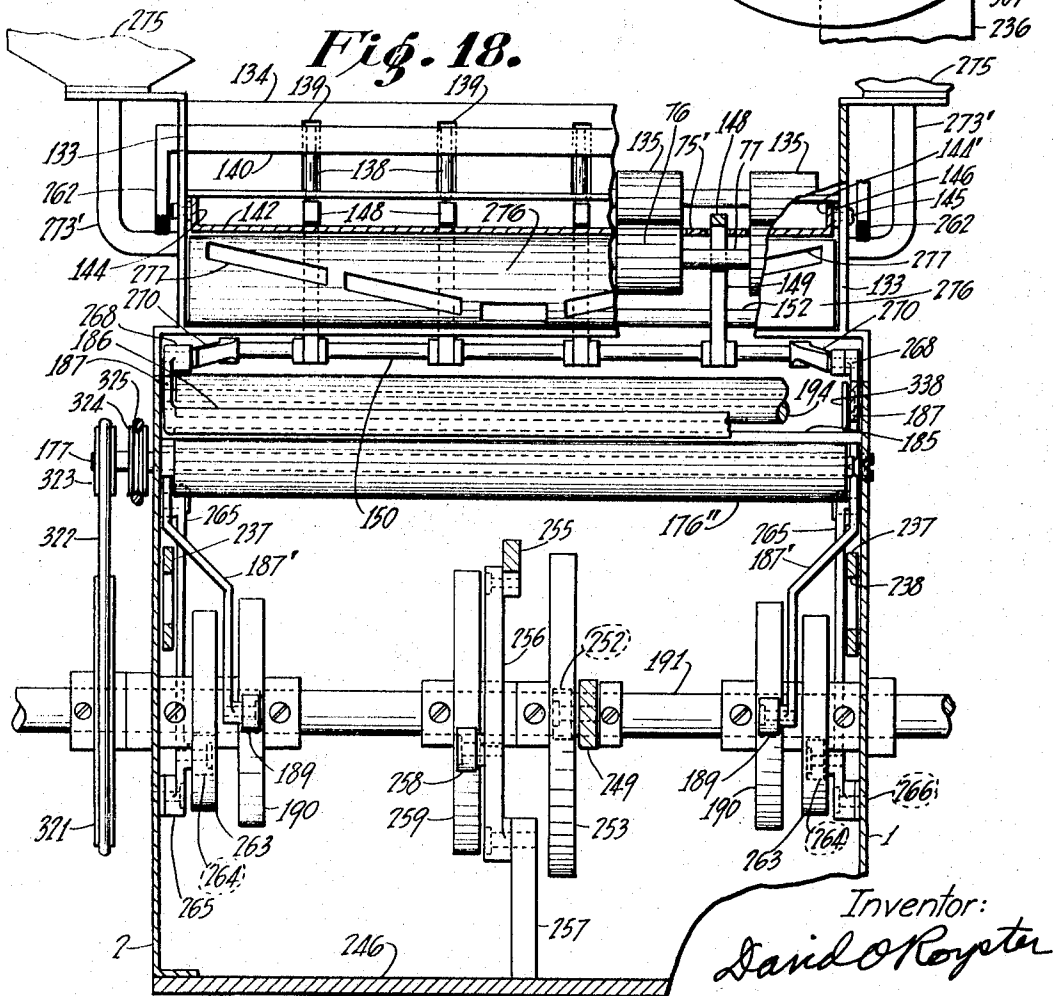
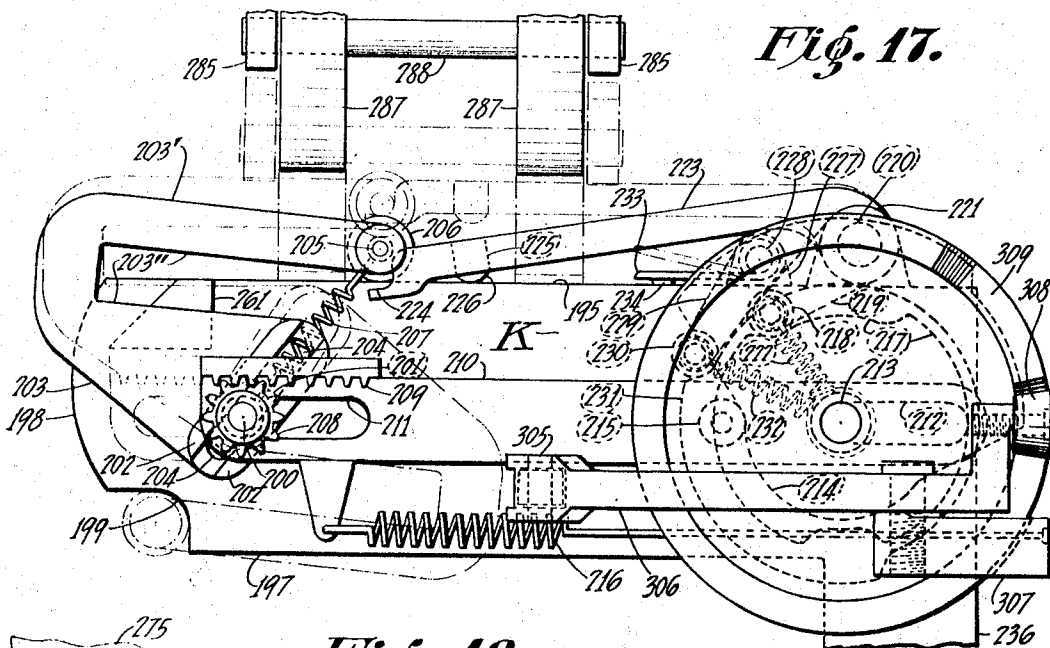
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MECHANISM FOR ASSEMBLING AND INSERTING INCLOSURES IN ENVELOPES

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UNITED STATES PATENT OFFICE

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MECHANISM FOR ASSEMBLING AND INSERTING INCLOSURES IN ENVELOPES

David O. Royster, Overland, Mo.

Application February 17, 1933, Serial No. 657,185

30 Claims. (Cl. 93—6)

This invention has particular reference to a mechanism for assembling and inserting inclosures in envelopes, and has for its prime objects the provision of a mechanism, of the kind described, for automatically inserting an envelope-inclosure into an envelope; the provision of an automatically operable mechanism for expanding the mouth of an envelope and inserting the envelope-inclosure therein; the provision of a mechanism, of the character described, for gathering together from suitable storage-chutes or other convenient source of supply, a plurality of inserts, as advertising matter, return post-cards, booklets, and the like, and inserting the gathered inserts into an envelope; the provision of such a described mechanism for embracing the gathered inserts in a folded article, as a folded letter, advertising-broadside or other folded matter, and inserting the resulting so-called envelope-inclosure in an envelope; and the provision of a mechanism of the kind set forth, for forming an envelope-inclosure composed of a plurality of inserts, with or without an accompanying letter, for inserting the same into an envelope or similar container having a side or end opening closable by a flap, or other suitable element, sealing the flap on the envelope, and removing the inclosure-containing and sealed-envelope from the machine.

And with the above, and other objects in view, my invention resides in the novel features of form, construction, arrangement, and combination of parts hereinafter described and pointed out in the claims.

In the accompanying drawings (eight sheets),—

Figure 1 is a reduced longitudinal view of a mechanism for assembling and inserting inclosures in an envelope, of my invention, the mechanism being shown as in the operation of assembling gathered inserts into a folded article, while feeding an envelope onto the envelope-carriage;

Figure 2 is a reduced plan view, partly broken away and in section, of the mechanism, as in the position of Figure 1;

Figure 3 is a fragmentary view taken approximately along the line 3—3, Figure 2, the mechanism being shown in position for receiving a folded article in the assembly box;

Figure 4 is a reduced transverse sectional view through the gathering-hopper, the view being taken approximately along the line 4—4, Figure 1;

Figure 5 is an enlarged fragmentary side view of one of the insert-feeding mechanisms, the view being taken approximately along the line 5—5, Figure 3, and other parts of the machine removed;

Figure 6 is an enlarged fragmentary plan view taken approximately along the lines 6—6 of Fig-

ure 5, the assembly-box operating mechanism being also shown;

Figure 7 is a fragmentary sectional view taken approximately along the line 7—7, Figure 3, showing also a side elevational view of the assembly-box operating mechanism;

Figure 8 is a fragmentary sectional view taken approximately along the line 8—8, Figure 3, showing also an interior view of the assembly-box;

Figure 9 is a fragmentary enlarged sectional view of one of the envelope-feeders, the view being taken approximately along the line 9—9, Figure 11, showing the mechanism in the act of engaging the flap of an envelope preparatory to removing an envelope from its storage-chute.

Figure 10 is a view, similar to Figure 9, showing the flap of the envelope gripped in the feeder and the envelope in the act of being drawn from the chute;

Figure 11 is a fragmentary plan sectional view of the feeder mechanism of Figure 9, the view being taken approximately along the line 11—11, Figure 1;

Figure 12 is a fragmentary transverse sectional view taken approximately along the line 12—12, Figure 11;

Figure 13 is a fragmentary enlarged sectional view of an envelope-feeder, the view being taken approximately along the line 13—13, Figure 14, showing the feeder disposed in envelope-inverted flap-gripping position, the feeder being also shown by dot-dash lines in envelope-inverted flap-releasing position;

Figure 14 is a fragmentary plan-sectional view of the feeder-mechanism of Figure 13, the view being taken approximately along the line 14—14, Figure 1;

Figure 15 is a fragmentary longitudinal sectional view taken approximately along the line 15—15, Figure 2, the envelope being on the envelope-carriage and the latter being shown up-raised and advanced to and under the stuffer-pan for receiving an assembled inclosure, the stuffer mechanism being shown in inclosure-inserting position;

Figure 16 is a fragmentary transverse sectional view taken approximately along the line 16—16, Figure 2, the envelope-carriage being shown up-raised and retracted from the stuffer-pan as at the conclusion of the inclosure-inserting and envelope-flap-sealing operation, the take-off rolls being shown by dot-dash lines in position for removing the inclosure-containing and sealed envelope from the machine;

Fig. 17 is an enlarged side view of the envelope carriage, taken approximately along the line 17—17, Figure 16, the parts being shown in position as at the conclusion of the flap-sealing operation, and the next succeeding position of the

parts for removing the envelopes from the machine being indicated by dot-dash lines;

Figure 18 is a transverse, partly broken, sectional view taken approximately along the line 18—18, of Figures 1 and 15, the parts being shown in position as at completion of the inclosure-inserting operation, the carriage being removed;

Figure 19 is an enlarged fragmentary detail sectional view taken through a side margin of the carriage approximately at the line 19—19, Figure 15, showing the gate-lifting cam on the carriage in cooperation with a leg of the gate and also a detail of the flap-sealing-roller operating mechanism, other parts of the machine being removed;

Figure 20 is a fragmentary side-elevational view of the mechanism of Figure 19; and

Figure 21 is a fragmentary detail view showing the position of the flap-sealing roller when folding the envelope-flap over the nose of the carriage, other parts being removed.

Briefly, it may be said that the mechanism of my invention is adapted for use with a flap-closable container, as for example, the common envelope, either with or without an address window; a folded article comprising, for example, a folded letter, which may be addressed, more especially if used with a window envelope; and a plurality of inserts, as advertising matter, a return post-card, and the like, which are disposed preferably between the folded plies of the folded article, the folded article and its included inserts forming the inclosure for the envelope.

Referring now more in detail and by reference characters to the drawings, which illustrate a preferred embodiment of my invention, the main frame of the machine includes a pair of transversely spaced longitudinally parallel side-frame members or preferably sheet-metallic walls 1, 2, suitably tied and braced together and supported by means of floor-engaging legs or posts 2', as best shown in Figures 1 and 4.

Depending from and between the upper margins of the frame-walls 1, 2, and located approximately at the central portion of the machine, is an insert-gathering hopper A, rectangular in plan and having its long sides transversely of the machine, the ends of the hopper being formed by false-side plates 1', 2', attached to the respective frame-walls 1, 2, as best seen in Figure 4. The hopper A is surrounded by a series of insert storage-chutes comprising a pair of opposing chutes B, B', located respectively in the rear and in the front of the hopper A and supported on and between the upper margins of the walls 1, 2, and a pair of also opposing chutes B'', B''', located respectively on the opposite sides of the hopper A and supported on respective pairs of brackets 3, extending laterally from the frame-walls, 1, 2, as best seen in Figures 2 and 4, the chutes B, B', B'', B''', being adapted to contain stacks of inserts, a, b, c, d, respectively, which are supported in and fed from the chutes in a manner as presently appearing.

The stack of inserts a in the chute B is supported on a series of three feed-rollers 4, disposed across the lower end of the chute B and each having its peripheral surface provided with a series of circumferentially spaced longitudinal teeth 5 as best seen in Figure 8. The rollers 4 are mounted on respective shafts 6, 7, each extending between and through the side walls of the chute B, the forward shaft 6 being journaled in the respective chute-walls, and the rearward shafts 7 being shiftable in suitable slots 8 pro-

vided in the chute side-walls, as best seen in Figure 5.

Embracing the lower portion of the chute B is a horizontal U-shaped frame comprising a pair of side-arms 9 having their front ends journaled on the respective opposite ends of the shaft 6 projecting from the side-walls of the chute B, the arms 9 in turn rotarily supporting the respective ends of the rearward shafts 7, as best seen in Figure 6.

At their rear ends the arms 9 are connected by a transverse yoke-piece 10, and at their respective junction with the yoke 10 the arms 9 are each equipped with a vertical threaded member or adjusting screw 11, whose depending end engages the adjacent outstanding chute-wall-flange 12, by means of which the chute B is attached to the frame walls 1 or 2, as the case may be, and as best seen in Figures 3 and 5. By manipulating the screw 11, the arms 9 may be more or less inclined from the horizontal for similarly inclining the series of feed-rollers 4, for facilitating the egress of an insert a from the chute B, as circumstances may require.

At one side of the chute B, the shafts 6, 7, are extended through the adjacent arm 9 and are each equipped with a spur-gear 13. Suitable idler gears 14 are detachably mounted on studs 15 engaging the arm 9, for meshing with adjacent pairs of the gears 13, whereby either or both of the gears 13 on the rearward shafts 7 may be connected with and rendered operative for rotation by the gear 13 on the shaft 6, as best seen in Figure 5, for, again, facilitating the egress of an insert a from the chute.

For actuating the feed-rollers 4, a feeder-drive mechanism C is provided comprising a ratchet wheel 16 mounted on an extension of the shaft 6, the ratchet wheel 16 being engageable by a pawl 17 carried on the swingable end of an arm 18 sleeved as at 19 on the shaft 6, the sleeve 19 in turn carrying a pinion 20 spaced from the arm 18, between which and the pinion 20 is reciprocally mounted a depending slide-bar 21, carrying a rack 22 meshing with the pinion 20 and having a slot 23 whose walls slidably embrace the sleeve 19, as best seen in Figures 5, 6 and 7.

The depending end of the slide-bar 21 is provided with a slot 24 slidably embracing a stub-shaft 25 projecting suitably from the adjacent frame-wall 2. On the shaft 25 is rotarily mounted a cam 26 having peripheral engagement with a roller 27 carried by the slide-bar 21, the latter being biased by means of a tensional member or spring 28 for reciprocatory movement of the slide 21 responsive to rotary movement of the cam 26.

The cam 26 is provided with a hub 29 on which in turn is mounted the hub 30 of a spur-gear 31, a suitable set-screw 32 being threaded through the hub 30 for impinging the cam-hub 29, whereby the angular rotative relation of the cam 26 with respect to the cyclic-operation of the machine may be suitably adjusted, as may best serve the purpose. The cam 26 is of the single lobe type, and, once in each period of its revolution, shifts the slide-bar 21, upwardly in this case, for, through the pawl 16 and ratchet 17, effecting rotatory actuation of the front one of the feed-rollers 4 and as many of the rearward rollers 4 as may be operatively connected therewith.

At its lower end the chute B is equipped with receptive side-wall extensions 33, which serve to

space the chute B rearwardly of the hopper A, and a shaft 34 is journaled in and through the chute wall extensions 33, forwardly of the front roller 4 of the chute B. As will presently appear, the shaft 34 is continuously rotated during the operation of the machine and carries a pinion 35 meshing with the gear 31, the reduction-ratio between the pinion 35 and the gear 31 being such as to effect one revolution of the cam 26 during each cycle of operation of the machine.

Between the chute-wall extensions 33 the shaft 34 carries a series of take-off rollers 36 which have cooperation with a corresponding series of superposed rollers 37 mounted on a shaft 38 shiftably mounted in a slot 39 provided in the respective chute-extensions 33. The rollers 36 peripherally project a suitable distance upwardly through a suitable feed-plate 40, the latter comprising an apron-portion extending upwardly from and in registration with the upper margin of the adjacent wall of the hopper A, and an inclined portion extending upwardly and rearwardly from the apron to a point adjacent the front feed-roller 4.

A gate 41, disposed transversely in front of the chute B, is adjustably supported on ears 42 projecting from the front wall of the hopper B, whereby the gate 41 may be vertically spaced more or less with respect to the subjacent upper end of the feed-plate 40 for regulating the discharge of inserts *a* from the hopper B responsive to periodic actuation of the feed rollers 4. Preferably also for facilitating such discharge of the inserts *a* from the chute B, the front and rear walls of the chute terminate at their lower ends in forwardly inclined lips 43, 44, respectively, the front lip 43 cooperating with the gate 41, as best seen in Figures 5 and 8.

The foregoing description of the particular chute B, located at the rear of, and which discharges its inserts *a* forwardly into the hopper A, suffices also for the chute B', located at the forward side of the hopper A, the chute B' being merely turned around for discharging its contained inserts *b* rearwardly into the hopper A, as will be understood from Figures 1 and 2, the chute B' being equipped with a feeder mechanism C' differentiated from the mechanism C merely in that the cam 26' of the former mechanism is set in advance of the cam 26 of the latter mechanism for purpose presently appearing, and as best seen in Figures 1 and 5.

Whereas, the chutes B, B', discharge from their respective opposing long sides into the hopper A, the chutes B'', B''', discharge into the hopper from their respective opposing short sides. Consequently, the respective inserts *c*, *d*, are shifted laterally endwise into the hopper A, and are supported in the respective chutes by a series of feed-rollers 4' of similar construction to but of correspondingly diminished length and of greater number than those in the hopper B, for substantially closing the bottom of the chute B'', or B''', as the case may be as will be understood from Figure 6. There are seven of the rollers 4' in each chute B'', B''', in the present instance, each bed of rollers 4' being mounted on respective shaft 6', 7', supported in a horizontal U-shaped frame comprising a pair of arms 9' and a connecting yoke-bar 10', and having adjusting screws 11' engageable with the chute-attaching flanges 12' of the brackets 3, as best seen in Figure 4.

The bed of rollers 4' are driven one from the other in the manner described for the rollers 4,

the chute B'' being equipped with a roller-driving mechanism C, and the chute B''' being equipped with a mechanism C', except that the pinion-shaft 34' of each respective chute B'', B''' extends through and between the side-wall extensions 33' thereof and carries a series of take-off rollers 36' cooperating with the superimposed series of rollers 37', the rollers 36', however, being of larger diameter than the rollers 36 of the chute B, B'. The rollers 36' thus have a higher peripheral speed than the rollers 36, for the reason that, the inserts *c*, *d*, in the respective chute B'', B''', being removed lengthwise from their chutes, they must be moved a greater distance to enter the hopper A. Also, by reason of the greater diameter of the roller 36', the feed-plates 40' of the chutes B'', B''' are set at less inclination, for discharging into the hopper A at a higher elevation, than the plates 40 of the chutes B, B', and each of the chutes B'', B''' is equipped with a gate 41', adjustably mounted as at 42' similarly to the gate 41, as best seen in Figures 1, 3, and 4.

The chutes B'', B''', are thus substantially similar, the chute B''' being merely turned around with respect to the chute B''. Other details of the chutes B'', B''' and mechanisms C, C' being similar in form and function to the like referenced chutes B, B', and their mechanisms C, C', further description thereof is omitted.

At their respective opposite ends all the shafts 34, 34', are operatively connected for unison actuation by means of a pair of miter or bevel-gears 45, as best seen in Figures 2 and 5, and it will be seen that, as described, the cams 26' of one pair of mechanisms C', being set to discharge corresponding inserts *b*, *d*, into the hopper A somewhat in advance of the discharge of inserts *a*, *c*, effected by the other pair of mechanisms C, and the inserts *c*, *d*, being fed into the hopper A from a higher elevation than the inserts *a*, *b*, the several inserts are neatly and without interference deposited one after the other into the hopper A, the so-deposited inserts *a*, *b*, *c*, *d*, being supported in the hopper A on a bed of rollers 47 peripherally projecting upwardly through the bottom wall 46 of the hopper A; the bed of rollers 47 being mounted on a series of, in the present instance three, shafts 48 journaled suitably in and through the frame-walls 1, 2, as best seen in Figures 4 and 8.

Cooperable with the bed of rollers 47 is a second bed of rollers 49 carried by a shiftable frame 50 reciprocally mounted on transversely spaced guides 51 supported by and from the respective inside walls of the chutes B'', B''' as best seen in Figure 4. The frame 50 is equipped with a pair of spring-boxes 52, in each of which is mounted a spring 53 for yieldingly supporting a plunger 54 having link connection as at 55 with an arm 56 projecting over the hopper A from a cross-bar 57 disposed in front of the rear chute B, the bar 57 at its opposite ends being supported on the swingable ends of respective levers 58, which extending rearwardly along the opposite sides of the chute, are mounted on the respective ends of a rock-shaft 59, disposed across the rear face of the chute B and mounted in suitable brackets 60 projecting therefrom, as best seen in Figures 1 and 4. A tensional member or spring 61 is engaged between the bar 57 and the adjacent front wall of the chute B for normally biasing the frame 50 in suitably elevated position above the hopper A during the operation of feeding the

inserts *a, b, c, d*, into the hopper, as best seen in Figure 8.

The shaft 59 carries a rearward arm 62, to which is pivotally connected a depending slide-rod 63 provided at its lower end with a slot 64 whose walls slidably embrace the projecting end of a shaft 65 rotarily mounted through and between the frame-walls 1, 2, below the chute B, the shaft 65 carrying a gear 66 which meshes at unitary ratio with the gear 31 of the adjacent mechanism C of the chute B, as will be understood from Figures 5, 6, and 7.

Mounted on the shaft 65 is a cam 67 having peripheral engagement with a roller 68 rotatably supported on the slide-rod 63, the latter being biased by the tensional member or spring 61 for reciprocatory movement of the slide 62 responsive to rotation of the cam 67. The cam 67 is of the single lobe type and, once in each cyclic period of operation of the machine, shifts the slide-bar 63, upwardly in this case, for rocking the shaft 59 and in turn lowering the frame 50 into the hopper A, for yielding engagement of the frame-rollers 49 with the group of inserts *a, b, c, d*, reposing on the hopper-rollers 47, for compacting the inserts in the hopper A, as best seen in Figures 1 and 4.

Supported by and between the upper margins of the frame-walls 1, 2, and disposed forwardly of the inserts-chute B', is a folded article storage chute D for containing a stack of folded articles *e*, each comprising a letter, advertising-broadside, or the like, and in any event having a ply or fold *e'* on its under-side, which at its front margin projects forwardly of the other plies of the folded article, the fold line of the folded article *e* being rearwardly presented for egress of the folded article *e* foldwise from the chute D. If the folded article *e* is in the form of a personal or addressed letter for use with a window envelope, the address is disposed on the lower face of the lower fold *e'*, for a purpose soon appearing.

For supporting the folded articles *e* in the chute D, the latter is equipped with a bed of feed-rollers 4'' mounted in a horizontal U-shaped frame including the arms 9'' and connecting yoke 10'', with the adjusting screws 11'' engaging the suitably projecting brackets 12'', the rollers 4'' being actuable by a mechanism C'' similar to the mechanism C, except that the cam 26'' of the mechanism C'' is set suitably for feeding a foldure *c* from the chute D in proper timed relation with the feeding of insertures from the chutes B, B', B'', B''', as well presently appear. The drive-gear 31'' of the mechanism C'' has meshing engagement with an idler gear 69 in turn meshing with the gear 31' of the mechanism C of the chute B', for unison actuation of the mechanisms C, C' and C'' one with and by the other, as best seen in Figures 1 and 2.

The mechanism C'' includes a series of take-off rollers 36'' mounted on the shaft 35'', the rollers 36'' peripherally projecting through a relatively short inclined feed-plate 40'' whose upper end has cooperation with the gate 41'' mounted on the rear wall of the chute D. The rollers 36'' are surmounted by a series of rollers 37'' disposed on a shaft 38'' shiftably mounted in slots provided in the frame-walls 1, 2, substantially in the manner heretofore described about the like numbered parts of the chute B and the mechanism C, and as best seen in Figures 1 and 2.

Trained over each roller 36'' is a belt 70, the upper run of which extends downwardly and

rearwardly to a point under the front portion of the hopper A, where the several belts 70 are trained over a corresponding series of rollers or pulleys 71 mounted on a shaft 72 journaled in and between the frame-walls 1, 2, subjacent to the bed of rollers 47, the lower run of each belt 73 returning to its particular roller 36'' over a tightener pulley or roller 72' mounted suitably for the purpose adjacent the roller 36''.

Flexibly engaging the upper face of the top-run of each belt 70 is a gripper-strip 73 of resilient material, having its upper end mounted on a rod 74 disposed between the rollers 37'' and the chute D, the lower end of the strip 73 being curved under the superjacent rollers 47 of the hopper A for extending rearwardly thereunder, as best seen in Figures 1, 2, 4 and 8.

A folded article *e*, being fed at a suitable moment from the chute D, is conveyed between the series of belts 70, and the gripper-strips 73, and is discharged onto an assembly plate 75, through which plate 75 suitably project the respective peripheries of a bed of rollers 76, mounted on a series of shafts 77 journaled in and between the frame-walls 1, 2, and each carrying a group of the rollers 76, the plate 75 and the rollers 76 extending rearwardly under the chute B and substantially therebeyond, for purposes presently appearing, and as best seen in Figures 1 and 8.

Preferably, though not necessarily, in approximately vertical registration with the rear wall of the chute B, and supported as at 78' for adjustably shiftable movement between the frame-walls 1, 2, is a transverse partition wall 78, between which and the rear wall 79 of the hopper A, is a so-called assembly chamber or box E, as best seen in Figure 6.

The lower margin of the partition 78 is spaced from the assembly plate 75, the opening so provided between the plate 75 and partition 78 being normally closed by a stop-gate 80 composed of a series of fingers vertically reciprocable in corresponding slots 81 provided in the partition 78, and supported by a gate-bar 82 disposed for vertical movement adjacent the rear face of the partition 78, the fingers of the gate 80 being adapted, when in "down" or closed position, for entering corresponding apertures 83 suitably provided in the delivery-plate 75 for "stopping" or limiting the movement of a folded article *e* transported by the rollers 76 for impinging its folded edge against the fingers of the gate 80, as will be understood from Figure 8.

Superposed in registration, and normally having peripheral engagement, with the respective groups of rollers 76 mounted on the first three shafts 77 preceding the partition 78, is a corresponding series of groups of rollers 84 mounted on respective shafts 85, which at their respective opposite ends project through suitable slots 86 provided in the frame-walls 1, 2, and are shiftably mounted also in slots 37 provided in the correspondingly adjacent ones of a pair of arms 88 disposed at the respective opposite sides of the assembly-box E, the rear ends of the arms 88 being mounted on and connected by a shaft 89 journaled between and through the frame-walls 1, 2, as best seen in Figures 2, 7 and 8.

Projecting from one of the arms 88 is a pin 90 slidably embraced by the walls of a slot 91 provided in the lower end of a slide-link 92 whose upper portion is provided with a slot 93 having its walls slidably embracing the shaft 65. The upper end of the link 92 carries a roller 94 having peripheral engagement with a cam 95 mounted 75

on the shaft 65, a suitably mounted tensional member 96 serving for biasing the link 92 for following the contour of the cam 95 on rotation thereof, as best seen in Figure 7.

The cam 95 is of the single lobe type, and periodically, during the operation of the machine, actuates the link 92 upwardly, the lower wall of the slot 91, then first impinging the pin 96, and the link 92 thereafter lifting the arms 88 about the shaft 89 as a center until the series of rollers 84 is inclined upwardly and forwardly in the assembly-box E in upwardly spaced relation from the assembly-plate 75, as best seen in Figure 1.

A transverse grip-bar 97 is disposed in the assembly-box E, in frontal adjacency to the bed of rollers 84, for shiftable movement toward and from the assembly plate 75, the opposite ends of the bar 97 working in and extending through suitable slots 98 provided in the respective frame-walls 1, 2, and being engageable by respective arms 99 mounted on the corresponding ends of a rockshaft 100 journaled through and between the frame-walls 1, 2. At its one end, the shaft 100 carries a rearward arm 101 engageable with a lug 102 on the lower end of the link 92, whereby the latter, when in normal "down" position, depresses the arm 101 for in turn, through the arms 99, shifting the bar 97 upwardly into spaced relation from the assembly-plate 75 for passage of a folded article *e* therebetween, which latter, moving between the rollers 76 and 84 until its motion is arrested by the gate 80, is disposed, on completion of its movement, with its projecting front margin of the lower fold *e* positioned beneath the bar 97, as best seen in Figure 8.

Extending upwardly from each projecting end of the bar 97 is a vertical leg or post 103. Rotarily supported by and between the respective upper ends of the posts 103 is a shaft 104 disposed transversely of the assembly-box E, within which the shaft 104 carries a series of depending arcuate lifters or fingers 107, whose lower ends normally engage or reside against the suitably chamfered upper face of the grip-bar 97, as best seen in Figure 8.

On upward actuation of the link 92 by the cam 95, the link-slot 91 permits an initial upward movement of the link 92 relatively to the pin 90 for disengaging the link from the arm 101, the weight of the bar 97 then causing the same to drop upon the plate 75 for gripping the margin of the fold *e'* prior to disengagement of the rollers 84 from the body of the folded article *e*, the shaft 104 and its carried lifters 107 dropping so that the lower ends of the lifters are brought very close to the adjacent margin of the folded article *e*.

At its respective opposite ends the shaft 104 carries a pair of cam-arms 106 disposed in the plane of swingable movement of the respective swingable frame-arms 88, whereby the latter, on upward movement thereof, impinge the cam-arms 106 for correspondingly effecting rotation of the shaft 105, thereby swinging the lifters 107 upwardly for engaging the folded-body *e* for lifting the same in following adjacency to the ascending rollers 84, thereby expanding the folds of the article *e* in a horizontal V-shaped manner, as may be said, the mouth of the V being presented toward the hopper A, for a purpose presently appearing, and as best seen in Figure 1.

The lower margin of the rear wall 79 of the hopper A is likewise spaced from the bottom wall 46 thereof, the space between the walls 46 and 79 being normally closed by a stop-gate 108, com-

posed of a series of pins or fingers vertically reciprocable in slots 109 suitably provided in the wall 79, the fingers of the gate 108 being supported by a transverse bar 110 mounted for vertical shiftable movement adjacent the rear face of the hopper-wall 79, and being adapted when in "down" or closed position for entering into suitably registering apertures 111 provided in the bottom wall 46 of the hopper A, for preventing egress of the compacted inserts *a-b-c-d* therefrom.

Pivotaly connected to the bars 110 is a pair of upstanding links 112 having at their upper ends a slot-and-pin connection 113 with the forward end of a lever 114, which extends rearwardly in and longitudinally of the assembly-box E, and is intermediately loosely fulcrumed on a shaft 115 journaled, for purposes soon appearing, in and between the frame-walls 1, 2, the lever 114, at its rear end, having a slot-and-pin connection 116 with a pair of links 117 which depend to, and have pivoted connection with, the gate-bar 82, as best seen in Figure 8.

At an intermediate point of its rear arm, the lever 114 carries a roller 118 having peripheral engagement with a cam 119 mounted on the shaft 65. The cam 119 is adapted, at proper intervals, during operation of the machine, to tilt the lever 114 upwardly at its front end, for lifting or opening the gate 108, the rear end of the lever 114 moving in the pin-and-slot arrangement 116. The cam 119 then subsequently supports the lever 114 at neutral or horizontal position, when both gates 80 and 108 are in "down" or closed position and thereafter the cam 119 reversely tilts the lever 114 for opening the gate 80, the front end of the lever 114 then moving in the slot-and-pin arrangement 113, as will be understood from Figures 1 and 8, the cam 119 being effective for opening the gate 108 as the folded article *e* is expanded, as described, in the assembly-box E.

The bottom-wall 45 of the hopper A is extended rearwardly therefrom, providing a platform 120 disposed in elevated position above the plate 75 and over which the inserts *a-b-c-d* are fed by the rollers 46, 49, on opening of the gate 108. The forward margin of the platform 120 is inclined downwardly and rearwardly and terminates substantially in vertical registration with the rear edge of the grip-bar 97. A pair of groups of rollers 121, suitably mounted on respective shafts 122 journaled in and between the frame-walls 1, 2, peripherally project upwardly through the platform 120, the rollers 121 being cooperatively engaged by corresponding superposed groups of rollers 123 mounted on respective shafts 124 shiftable mounted in suitable slots 125 provided in the respective frame-walls 1, 2. The inserts *a-b-c-d*, on emerging from the hopper A, are engaged between the rollers 121, 123, for movement over the platform 120 and into the expanded article *e* for reposing on the lower fold *e'* thereof, as seen in Figure 1.

The shaft 115 carries a series of goose-neck arms 126 extending forwardly and then downwardly in the assembly-box E, the swingable end of each arm 126 carrying an adjustably mounted pusher or plate 127 the arm 126 being normally retracted by a spring 126' to a position between the shafts 124 in upward spaced relation from the platform 120. The shaft 115 is extended through the frame-wall 2 and carries an arm 128, pivotally connected to a slide-bar 129 having a slot 130 whose walls slidably embrace the shaft 65, the bar 129 carrying a roller 131 having peripheral

cooperation with the cam 67, as best seen in Figures 7 and 8. On rotation of the cam 67, the slide-bar 129 is actuated once during each cycle of operation of the machine, and at a suitable time following the movement of the inserts over the plate 120, for oscillating the shaft 115 and in turn, swinging the arm 126 and their carried pushers 127 downwardly and forwardly between the rear pair of shafts 122, 124, for projecting the pushers 127 into engagement with the inserts *a—b—c—d* for completing the feeding movement thereof into the expanded article *e* the arms 126 passing through suitable slots 132 in the platform 120, in which slots 132, also, the lifters 107, are adapted to reside when in "down" position, as best seen in Figures 3 and 8.

Approximately at the time the pushers 126 reach their extreme rearward position for depositing the inserts *a—b—c—d*, in the article *e*, the cam 95 acts for lowering the rollers 84, thereby folding or closing the article *e* upon its contents, the lifters 107 meanwhile being retracted from the article *e*, and the grip-bar 97 being lifted from the margin of the flap *e'*. The rollers 84 yieldingly engage the article *e* upon its contained inserts, the whole becoming compacted between the rollers 76 and 84 and forming the envelope-enclosure *f*, as will presently more particularly be described.

Meanwhile the cam 119 acts for closing the gate 108 and then opens the gate 80 for allowing the inclosure *f* to be moved by the rollers 76 and 84 past the partition and onto a stuffer-plate 75' forming an extension of the plate 75, the cam 119 acting for closing the gate 80 after the inclosure *f* has passed thereunder onto the plate 75'. The plate 75' is extended rearwardly beyond the partition wall 78 and is coterminous with the vertical margin 133 of a break or drop in the contour of the respective frame-side walls 1, 2, a vertical partition-wall 134 being mounted a suitable distance forwardly of and between the wall-margins 133 for defining, between the side-walls 1, 2, and the partition walls 78, and 134, a so-called stuffer-box F. The terminal pair of the groups of rollers 76 disposed in stuffer-box F are more widely spaced than the others and are respectively disposed adjacent the partition walls 78 and 134, also respectively, of the stuffing-box, the terminal pair of groups of rollers 76 being surmounted by corresponding groups of shiftable rollers 135 mounted on respective shafts 136 whose opposite ends work in suitable slots 137 provided in the side-walls, 2, as best seen in Figure 15.

The lower margin of the partition 134 is spaced from the plate 75', the partition 134 being equipped with a stop-gate 138 comprising a series of fingers vertically reciprocable in slots 139 provided in the partition 134, the fingers of the gate 138 being supported by a transverse bar 140 mounted for vertical shiftable movement adjacent the rear face of the partition 134. The fingers of the gate 138 are adapted, when the gate is in "down" position, for entering a suitable series of registering apertures 141 provided in the plate 75' for normally effecting closure of the gap between the plate and the partition 134, as best seen in Figures 15 and 18.

The gate 138 is, by means presently appearing, lifted or opened as the inclosure *f* passes between the rollers 76 and 135 through the stuffer-box F, for movement of the inclosure *f* onto a so-called inclosure-receptive stuffer-pan 142 extending or projecting rearwardly from the

frame-margin 133. At its rear margin the pan 142 is provided with an arcuate cut-out 143, as best seen in Figure 2, the pan 142 at its opposite side margins being provided with spaced triangular upstanding envelope-expanders or wedge-shaped side walls 144 which, merging at their rear ends into the pan 142, extend their upper margins incliningly forwardly and upwardly a suitable height until they meet the partition 134, as best seen in Figure 15.

The stuffer-pan 142 is disposed in the horizontal plane of the stuffer-plate 75', and the pan-sides 144 are extended as side-bars or guide-walls 144' forwardly over the plate 75' into the stuffing-chamber F, the pan-extensions 144' being detachably supported from the side-walls 1, 2, by means of suitable fastening elements 145 passed through the walls 1, 2, for engaging spacer elements 146 attached to the pan extensions 144' as best seen in Figures 15 and 18.

Within the chamber F, the plate 75' is provided with a series of longitudinal slots 147, through which is shiftable a corresponding series of pusher-heads 148, each at its rear end terminating in an arcuate face for engaging an inclosure *f* reposing on the plate 75'. At its front end each head 148 is curved obliquely downwardly for merging into a slide-bar 149, the series of bars 149 being tied together in unitary relation by a pair of spaced transverse rods 150. Each bar 149 is provided with a longitudinal slot 151, whose walls reciprocally and slidingly engage a pair of longitudinally spaced transverse rods 152 mounted between the frame walls 1, 2, beneath the rollers 76, the slot 150 at its rear end being provided with an upward and rearward oblique extension 153, as best seen in Figure 15.

The series of bars 149 are reciprocable in unison over the rods 151 from extreme rearward to extreme forward positions by a means presently to appear. It may here be said, however, that when the bar 149 is shifted to extreme forward position, the rear one of the rods 152 engages the walls of the slot-extension 153, thereby causing the bar 149 to dip for shifting the head 148 forwardly and downwardly through the slots 147 for withdrawing the head 148 from the plate 75, as best seen in Figure 1, for permitting passage of the inclosure *f* thereover, and when the bar 149 is shifted to extreme rear position, the rods 152 engage the walls of the slot 151 for disposing the bar 149 in horizontal position, the heads 148 then being extended upwardly through the slots 147 in the plate 75' for projecting rearwardly thereover and between the same and the partition 134, as shown in Figure 15, for effecting final shifting movement of the inclosure *f* onto the pan 142.

Supported suitably by and between the frame-walls 1, 2, at the extreme forward end of the machine, is an envelope storage-chute G, for receiving a stack of envelopes *h*, the envelopes *h* being disposed in the chute G with their flaps *h'* on their under side and pointed forwardly. At its rear margin the bottom wall 154 of the chute G is provided with a triangular shaped cut-out 155, through which depends the flap *h'* of the bottom envelope in the chute, as best seen in Figure 9. At their respective lower ends the front and rear walls of the chute G are inclined obliquely rearwardly, the front wall of the chute G having a gate 41''' similar to the gate 41 of the chute B, as best seen in Figure 1.

Disposed subjacent to the chute G is a trans-

verse track-plate 156, having at its opposite side margins a pair of longitudinal raised ribs or cam-tracks 157. Working over the respective tracks 157, and having their upper runs moving rearwardly thereover, is a pair of endless roller-chains 158 trained, in turn, over respective pairs of front and rear sprockets 159, 160, also respectively, the sprockets 159, 160, being supported on corresponding front and rear shafts 161, 162, journaled in and between the frame walls 1, 2, as best seen in Figures 1 and 12.

At suitable equal intervals of their length, the chains 158 support a series of four feeder members H, each comprising a transversely registering pair of special link attachments or upstanding side-plates 163, respectively forming an inside link of the pair connecting a corresponding pair of rollers 163' of the particular chain 158, each registering pair of side-plates 163 being connected at their upper margins by a transverse slipper-bar 164, having at its rear margin an upwardly inclined lip 165, adapted, on movement of the feeder H rearwardly under the chute G, for entering into and between the bottom envelope *h* in the chute G and the flap *h'* thereof which depends through the opening 155, as seen in Figure 9.

Also at its upper margin, each plate 163 is equipped with a pair of longitudinally spaced inwardly-projecting front and rear pivot-pins or studs 166, 167, respectively, disposed on the opposite sides of the slipper-bar 164. Pivoted on the respective studs 166 is a pair of grip-levers 168, respectively extending approximately horizontally rearwardly under the slipper 164 for supporting a transverse gripper-bar 169 disposed in vertical registration with the slipper lip 165, each lever 168 being provided with a depending trip arm 170 disposed opposite its pivot 166, for a purpose shortly appearing.

Pivoted on each stud 167 is an approximately vertical latch-lever 171 having a depending arm provided with a catch 172, the lever 171 being adapted normally for engaging the end of the grip-lever 168 for retaining the same in depressed position for widely spacing the grip-bar 169 from the slipper-lip 165, a tensional member or spring 173 being engaged between the levers 168 and 171 for biasing the same mutually one toward the other, and a stop 173' being provided on the plate 163 for limiting the movement of the lever 171, as seen in Figures 9 and 11. Projecting from the respective frame-walls 1, 2, is a pair of trip-bars 174, disposed in the path of movement of the upper arm of the respective levers 171, whereby the latter, moving responsively to actuation of the chains 158, are caused to impinge the trips 174 for oscillation of the latch-levers 171 for releasing the grip-levers 168, the latter then, under bias of the springs 173, being actuated for snapping the grip-bar 169 upwardly into engagement with the envelope flap *h'* for gripping the same between the bar 169 and the lower face of the slipper-lip 165, the latter then residing in the crotch of the envelope *h*, and the envelope *h* then being secured to the feeder H for withdrawal of the envelope from the storage-chute G, on ensuing rearward travel of the feeder.

Each of the cam tracks 157 comprises, from front to rear, a horizontal elevated portion 157' and a horizontal depressed portion 157'', a suitably mounted roller 174' being provided adjacent the drop between the portions 157' and 157'', and the drop being disposed in such position that the

leading one of the pair of rollers 163', in cooperation with the roller 174', drops onto the depressed track-portion 157'' while the following roller of the pair is yet on the track-portion 157', whereby the feeder H is tilted rearwardly, approximately at the time the latch-levers 171 engage the trip-bars 174 for releasing the levers 168, for thus dipping the leading edge of the envelope *h* below the gate 41''' as best seen in Figure 10.

As a particular feeder H and its carried envelope *h* passes over the rear sprockets 160 to approximate registration with the horizontal axis thereof, the arms 170 of the levers 168 engage respective, suitably mounted, trip-rollers 175, as will be understood from Figure 13, whereby, on further movement of the carriage H around the sprockets 160, the levers 168 are oscillated for again widely spacing the grip-bar 169 from the slipper-lip 165, the levers 171 again, in turn, having latching cooperation with the levers 168, as shown by dot-dash lines in Figure 13.

Meanwhile, as the feeder H passes over the sprockets 160, the body-portion of the envelope *h* is turned over from horizontal position with its flap *h'* on the underside of the envelope to substantially inverted position with the mouth of the envelope on its upper side and the flap *h'* opened or expanded more or less forwardly, as shown by dot-dash lines in Figure 13.

A bed of continuously revolving rollers 176, extending rearwardly in the machine and mounted on respective shafts 177 journaled suitably in and between the lower-portion of the frame-walls 1, 2, has its initial rollers 176' disposed in rear of and below the sprockets 160, the roller 176' being disposed in the path of movement of a so-called drop-roller 178, supported by and between a pair of rearwardly extending arms 179 mounted on a shaft 180 journaled in and between the frame-walls 1, 2, approximately under the hopper A, as best seen in Figure 1.

The shaft 180 is extended through the frame-wall 1, and carries an arm 181 supporting a roller 182 having peripheral cooperation with a cam 183 mounted on a stub-shaft 184 projecting from the wall 1, the cam 183 being adapted for normally sustaining the roller 178 in elevated position as shown by dot-dash lines in Figure 1, so that the envelope *h* may readily pass thereunder during the turn-over movement of the envelope.

As the envelope *h* passes under the roller 178, the cam 183 acts for dropping the roller 178 in following relation to the descending envelope *h*, for engaging the same between the roller 176' and 178, whereby the envelope *h* is drawn away from the feeder H as the grip-bar 169 releases the flap *h'*, the latter sliding out from under the feeder-lip 165, in stretched-out or following relation to the body of the envelope *h*, as best seen in Figure 1.

The envelope *h* is then transported rearwardly in the machine over the bed of continuously revolving rollers 176, the latter extending under the hopper A, assembly-box E, and stuffer-box F, to a suitable point rearwardly of, and in a plane below, the stuffer-pan 142, as best seen in Figures 1 and 15.

Supported by and between the frame walls 1, 2, is a transverse threshold plate or bar 185 disposed approximately in horizontal alignment with, and rearwardly adjacent to, the terminal roller 176'' of the series of rollers 176. A transverse gate-bar 186 is mounted for vertical shiftable movement adjacent the rear margin of the plate 185,

and at its respective opposite ends is supported by a pair of levers 187, which extend forwardly in the machine adjacent to, and are pivotally supported as at 188 by, the respective frame-walls, 1, 2, each lever 187 including a depending arm 187' carrying a roller 189 having peripheral engagement with a cam 190 mounted on a shaft 191 journaled in and between the lower portion of the respective frame-walls 1, 2, as best seen in Figures 15 and 18.

Adjacent their swingable ends the respective levers 187 are provided with registering slots 192, in and between which is mounted a shaft 193 carrying a roller 194 disposed in vertical registration with the roller 176''. Normally, the cam 190 acts for sustaining the gate-bar 186 in closed or elevated position projectingly above the bar 185, the roller 194 then being likewise lifted in vertical spaced relation to the roller 176'' for movement of an envelope therebetween, as best seen in Figure 15, the envelope, however, being stopped with its leading margin impinging the gate 186. At a suitable period of the cycle of operation of the machine, however, the cam 190 acts for dropping the gate 186 below the level of the bar 185, the roller 194 then likewise dropping for yieldingly engaging the envelope, as *h*, between the rollers 176'' and 194, for feeding the same over the bar 185 and rearwardly onto a carriage K disposed, at such time, in horizontal registration with bed of rollers 176, as best seen in Figure 1.

The carriage K comprises a flat bed 195 having at its longitudinal side-margins suitably depending side walls 196, 197, respectively, and at its front margin being provided with a transverse, bulgingly depending, or rounded nose-wall 198, the latter at its lower margin merging into a recessed transverse pocket 199, as best seen in Figures 15 and 17.

Mounted through and between the side-walls 196, 197, is a transverse shaft 200. Mounted on the respective opposite ends of the shaft 200 is a pair of diametrically aligned rectangular hub-members 201, each of which is slidably engaged by a pair of spaced opposing parallel guide-walls 202 outstanding from the base portion of a goose-neck shaped crank 203, the latter having, in registration with the pair of walls 202, an elongated slot 204 whose walls slidably engage the shaft 200, as best seen in Figures 17 and 19.

The base of the crank 203 extends laterally from the shaft 200, and at its extremity carries a goose-neck arm 203' which returns over in spaced relation to the base of the crank 203, providing a slot 203'' therebetween, for a purpose shortly appearing. Rotarily supported by and between the free ends of the arms 203' is a shaft 205 carrying a flap-pressing roller 206, the axis of the roller 206 being disposed in alignment with the extended axis of the slot 204 in the base of the crank 203, a pair of suitable tensional members or springs 207 being mounted between the shafts 200 and 205, at the respective opposite ends thereof, for biasing the roller 206 on the bed 195, as best seen in Figure 17.

At an end projecting from the carriage wall 197, the shaft 200 is equipped with a pinion 208, which has meshing cooperation with a rack 209 mounted on a rearwardly extending slide-bar 210. The slide-bar 210 at its front end has a longitudinal slot 211 whose walls slidably engage the shaft 200, and at its rear end, the bar 210 is provided with a longitudinal slot 212 whose walls have sliding engagement with the projecting end of a shaft 213

journaled through and between the carriage side-walls 196, 197, adjacent the rear end of the carriage K, as best seen in Figures 16 and 17, the shaft 213 being continuously rotated by means of a flexible shaft 315 connected to a suitable driving agency, as presently appearing.

A cam 214 is mounted on the shaft 213, and has peripheral cooperation with a roller 215 mounted on the slide-bar 210, a tensional member or spring 216 being suitably mounted for biasing the slide-bar 210 on the cam 214, which latter, at the time of deposit of the envelope *h* on the carriage K, has previously acted for shifting the slide-bar 210 to extreme rear position, the flap pressing roller 206 being then engaged with the bed 195 at a suitable distance rearwardly of the front margin of the bed as will be understood from Figure 17.

Also mounted on the shaft 213 is a cam 217, having peripheral cooperation with a roller 218 carried by an arm 219 mounted on a transverse shaft 220 journaled in suitable bearings 221 upstanding from the bed 195, a suitably mounted tensional member or spring 222 serving for biasing the roller 218 on the cam 217, as best seen in Figures 16 and 17.

At the respective opposite sides of the carriage K, the shaft 220 carries a pair of forwardly extending levers 223 each terminating in a hook-like portion 224, adapted for extending under the shaft 205 when the flap-roller 206 is in its rearward "up" position, the levers 223, adjacent the hook-portions 224, being connected by a transverse presser-bar 225 carrying a depending grip-knob 226, for a purpose presently appearing, and as best seen in Figures 16 and 17.

At the time the carriage K is in horizontal registration with the rollers 176, however, the cam 217 has acted for lifting the arms 223, which, in turn, have engaged the opposite ends of the shaft 205 for lifting the roller 206 upwardly from the bed 195, thereby permitting ensuing movement of the envelope *h* therebetween under bias of the rollers 176'', 194, responsive to lowering of the gate 186, as best seen in Figure 1.

Upstanding from the respective side-margins of the bed 195, forwardly of the shaft 220, is a pair of bearings 227 which rotarily support a transverse shaft 228, having, at its end projecting over the side-wall 197, an arm 229 carrying a roller 230 which has peripheral cooperation with a cam 231 mounted on the shaft 213, a suitable tensional member or spring 232 serving for biasing the roller 230 on the cam 231, as best seen in Figures 16 and 17.

Mounted on the shaft 228 is a forwardly projecting grip-plate 233 provided, adjacent its forward swingable margin, with a series of depending fingers 234 shiftably working in a corresponding series of apertures 235 provided transversely in the bed 195, as best seen in Figure 15.

The cam 231 is adapted, at the time the carriage K is in position for receiving the envelope *h*, for lifting the grip-plate 233 so as to dispose its forward margin in upwardly spaced relation to the bed 195, the fingers 234 then rising above the bed 195 for providing a series of stops against which the leading edge of the envelope *h* is impinged as it is fed to the carriage K, with the front margin of the grip-plate 233 overhanging the rear margin of the envelope, the flap *h'* at such time being forwardly extended from the envelope *h* under the drop rollers 194, as will be understood from Figure 1.

At its rear end the carriage K is provided with

a depending box-like leg 236, from the opposite lower corners of which forwardly extends a pair of respective slide-bars 237, each having a longitudinal slot 238 whose walls slidably engage a pair of longitudinally spaced rollers 239, each pair of rollers 239 being supported from and by the adjacent one of a pair of side-frames 240 upstanding from the opposite side-margins of a platform 241 of a vertically reciprocable elevator-frame L, as best seen in Figures 1, 15 and 16, whereby the carriage K is shiftably supported for longitudinal reciprocation on the elevator L, for a purpose presently appearing.

Each of the side-frames 240 is provided with a pair of longitudinally spaced substantially rectangular apertures 242, the walls of each aperture 242 enclosing the correspondingly adjacent ones of suitably formed eccentrics or cams 243 disposed on the respective ends of a pair of transverse shafts 244 mounted in and through the respective apertures 242 of the side-frames 240, each side-frame 242 being equipped with vertical guides 242', arranged in spaced pairs each slidably embracing a respective shaft 244, for guiding the elevator L in its vertical reciprocatory movement, as best seen in Figures 15 and 16.

At their respective opposite ends the shafts 244 are rotarily supported in and on respective bearing standards 245 upstanding from a base-plate 246 supported by and between the lower margins of the frame walls 1, 2, each of the shafts 244 being equipped with a pinion 247 having meshing cooperation with respective racks 248 mounted on a slide-bar 249 provided with a pair of spaced slots 250, the walls of the respective slots 250 having sliding cooperation with the also respective shafts 244.

The bar 249 extends forwardly from the elevator L, and at its forward end is provided with a slot 251 whose walls slidably engage the shaft 191, the front end of the bar 249 carrying a roller 252 having peripheral cooperation with a cam 253 mounted on the shaft 191. A suitably mounted tensional member or spring 254 serves for biasing the roller 252 on the cam 253, as best seen in Figure 1, the cam 253 being adapted, at a suitable moment of operation of the machine, for rotating the eccentrics 243 to "down" position, the elevator L being then in "lowered" position for disposing the carriage K in position for receiving the envelope h from the bed of rollers 176, as best seen in Figure 1.

After the envelope is deposited on the carriage K, the cam 231 acts for lowering the grip-plate 233 on the envelope h for gripping the same at its rear margin on the bed 195, whereupon the cam 253 acts for reciprocating the bar 249 for rotating the eccentrics 243 angularly 180 degrees from "down" position to "up" position as shown in Figure 15, for lifting the elevator L to "raised" position, the elevator L in turn upraising the carriage K until the bed 195 is disposed in a plane slightly below that of the stuffer pan 142.

As the carriage K is upraised the cam 190 acts for lifting or closing the gate 186, the envelope-flap h' being meanwhile drawn out from between the rollers 176'', 194, and by such movement, folded over the front end of the carriage K. The cam 217, in the interim, acts for lowering the arms 223 for returning the roller 206 toward the bed 195 for engaging the envelope h thereon, the cam 214 then acting for revolving the arms 203 for causing the roller 206, under bias of the spring 207, to pass over the front end or nose 198 of the carriage K, for wrapping the flap h' thereover, the

roller 206 coming to rest while yet in contact with the flap h' at the lower end of the nose 198, as best seen in Figure 21.

Pivotaly connected, as at 255', to the leg 236 of the carriage K, is a link 255, which extends forwardly, and is pivotaly connected to the upper swingable end of a lever 256 whose lower end is pivotaly supported on a bracket 257 upstanding from the base-plate 246, as best seen in Figure 1, the lever 256, at an intermediate point, carrying a roller 258 which has peripheral cooperation with a cam 259 mounted on the shaft 191, a suitably mounted spring 260 serving for biasing the roller 258 on the cam 259, as best seen in Figure 15.

The cam 259 is adapted for shifting the carriage K forwardly on the elevator L as the latter reaches its "raised" position, the cam 217 meanwhile lifting the levers 223 for spacing the grip-knob 226 upwardly from the bed 195, until the carriage K resides substantially under the stuffer-pan 142, the latter then overlapping the carriage K for entering and widely expanding the mouth of the carriage-supported envelope h, the lower "front" wall of the envelope h residing between the pan 142 and the bed 195, and the upper "back" wall of the envelope spanning across the upper margins of the flanges 144 of the stuffer-pan 142, as best seen in Figure 15.

At such time, a pair of lugs 261, disposed respectively on the opposite sides of the forward end of the carriage K, engage a corresponding pair of gate-legs 262 depending respectively from the opposite ends of the gate bar 140, as best seen in Figures 19 and 20, for lifting the gate 138, whereby, as the envelope h is opened or spread upon the pan 142, the enclosure f from the stuffer-box F is fed to the pan 142, under bias of the rollers 76, 135, the pushers 148 meanwhile being rearwardly shifted for inserting the enclosure f fully into the envelope h. The pushers 148 are actuated at the proper time, in such rearward movement, by means of a pair of cams 263 mounted respectively on the opposite ends of the shaft 191 and having peripheral cooperation with rollers 264 carried by respective levers 265, each lever 265 at its rearward end being pivotaly supported, as at 266, on and by an adjacent frame-wall 1, 2, as the case may be, and as best seen in Figure 18.

Each lever 265 is biased by a spring 267 for following the cam 263, and at its forward free end is pivotaly connected to the lower end of an arcuate link 268, provided with a longitudinally arcuate slot 269 whose walls have sliding engagement with a particular shaft 177 of the bed of rollers 176, the respective upper ends of the pair of links 268 being connected, by other respective links 270, with the opposite ends of the rear one of the tie-rods 150 of the bank of pusher-slide-bars 149, as best seen in Figure 15.

Depending from the stuffer-plate 75' approximately under the partition 134, is a transversely disposed sponge-box 271, containing a suitable water absorption material 272, as a sponge, a body of felt, or the like. A conduit or pipe 273, disposed through the sponge-box 271, is provided with a series of suitable outlet apertures 274, and at its opposite ends extends through the respective frame-walls 1, 2, and supports, on respective suitably upturned stem-portions 273' of the conduit 273, a pair of water-reservoirs 275, for maintaining the sponge 272 in moistened condition, as best seen in Figure 15.

At its rear side, the sponge-box 271 is closed by a transverse shiftable wall or mask 276, concave

in cross-section complementary to the nose 198 of the carriage K, and having a series of elongated apertures or slots 277, arranged in a V-shaped alignment as best seen in Figure 18, for conforming to the contour of the glued or adhesive-bearing margin of the triangular envelope-flap *h'* supported on the carriage nose 198.

As the carriage K approaches the forward terminus of its stroke, the cam 214 acts for retracting the roller 206 into the pocket 199 of the carriage K, thus releasing the envelope flap *h'* as the latter is engaged between the nose 198 and the mask 276, the mask 276 yielding to such engagement for compressing the sponge 272, thereby causing the egress, through the apertures 277, of a sufficient amount of water for moistening the gummed margin of the flap *h'* as best seen in Figure 15.

At the completion of the envelope-stuffing operation, the cams 263 act for withdrawing the pushers 148 from the stuffer-pan 142, and the cam 217 actuates the levers 223 for dropping the grip-knob 226 toward the bed 195, the cut-out 143 being provided in the pan 142 for permitting the envelope *h* and its contained enclosure *f* to be gripped on the carriage K between the knob 226 and the bed 195, for effecting subsequent withdrawal of the enclosure *f* from the pan 142.

The cam 259 then actuates the carriage K rearwardly on the elevator L, the carriage K, in its movement from the stuffer-pan 142, removing the enclosure-stuffed envelope *h* therefrom, and, meanwhile, releases the gate-legs 262 for dropping the gate 138 to closed position. As the carriage K clears the pan 142, the cam 214 acts for revolving the arms 203 upwardly, the roller 206 then emerging from the carriage-pocket 199, and, engaging the moistened flap *h'* from beneath, folds the same upwardly and over the mouth of the envelope *h* and meanwhile firmly presses and seals the flap *h'* on the envelope *h*, the several parts taking their respective positions shown in Figure 17.

M designates a take-off mechanism comprising a pair of front and rear brackets 278, 279, respectively, upstanding from the frame-wall 1, at the rear end of the machine, as best seen in Figures 1 and 2. Journaled in and between the brackets 278, 279, is a pair of upper and lower superposed shafts 280, 281, respectively, the upper shaft 280 being shiftable in slots 282 provided in the respective brackets 278, 279.

A pair of normally peripherally engaged upper and lower take-off rollers 283, 284, mounted respectively on the like respective shafts 280, 281, have their meeting plane disposed for horizontal registration thereof with the top of the bed 195 when the carriage K is in upraised position, the carriage K, at the conclusion of its rearward stroke on the elevator L, being disposed in transverse registration with the mechanism M, as will be understood from Figure 2.

A pair of bell-cranks 285 is pivotally mounted on the shaft 280, at the respective opposite ends of the upper roller 283, one or the upper arm of each bell-crank 285 extending over the path of movement of the carriage K, and at its swingable end having a vertical slot 286. Between the upper arms of the crank 285 is disposed a pair of rollers 287 mounted on a shaft 288 whose opposite ends are shiftable engaged in the respective slots 286.

Normally a pair of springs 289, engaged between the swingable ends of the respective

cranks 285 and a corresponding pair of standards 290 upstanding from the brackets 276, 279, as best seen in Figure 1, serve for yieldingly elevating the rollers 287 in suitably spaced relation to the plane of movement of the bed 195 of the carriage K, suitable stops 291 being engaged by the cranks 285 for limiting the upward movement thereof, as best seen in Figure 16.

The bed plate 195 is provided with a pair of longitudinally spaced transverse slots 292, positioned so as to be overlain by the envelope *h* on the carriage K and adapted to be in registration with the rollers 287 when the carriage is in its rearward position.

A pair of rollers 293 mounted interiorly the walls of the carriage K, in registration with the respective slots 292, is mounted on a shaft 294 journaled in the swingable end of a frame 295 whose other end is pivotally supported on a shaft 296 journaled in a suitable hanger 297 depending from the bed 195, as best seen in Figure 16.

At its rear end the shaft 294 carries a pinion 298 meshing with a gear 299 on a shaft 296', the latter being rearwardly extended through a second hanger 300 depending from the bed 195, the shaft 296' at its rear end carrying a bevel pinion 301 meshing with a bevel-gear 302 on the shaft 213, as best seen in Figure 15, whereby the rollers 293 have continuous rotation by and with the shaft 213.

Reciprocable in and through the carriage side walls 196, 197, is a cam-bar 303, carrying an upstanding cam-lug 304 for engaging the swingable end of the roller-frame 295. One end of the bar 303 is extended through the side-wall 197 and has suitable slot-and-pin connection, as at 305, with the front end of a lever 306, mounted for swingable movement in a horizontal plane, and intermediately pivoted on a bracket 307 projecting laterally from the carriage K, the lever 306 at its rear end carrying a conical roller 308 cooperating with a face-cam 309 mounted on the shaft 213, as best seen in Figures 2 and 16.

At its other end the bar 303 is extended through the carriage side-wall 196, and is adapted to be disposed, when the carriage K is in its rearward raised position, in registration with a yoke-bar 310 extending between and connecting the lower ends of the depending arms of the cranks 285, the yoke 310 being disposed for swingable movement under the lower take-off roller 284, as best seen in Figure 16.

At the conclusion of the stroke of the carriage K, the cam 217 acts for lifting the levers 223 for raising the roller 206 from the envelope *h* while also releasing the envelope from the grip of the knob 226, the goose-neck arm 203' being then lifted above the plane of the bed 195 so that the envelope *h* may, in its subsequent movement laterally from the carriage K, move through the slot 203'' of the crank 203. At the same time, the cam 231 acts for lifting the grip-plate 233 from the envelope, as shown by dot-dash lines in Figure 17.

Following these operations, the cam 309 acts for shifting the bar 303 for engaging its cam-lug 304 with the frame 295 for lifting the rollers 293 peripherally through the slots 292 into engagement with the now released envelope *h* on the bed 195, while at the same time, the bar 303 engages the yoke 310 for swinging the bell-cranks 285, for dropping the rollers 287 toward the carriage K and into yielding engagement with the envelope *h*, the latter being then engaged be-

tween the rollers 287 and 293, as will be understood from the dot-dash lines in Figure 16.

Under bias of the rollers 287, 293, the now-sealed envelope *h* is shifted laterally off the carriage K into engagement with and between the take-off rollers 283, 284, which latter serve to remove the envelope from the machine for delivery of the envelope to any convenient place, as a storage chute, a stamp-affixing machine or the like, (not shown).

As soon as the envelope has been discharged from the rollers 287, 293, the cam 295 acts for lowering the elevator L, for again disposing the carriage K in registration with the bed of rollers 276, the several parts of the machine being then restored to their respective positions, as shown in Figure 1, for repetition of another cycle of operations of the machine.

For effecting actuation of the several parts of the machine, any suitable motivating agent may be provided, as an electric-motor 311 supported on a bracket 312 extending from the frame wall 2, the motor 311 working through a speed-reducer 313, as best seen in Figure 2, for connection with the shaft 191 for driving the shaft 191 at the rate of one revolution per cycle of operations of the machine.

The end of the shaft 191, extending through the frame-wall 1 is connected, as at 314, to one end of a suitably mounted flexible-drive shaft 315, whose other end is suitably connected, as at 316, to the shaft 213 of the carriage K, whereby the shaft 213 is rotated in synchronism with other parts of the machine while the carriage K may readily partake of its several shifting movements required during the operation of the machine, as best seen in Figure 2.

A sprocket-chain 317 is run from a sprocket 318 on the shaft 191 to a suitable sprocket 319 mounted on the gear 31'', of the folded article-feeder mechanism C'', at a one-to-one ratio for effecting actuation of the several mechanisms C, C', C'', and the envelope-feeders H, as hereinbefore described, the chain 317 passing also over a sprocket 320 attached to the cam 183 which actuates the drop-roller 178, as indicated in Figure 1.

For actuating the several banks of rollers of the machine, a drive-pulley 321, mounted on the shaft 191, has vertical belt connection, as at 322, with a pulley 323 mounted on one of the roller shafts 177, this particular shaft driving the other shafts 177 by means of pulleys 324 engaged by a longitudinal belt 325, as indicated in Figure 18.

In turn, one of the shafts 77 is equipped with a pulley 326 having a vertical belt connection 327 with a pulley 328 mounted on a subjacent shaft 177, this particular shaft 77 driving the other shafts 77 by means of a similar arrangement of pulleys 329 and longitudinal belt 330, as indicated in Figures 4 and 7.

The hopper feed roller-shafts 48 are equipped with pinions 331 meshing with intermediate idlers 332, one of which latter meshes with a pinion 333 on the subjacent shaft 77. Similarly, the hopper take-off roller-shafts 122 are equipped with pinions 334 meshing with an idler 335 in turn meshing with a pinion 336 on another or subjacent shaft 77, as best seen in Figures 3, 4, and 7.

As the inserts *a*, *b*, *c*, *d*, the folded articles *e*, and the envelope *h*, may have variations in their respective lengths, suitable false walls, indicated generally at 337, may be mounted in the respective chutes B, B', B'', B''', D, and G, for accommodating such variations in the dimensions of their contents, as best seen in Figure 2. Likewise,

suitable longitudinal guide strips 338 may be mounted on the respective frame-walls, 1, 2, for guiding the envelopes along the rollers 176, as seen in Figure 4. Similarly, guide-strips 339 may be provided for guiding the folded articles *e* over the rollers 76, and other guides 340 may be provided for guiding the inserts *a-b-c-d* over the platform 120, as best seen in Figure 3. It will be borne in mind that envelope-expanders or stuffer-pans, 142, of different widths are employed for different sizes of envelopes and enclosures, the extensions 144' of the stuffer-pan 142 acting as guides for an enclosure *f* during its movement through the stuffer-box F. The several above mentioned guides may be attached to the frame or other walls of the machine in a manner similarly as described for the pan-extensions 144', so that, by varying the thickness of the spacers between the several walls and the guides, the latter may be set more or less inwardly from the several walls for narrowing or widening the channel between the guides, as circumstances may require.

The shaft 281 of the take-off mechanism M is provided with a bevel-pinion, 341 which meshes with a bevel-gear 342 mounted on a shaft 343 journaled in the brackets 278. The shaft 343 is driven from the shaft 191 by means of a belt-and-pulley arrangement generally indicated at 344, as best seen in Figures 1 and 2.

The use and operation of my improved mechanism for assembling and inserting inclosures in envelopes may be briefly summarized as follows,—

Since the machine operates continuously, a cycle, of operation of the machine may, for the purpose of description, be defined as the operations taking place from the time one envelope *h* is discharged from the bed of rollers 176 onto the carriage K, to the time the next succeeding envelope is so delivered to the carriage K.

Figure 1 represents the beginning of such a cycle. As will be seen, an envelope *h* is being delivered to the carriage K from the rear end of the bed of rollers 176, and another envelope *h* has been deposited on the front end of the bed of rollers 176, and still another envelope *h* is being drawn from the chute G by a feeder H; thus the machine may operate on three envelopes *h* at the same time.

Likewise, as will be seen from Figure 1, a folded article *e* is disposed in expanded position in the assembly-box E while yet another folded article *e* is being fed to the belts 76 from the chute D; thus the machine may be operating on two of the articles *e* at the same time.

And, at the same time indicated in Figure 1, a group of inserts *a-b-c-d* is being fed from the hopper A to the expanded article *e*, the inserts having been previously fed from the respective chutes B, B', B'', B''', to the hopper A, and compacted therein by the rollers 49.

Shortly after the time indicated in Figure 1, a second group of inserts *a-b-c-d* will be started from the chutes B, B', B'', B''', toward the hopper A, and, thus, the machine may be operating on two groups of the inserts at the same time, one of the inserture groups, however, being embraced by an article *e* for forming the envelope-inclosure *f* on the pan 142, as shown in Figure 15, at which time also, it may be said an envelope *h* will be expanded on the pan 142, another envelope will be on its way over the rollers 176, and still another envelope will be passing over the sprockets 160.

The next stage of the cycle is shown by dot-

dash lines in Figures 16 and 17, wherein the stuffed envelope *h*, having been removed with its inclosure *f* from the pan 142 and the flap *h'* of the envelope having been sealed by the roller 206, is now in process of removal from the machine. At this time, also, an envelope on the rollers 176 will be approaching the gate 186, the envelope passing over the sprocket 160 will have been inverted in readiness for deposit on the rollers 176, a folded article *e* will be in process of expansion in the assembly-box E, and a group of inserts *a-b-c-d* will be disposed in the hopper A in readiness for discharge therefrom. On ensuing discharge of the envelope from the machine, this particular cycle is completed and the parts revert to their several positions of Figure 1.

It will be seen that my invention accomplishes its object in a highly efficient and practicable manner. I might add that, in one commercial use of the machine, the folded article *e* may comprise a personal letter including an address, and the envelope *h* may be of the "window" type, wherein a transparency is provided in the front or face wall of the envelope.

It becomes an object of my invention, in such event, to bring the address on the folded article *e* into registration with the "window" of the envelope *h*, and, for the furtherance of such object, the letter comprising the folded article *e* is folded with the address disposed on the outside face of the longer fold *e'* of the letter-article *e*, the body of the letter being comprised in the other shorter flap or flaps thereof, depending upon the dimensions of the letter-sheet. As will be readily understood, the envelope *h* is disposed on the carriage K with its face-side down. Hence when the envelope *h* is mounted on the pan 142, the window of the envelope will be on the underside of the pan, and, since the letter flap *e'* is fed to the pan 142 on the underside of the inclosure *f*, the address of the letter, if properly placed thereon when writing the letter, will be in registration with the window of the envelope.

If desired, the chute D may, instead of the folded articles *e*, contain a stack of address-bearing cards, or other articles not necessarily of the folded type, the respective cards being disposed in the chute D with the address on the under-face of the card. In such case, when a card is fed to the assembly-box E, the card will be firmly held in and between the grip-bar 97 and the plate 75 during the feeding of the group of inserts *a-b-c-d* from the hopper A into the assembly-box E for the depositing of the insert-group on top of the card, thus, again assuring that the address on the card will appear in registration with the "window" of the envelope *h*.

Again, the several inserts *a-b-c-d* may be enclosed in the envelope *h* without a folded article, if so desired, and it is possible, in such case, to so adjust the cam 26 of the mechanism C of the chute B, for example, as to insure that the particular insert *a* will reside at the bottom of the group of inserts *a-b-c-d* so that, if the insert *a* has an address provided properly on its underface, such address may appear in registration with the "window" of an envelope *h*.

Further, the envelope *h*, itself, may have the address printed on its front or rear face, in which event, a group of inserts *a-b-c-d*, alone, or inclosed in a folded article *e*, may be inserted into the envelope, as may best serve the purpose.

In order that the marginally projecting flap or foldable portion *c'* of the folded article *e* may be disposed in the assembly-box E in position for

gripping engagement of the flap *e'*, the partition 78 may, by means of its adjustable attachment 78' to the walls 1, 2, be shifted forwardly or rearwardly in the box E suitably to the dimensions of the folded article, as may best serve the purpose. Other containers having the characteristics of an envelope, that is to say, cartons or the like, having a side or end opening closable by a flap or similar closure element, may be successfully employed in the machine, for the purpose set forth, by altering the dimensions of the several mechanisms for providing the requisite clearance for the body of the container in its movement through the machine, and I do not wish to be limited in the use of my invention to the specific type of envelope shown.

It will be understood that other changes and modifications in the form, construction, arrangement and combination of the several parts and mechanisms of the machine may be made and substituted for those herein shown and described, without departing from the nature and principles of my invention.

Having thus described my invention, what I claim and desire to secure by Letters-Patent is,—

1. In an apparatus of the character described, the combination comprising a feed-plate having a projecting end for expanding the mouth of an envelope, envelope-supporting means shiftable for engaging an envelope on the envelope-expanding end of the feed-plate, means for assembling a plurality of inclosures, means for feeding the inclosures into the expanded envelope, and means including a roller shiftable carried by the support for sealing the envelope.

2. In an apparatus of the character described, the combination comprising an envelope support including a bed having a rounded nose, a roller shiftable carried by the support, means for moving the roller from the bed over the nose for folding the flap of an envelope thereover, means for expanding the mouth of the envelope, means for assembling a plurality of inclosures, means for inserting the inclosures into the expanded envelope, and means for moving the roller from the nose over the bed for closing the flap of the envelope.

3. In an apparatus of the character described, the combination comprising means for gathering a plurality of inserts, means for expanding the folds of a folded article carrying an exposed address, means for feeding the gathered inserts into an expanded article, means for closing the article on its contained inserts for forming an envelope-inclosure thereof, means for expanding the mouth of an envelope of the window type, means for feeding the inclosure into the expanded envelope with the address of the article visible through the window of the envelope, and means for sealing the envelope on its contained inclosure.

4. In an apparatus of the character described, the combination comprising means for opening the flap of an envelope, means for expanding the mouth of the flap-opened envelope, means for assembling a plurality of inserts and means for feeding the inserts into the expanded envelope, said last mentioned means including a feed-plate, a first continuously revolving roller-bed peripherally projecting through the feed-plate, and a second roller-bed swingingly shiftable as a unit toward the first roller-bed for engaging the assembled inserts therebetween.

5. In an apparatus of the character described, 75

the combination comprising means for expanding the mouth of an envelope, means for feeding an inclosure into the expanded envelope, and means for sealing the envelope, said last mentioned means including a moisture-carrying body and a perforated mask covering said body for effecting moistening of the flap of the envelope.

6. In an apparatus of the character described, the combination comprising a shiftable envelope-support including a bed having a rounded nose, means for opening the flap of an envelope over the nose of the support, means for expanding the mouth of the flap-opened envelope, means for shifting the support for mounting an envelope on the expanding means, means for feeding an inclosure into the expanded envelope, and means for moistening the opened flap of the envelope, said last mentioned means including a moisture-carrying body, and a perforated mask covering said body, the body and mask being disposed for engagement of the opened flap between the mask and the nose of the support or shifting movement of the latter for expanding the envelope.

7. In an apparatus of the character described, the combination comprising a shiftable envelope support, means for opening the flap of an envelope over a side of the support, means including a feed-plate having a projecting end equipped for expanding the mouth of the flap-opened envelope, means for feeding an inclosure to and over the feed-plate, moisture applying means disposed beneath the feed-plate, and means for shifting the support toward and under the feed-plate for concurrently mounting the envelope on the expanding means and effecting moistening of the flap of the envelope.

8. In an apparatus of the character described, the combination comprising insert storage-means, a gathering hopper, and means for feeding inserts from the storage-means to the hopper, said last mentioned means including a roller-bed for supporting the inserts in the storage means, and a shiftable support for the roller-bed for varying the inclination thereof.

9. In an apparatus of the character described, the combination comprising an insert gathering-hopper, means for feeding inserts to the hopper, a first roller-bed disposed at the bottom of the hopper, and a second roller-bed reciprocally shiftable in the hopper for movement toward the first roller-bed for compacting the gathered inserts in the hopper.

10. In an apparatus of the character described, the combination comprising an insert gathering hopper, means for feeding inserts to the hopper, and means for feeding the gathered inserts from the hopper, said last mentioned means including a first normally revolving roller-bed disposed at the bottom of the hopper, a second roller-bed shiftable toward the first roller-bed for engaging the inserts therebetween, and a gate shiftable for controlling egress of the inserts from the hopper.

11. In an apparatus of the character described, the combination comprising an insert gathering-hopper, means for feeding inserts from the hopper, and means for feeding the gathered inserts into a folded article, said last mentioned means including a first roller-bed, a second roller-bed shiftable toward and from the first roller-bed, and oscillatory members actuable responsive to movement of the second roller-bed from the first roller-bed for guiding the inserts therebetween.

12. In an apparatus of the character described,

the combination comprising envelope expanding means, envelope storage means, and means for feeding successive envelopes from the storage means to the expanding means, said last mentioned means including a carriage, cooperable gripping members mounted on the carriage, a latching member swingable on the carriage for normally spacing said gripping members one from the other, and means for tripping the latching member for releasing the gripping members for engaging the flap of an envelope therebetween.

13. Apparatus of the character described, comprising in combination, a support, means including a transverse bar shiftable for gripping one fold of a folded article on the support, means including oscillatory member actuable for lifting the other fold of the article from the gripped fold thereof, means for feeding an insert to and between the expanded folds of the article, envelope expanding means, a roller-bed cooperable with the support for feeding the article and its contained insert to the expanding means, means for lifting the roller-bed from the support, and means responsive to movement of the roller-bed for shifting the bar and actuating the oscillatory members.

14. In an apparatus of the character described, the combination comprising means for spacing the foldable portions of a folded article one from the other, means for feeding other articles to and between the spaced portions of the folded article, a first continuously revolving roller-bed for supporting the folded article, a stop for retaining the article on the first roller-bed, a second roller-bed shiftable as a unit from the first roller-bed responsive to spacing of the folded-article portions, envelope-expanding means, and means for shifting the second roller-bed toward the first roller-bed and concurrently actuating the stop for feeding the folded article to the envelope-expanding means.

15. In an apparatus of the character described, the combination comprising envelope-expanding means, envelope feeding means disposed in a plane below the expanding means, and means including an elevator for receiving an envelope from the feeding means for lifting the envelope to the plane of the expanding means for mounting an envelope thereon.

16. In an apparatus of the character described, the combination comprising envelope-expanding means including a pair of spaced wedge-members, an envelope carriage and means for moving the carriage in a right angular path for mounting an envelope on the wedge-members.

17. In an apparatus of the character described, the combination comprising envelope-expanding means including a feed-plate and a gate cooperable therewith, means including a movable envelope-support for mounting an envelope on the expanding means, means for feeding inserts to and over the feed-plate for inclosure in the envelope, and means for opening the gate responsive to movement of the envelope-support.

18. In an apparatus of the character described, the combination comprising stationary envelope-expanding means, a shiftable envelope-support including a bed having an arcuate side-wall, a roller shiftable over the bed and the side-wall, yielding means normally biasing the roller on the bed, means for feeding an envelope on the bed of the support, means for spacing the roller from the support during the envelope-feeding operation, means on the support shifting the rollers

over the arcuate side-wall for folding the flap of the envelope thereover, and means for shifting the support for mounting the envelope on the expanding means.

19. In an apparatus of the character described, the combination comprising spaced stationary wedge-members, means for mounting an envelope on the wedge-members for expanding the mouth of the envelope, and means including a feed-plate and a gate actuably responsive to mounting of the envelope on the wedge-members for feeding an inclosure between the wedge-members into the envelope.

20. In an apparatus of the character described, the combination comprising spaced stationary wedge-members, a shiftable envelope-support including a bed and rollers normally depressed therein, means for shifting the support for mounting an envelope on the wedge-members for expanding the mouth of the envelope, means for gathering a plurality of inclosures, means for feeding the gathered inclosure to and between the wedge-members for depositing the inclosures in the envelope, and means for peripherally projecting the rollers above the bed for discharging the envelope and its contained inclosures from the support.

21. In an apparatus of the character described, the combination comprising inclosure-receptive means including envelope-expanding members, means for feeding an inclosure to the receptive means, means including an envelope-support shiftable from a first plane to a second plane for mounting an envelope on the expanding members for surrounding the inclosure fed to the receptive means, and means including a feed-roller and a gate cooperable therewith disposed at the first plane for feeding an envelope to the envelope support.

22. In an apparatus of the character described, the combination comprising inclosure-receptive means including a feed-plate having a portion cut-away envelope-expanding members upstanding from the sides of the feed-plate, means for feeding an inclosure to the receptive means, means including a shiftable envelope-supporting carriage for mounting an envelope on the expanding members for surrounding an inclosure fed to the receptive means, means on the carriage actuatable toward the cut-away portion of the feed-plate for gripping the envelope and the inclosure on the carriage, and means for shifting the carriage for removing the envelope and its contained inclosure from the receptive means.

23. In an apparatus of the character described, the combination comprising inclosure-receptive means including envelope-expanding members, means for feeding an inclosure to the receptive means, means for mounting an envelope on the expanding members for surrounding an inclosure fed to the receptive means, and mechanism for feeding an envelope to the mounting means, said mechanism including an envelope-storage, a conveyor, a carriage on the conveyor for gripping the flap of an envelope in the storage means, and a track for supporting the conveyor, said track having a depressed portion for causing the carriage on the conveyor to descend while removing a flap-gripped envelope from the storage-means.

24. In an apparatus of the character described, the combination comprising envelope expanding

means, first and second feed-plates, normally rotating feed rollers cooperating with said feed-plates, means including a first gate cooperable with the first feed-plate for holding an inclosure thereon, means including a second gate cooperable with the second feed-plate for feeding other inclosures from the second feed-plate onto the first mentioned inclosure, and means for concurrently opening the first gate and closing the second gate for feeding the inclosures to the expanding means.

25. In an apparatus of the character described, the combination comprising envelope expanding means, an envelope support, means including an oscillatory bar for gripping an envelope on the support, fingers depending from the bar for cooperation with the support for locating the envelope on the support for engagement by the gripping bar, means for shifting the bar for gripping the envelope on the support, and means for shifting the support for mounting the gripped envelope on the expanding means.

26. In an apparatus of the character described, the combination comprising means for opening the flap of an envelope, means for feeding an inclosure into the opened envelope, and means for sealing the envelope, said last mentioned means including a yieldable moisture carrying body, a shiftable supported mask compressibly engageable with said body, and means for pressing the flap of the envelope on the mask for effecting moistening of the flap of the envelope.

27. In an apparatus of the character described, the combination comprising means for expanding the mouth of an envelope, envelope-supporting means shiftable for respectively engaging and disengaging an envelope on and from the expanding means, and means including a roller shiftable carried by the support for sealing the envelope on disengagement thereof from the expanding means.

28. In an apparatus of the character described, the combination comprising inclosure-receptive means including envelope-expanding members, means for feeding an inclosure to the receptive means, and means including an envelope-support shiftable from a first plane to a second plane for mounting an envelope on the expanding members for surrounding the enclosure fed to the receptive means.

29. In an apparatus of the character described the combination, comprising insert storage means, a stationary gathering hopper, means for feeding inserts into the hopper, means for compacting the gathered inserts in the hopper, means for expanding the folds of a folded article, means for feeding the gathered inserts from the hopper into an expanded article, means for expanding the mouth of an envelope, and means for feeding the article and its contained inserts into the expanded envelope.

30. In an apparatus of the character described, the combination, comprising a feed-plate, a pan projecting from the feed plate, the pan having fixed side walls forming envelope expanding members, means for detachably mounting the pan on the feed-plate, and means for mounting an envelope on the pan for delivery of an inclosure from the feed-plate to the envelope.

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