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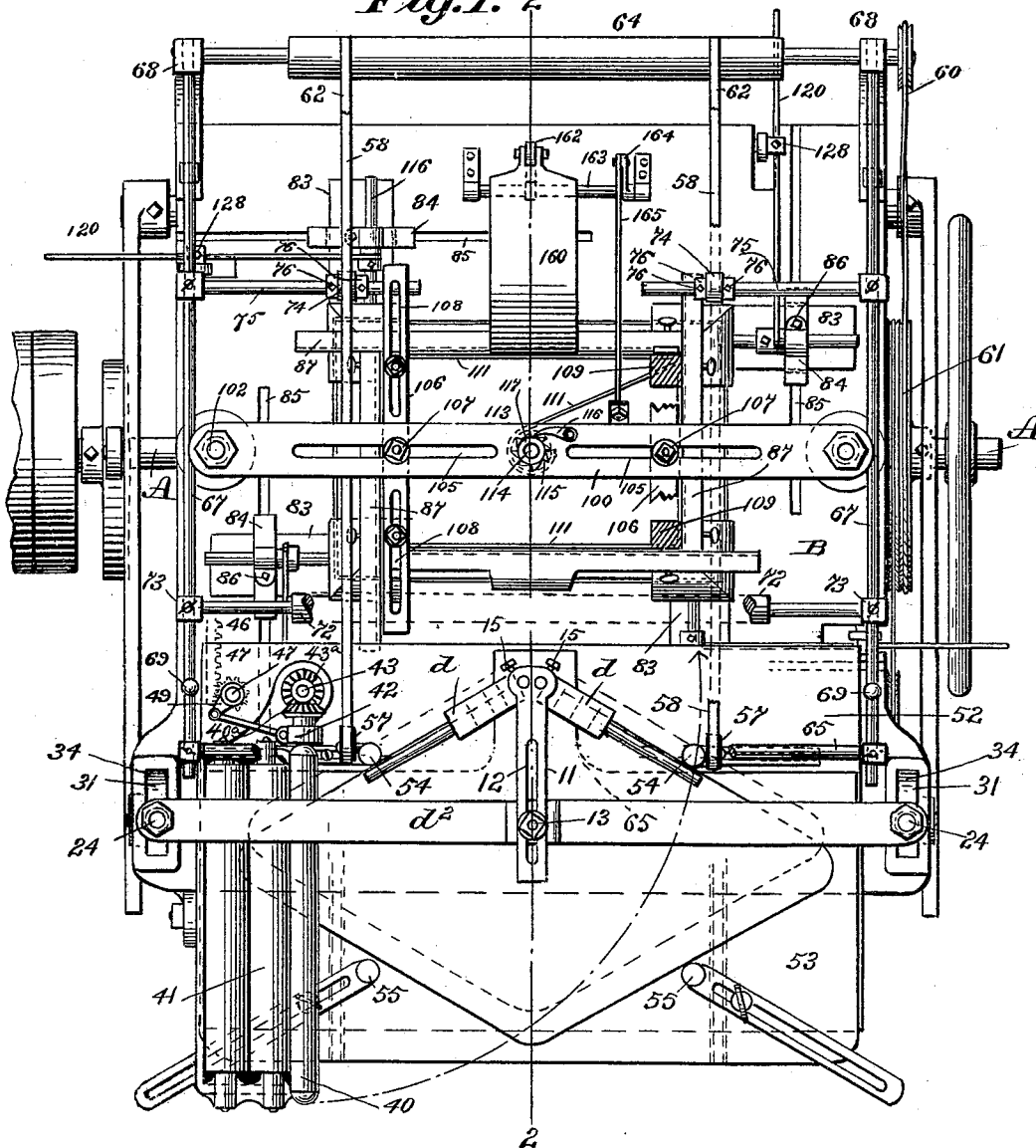
6 Sheets—Sheet 1.

L. J. & M. J. CHURCH.
ENVELOPE MACHINE.

No. 521,153.

Patented June 12, 1894.

Fig. 1. 2



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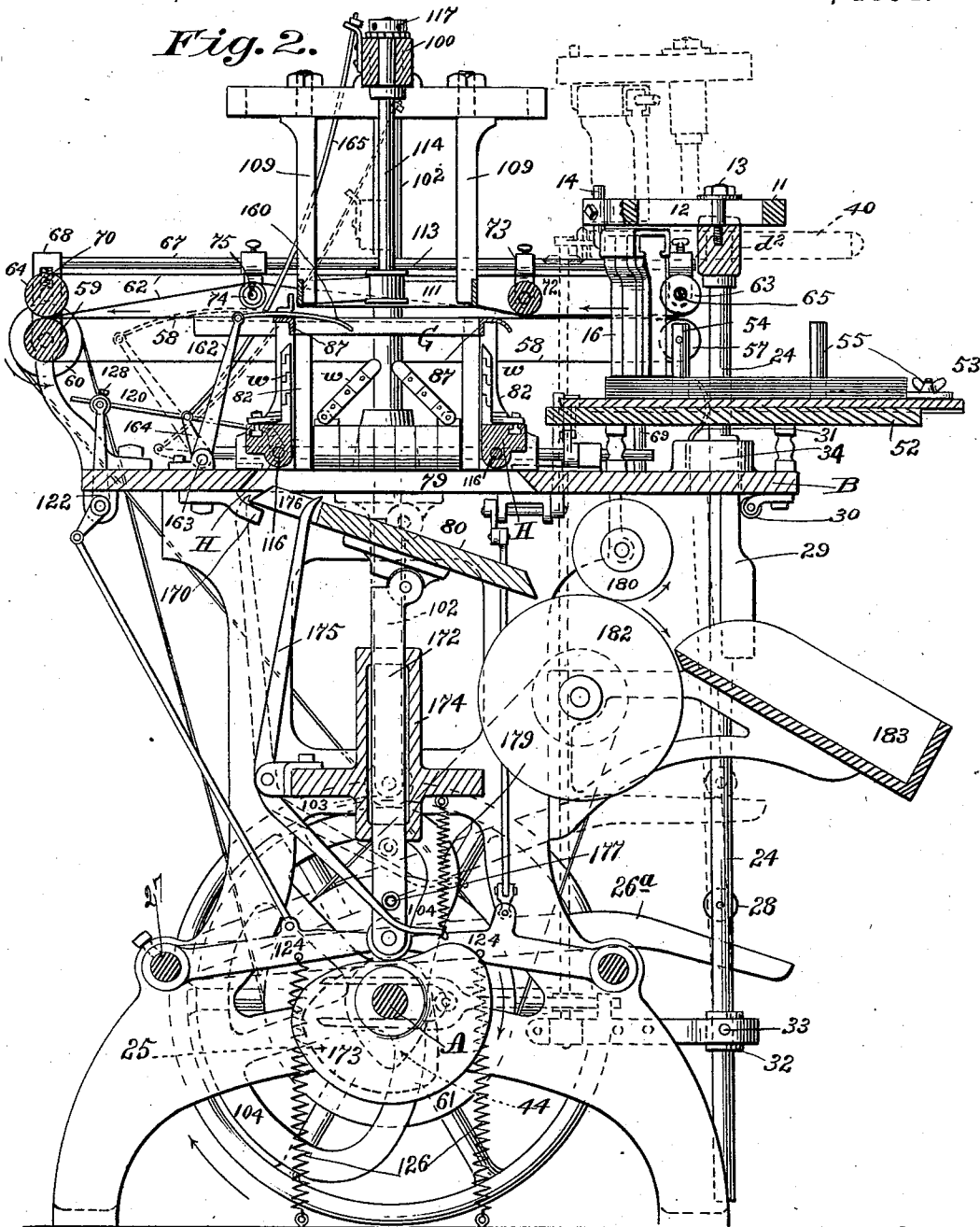
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ENVELOPE MACHINE.

No. 521,153.

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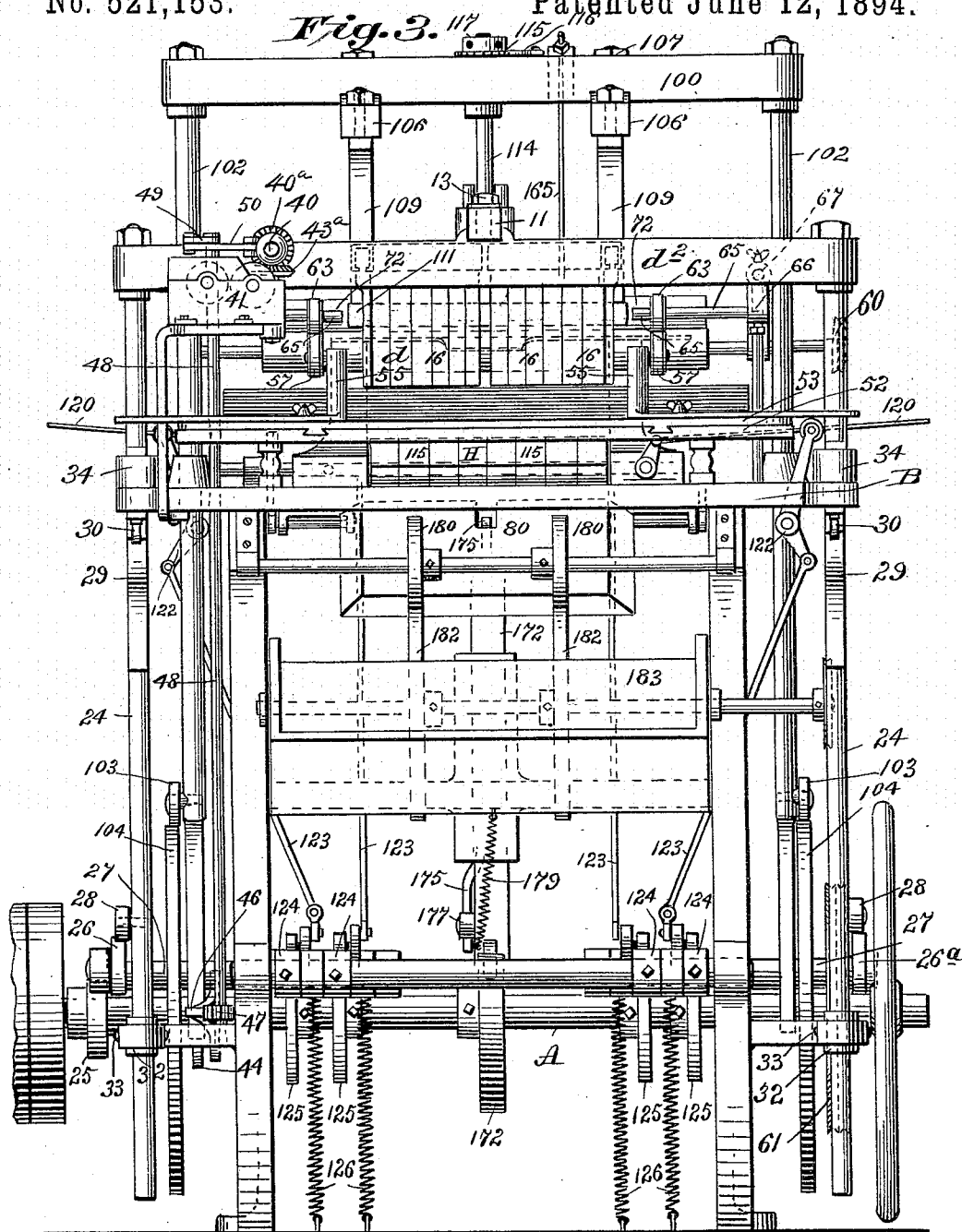
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Fig. 4.

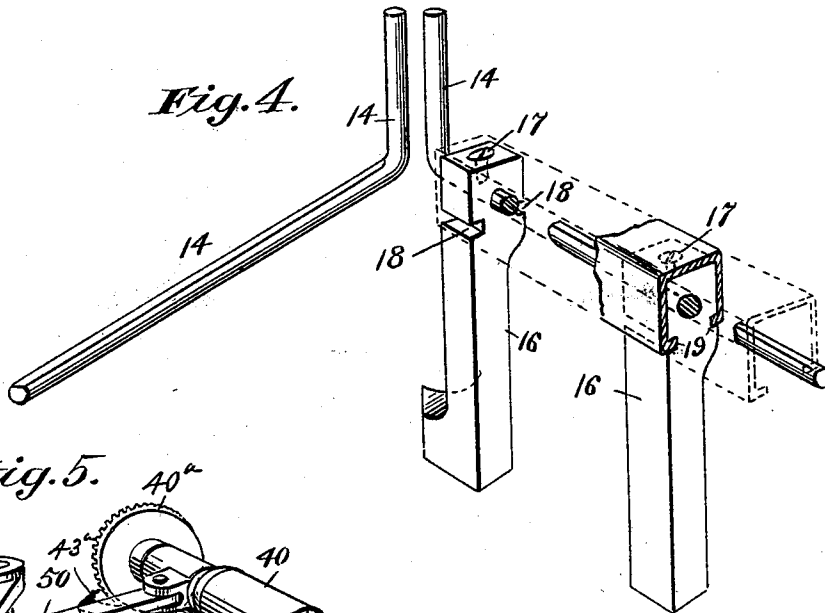


Fig. 5.

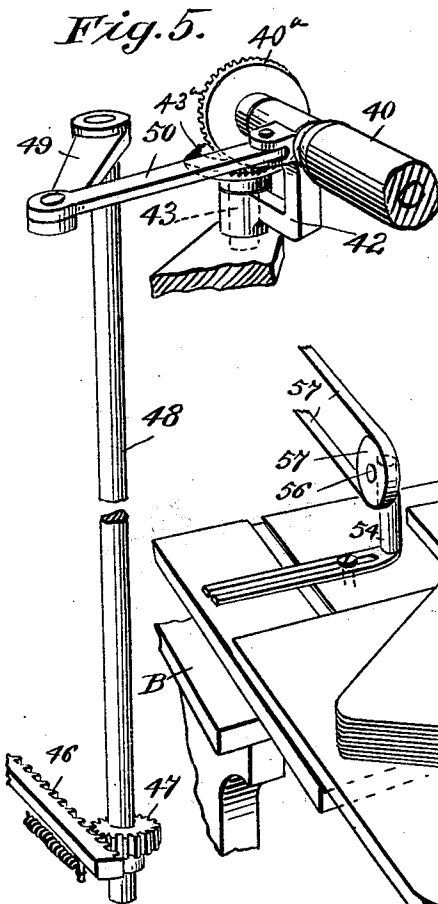
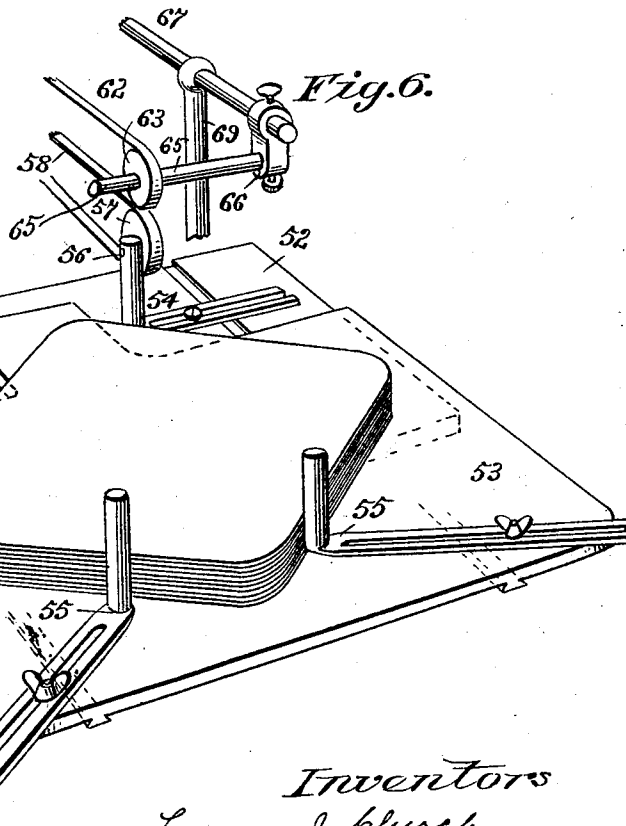


Fig. 6.



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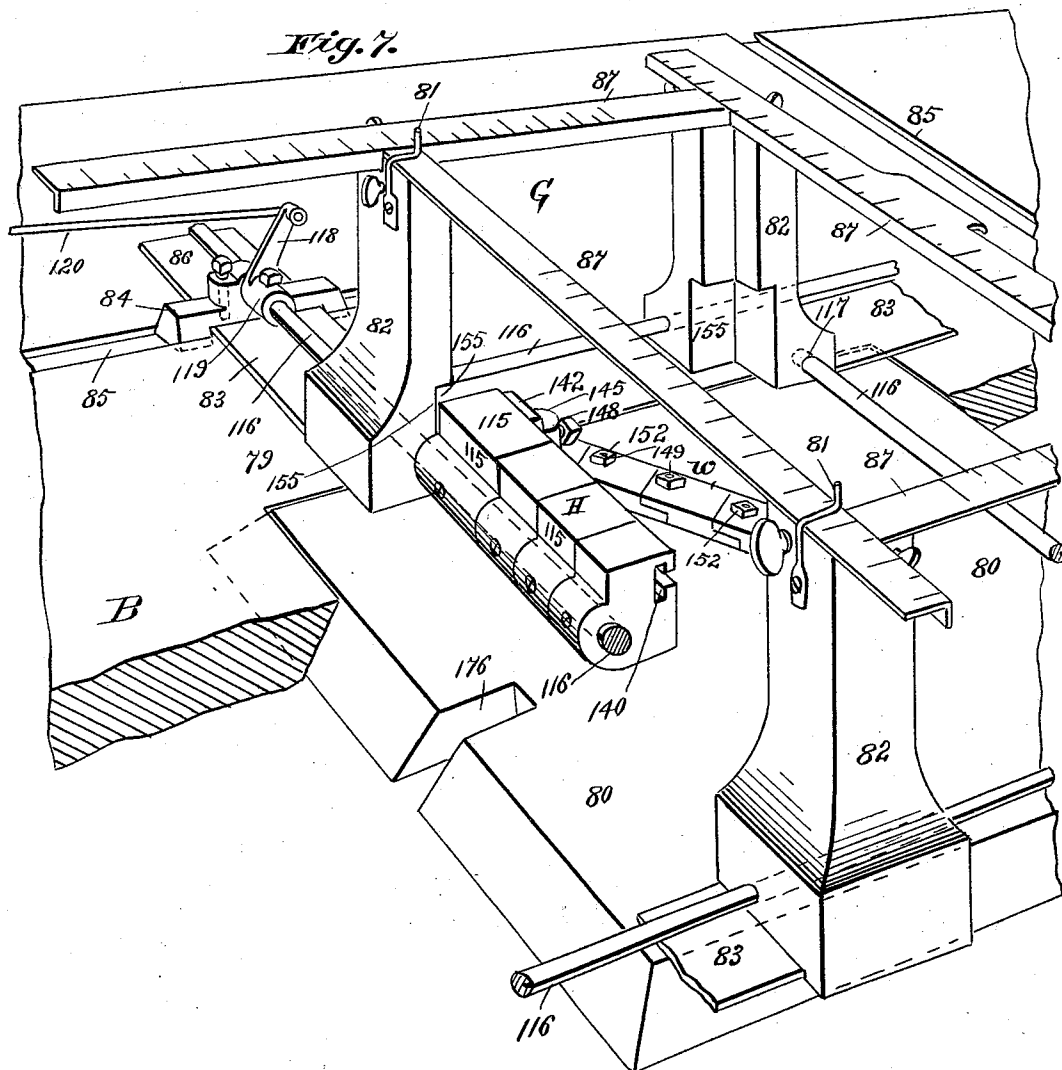
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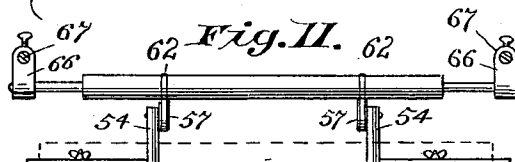
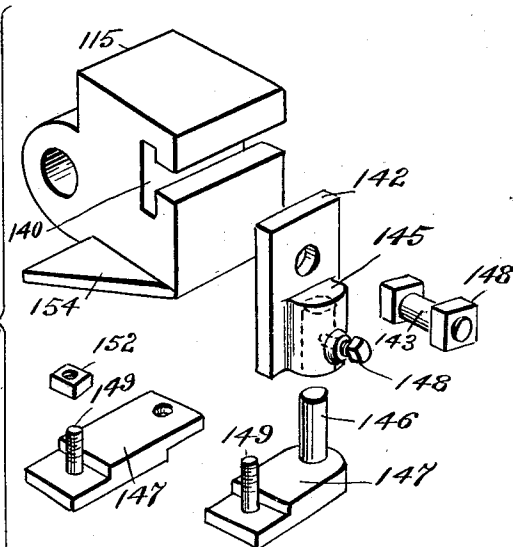
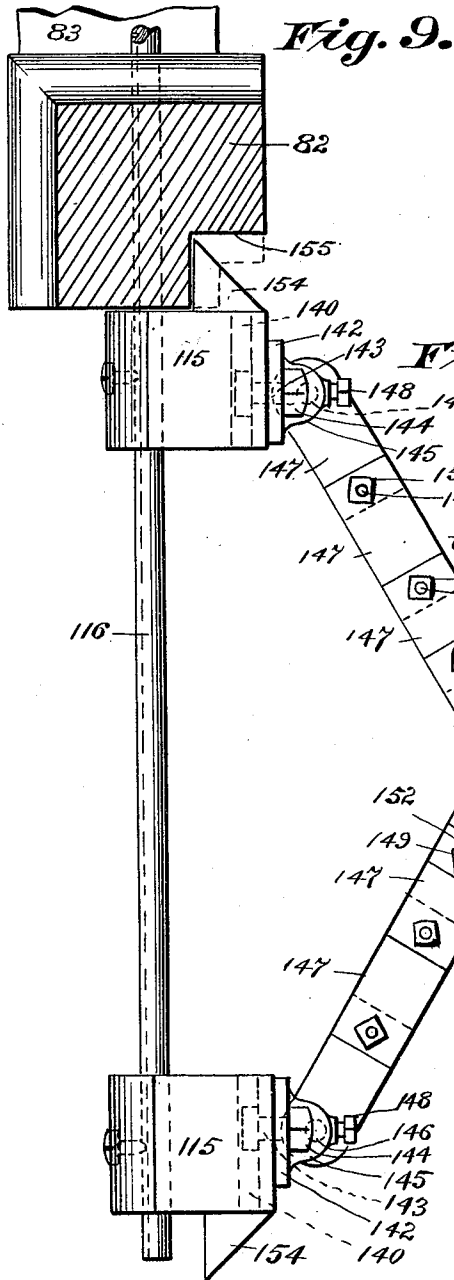
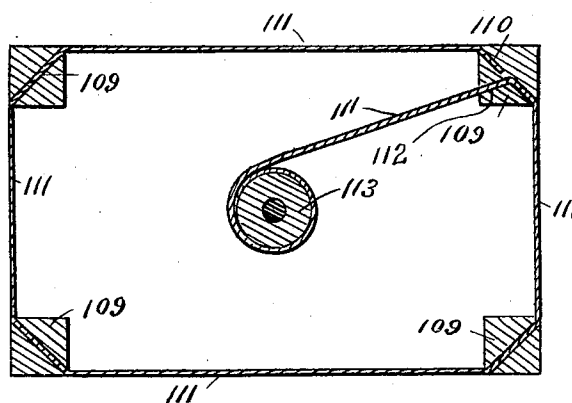


Fig. 8.



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UNITED STATES PATENT OFFICE.

LAWRENCE J. CHURCH AND MICHAEL J. CHURCH, OF SPRINGFIELD,
MASSACHUSETTS.

ENVELOPE-MACHINE.

SPECIFICATION forming part of Letters Patent No. 521,153, dated June 12, 1894.

Application filed April 27, 1893. Serial No. 472,149. (No model.)

To all whom it may concern:

Be it known that we, LAWRENCE J. CHURCH and MICHAEL J. CHURCH, citizens of the United States, both residing at Springfield, in the county of Hampden and State of Massachusetts, have invented new and useful Improvements in Envelope-Machines, of which the following is a specification.

The principal object of this invention is to so improve an envelope machine as to render various of its devices or mechanisms contractible and expansible, or adjustable as to size or relative arrangement, and thereby to adapt the machine, at pleasure, for the production of envelopes of varying sizes and shapes. Manifestly a machine having such capability is very useful and profitable in an establishment where comparatively small orders for odd-sized envelopes are to be frequently filled.

The machine of the present invention is particularly characterized by the embodiment therein of a table or support for the blanks which is of itself movable or adjustable and has combined therewith adjustable gages, a gummer picker, which is formed of removable sections and peculiarly constructed and arranged supports therefor whereby the length of the gummer may be variable at pleasure; adjustable tape-carriers; an expansible and contractible folding plunger; a contractible and expansible folding box or frame, and folder-wings which are composed of removable sections and which are adjustably mounted so as to fold larger or smaller envelope-blanks.

The invention consists in combinations or arrangements of mechanisms, and constructions of certain of the parts all substantially as will hereinafter fully appear and be set forth in the claims.

Reference is to be had to the accompanying drawings, in which—

Figure 1 is a plan view of the improved envelope machine. Fig. 2 is a sectional elevation of the same from front to rear on the plane indicated on the line 2—2, Fig. 1. Fig. 3 is a front elevation of the machine. Fig. 4 is a perspective view illustrating parts of the novel sectional picker-devices. Fig. 5 is a perspective view illustrating the gum-roll operating mechanism. Fig. 6 is a perspective view of the blank

support or table and parts of the carrier-tapes and adjustable supports therefor. Fig. 7 is a perspective view showing the adjustable folder-box and the sectional and adjustable folders. Fig. 8 is a horizontal sectional view through the creasing plunger. Fig. 9 is a plan view of one of the folder rock-shafts with the end folder sections thereon (some of the intermediate folder sections being removed) and the supplemental bearing members supported by said end sections. Fig. 10 is a perspective representation of the parts making up one of the supplemental bearing members for the folder. Fig. 11 is a view in front elevation of a modified arrangement of detail parts to be hereinafter particularly referred to.

In the drawings, *d* indicates the sectional picker to be now in detail described, the same being supported by the horizontal beam, *d*², which has a vertical reciprocating motion. A bar, 11, ranging horizontally from front to rear of the machine is horizontally supported by said main beam, *d*², being adjustable as to its length by reason of the slot, 12, therein and the screw-stud or bolt and confining nut indicated at 13. This bar, 11, has at its rear extremity two vertical holes through which the vertical members of the L-shaped supports, 14, are passed and held by the set-screws, 15. By loosening the set-screw the horizontal arms of these supports may be arranged at varying angles to correspond to the form at the flap edge of any envelope to be made. The picker, itself, is composed of several section-blocks or vertical bars, 16, 16, transversely drilled at their upper portions to be strung upon the horizontal arms, 14, and confined by set-screws. These blocks, 16, more or less, as desired to correspond to the length of the picker, are prevented from having any rotational movement on their carrying arm, 14, by the screws, 17, passing through the blocks at one side of the perforations thereof and bearing against the faced-off or flattened surface of the arm, all as clearly indicated in Fig. 4. The picker sections are formed with aligned horizontal grooves, 18, in opposite sides thereof, and with the heads of the sections there may be engaged a metallic inverted trough-formed cap,

which is slipped thereover, the inwardly and approached flanges, 19, of the cap, having engagement within the opposing grooves of the picker section thus imparting rigidity to the picker. The lower ends of the picker sections may be rubber-faced or otherwise constituted, as usual or desirable. The main-beam, d^2 , for the picker has at each side of the machine the depending vertical shafts or members, 24, 24, serving to receive the thrusts from the cam, 25, which works against the lever-arm, 26, which latter is secured to the rock-shaft, 27. This rock-shaft also has at its other end another lever, 26^a, which swings concurrently with the one, 26, and these levers impart the vertical movements to the pending members, 24, of the picker-frame through the rollers, 28, 28. This frame has a swinging movement rearward, to carry the blank to the nipping action of the tape-carriers, as imparted by the impingement of the cam shoulders, 29, on the members, 24, 24, against the rollers, 30, mounted on fixed pivots or arbors at the front of the framing. The springs, 31, return the picker-frame into its vertical position on its downward movement. The pending members, 24, of the picker-frame play through round boxes, 32, pivotally hung to oscillate on a horizontal axis stud, 33, while the intermediate portions of these members, 24, play through the guiding boxes, 34, 34, which have the apertures therein elongated from front to rear.

The gummer-roll, 40, is mounted to swing about a vertical axis, at its one end, away from and back to the gum distributing rollers, 41. The gummer-roll is journaled in the angular bracket, 42, which has a rotary movement about the vertical stud, 43. The horizontal swinging movement is imparted to the bracket by this means:—A cam, as 44, on the driving-shaft, A, together with the spring, 45, imparts the horizontal reciprocating movement to the rack-bar, 46, which meshes into the pinion, 47, on the lower end of a vertically mounted shaft, 48; said shaft has at its upper end the radial arm, 49, which, by link, 50, is connected to the aforesaid bracket, 42. The stud, 43, has the fixed bevel gear, 43^a, thereon, with which meshes the bevel gear, 40^a, in the journal of the gum roll, 40, so that as the gum roll is swung it also derives rotary movement.

In the operation of picker-frame, as the same moves downwardly, the pickers are permitted to come to seat on top of the upper envelope of the pile, the levers, 26, 26^a, retreating slightly below the rollers, 28, 28, the extent of such retreat being more or less according as the blank-pile is more or less high.

Above the front of the table, or top, B, of the machine, is a stationary horizontal blank-support, or table, 52, with the supplemental table, 53, to slide thereon forwardly and rearwardly by having a dovetail rib and slot engagement. Adjustable gages are provided, two, 54, 54, at the rear on the blank table, 52,

which have the sidewise adjustments toward and from each other in a common line, while on the supplemental table the two gages, 55, 55, are provided which are adjustable in rearwardly converging lines. The upright members of the gages, 54, 54, have the laterally extended journal-supports, 56, 56, for the tape rolls, 57, 57. The endless tapes, 58, 58, are passed in suitable tension around the rolls, 57, 57, and around the roll, 59, at the rear of the machine. These tapes are driven by belt and pulley, indicated at 60, 61, primarily actuated by the driving-shaft. As the gages, 54, are adjusted to and from each other, so also are the carrier-tapes, 58. The upper pair of endless carrier-tapes, 62, 62, are supported by the rollers, 63, 63, at front, and the roller, 64, at the rear, which is in yielding contact with the aforesaid roller, 59. The forward tape-rollers, 63, journaled on the rods, 65, which are adjustable horizontally and transversely of the machine through the depending supports, 66, which in turn are adjustable fore-and-aft on the horizontal rods, 67, 67, which are supported by the stanchions, 68, 69, rising from the table toward the front and at the rear of the machine. The rear roller, 64, is downwardly spring pressed, its journals being guided in vertical slots therefor at the rear of the rods, 67, 67. The tapes are pressed together by the roll, 72, just forward of the creasing frame, which roll is journaled at its ends in the depending supports, 73, 73, which are forwardly and rearwardly adjustable on the rods, 67, 67. Another set of rolls, 74, 74, are on a shaft or rod, 75, which is journaled in the depending supports on the rods, 67, similar to those, 73. These rolls, 74, are therefore also adjustable fore-and-aft, and also adjustable toward and from each other along said rod, 75, said rolls being confined against axial movement after adjustment by the sliding collars and set-screws indicated by 76, 76, or otherwise. The lower course of each of the upper tapes passes under the roller, 72, and over the roller, 74, being thereby free from contact with the upper course of the lower tape from a point in advance of the folder box to a point at the rear thereof. The tapes, as will be manifest, bind and positively carry the blanks until the rear edge has passed the roll, 72, when the positive rearward feed ceases,—the blank being then jogged up to place against the abutment gages at the rear upper side of the folder box, merely by reason of its rest and frictional contact on the lower tapes. A single long roller, 63^a, which is non-adjustable in its length, may be transversely provided just to the rear of the picker for the forward support of the upper tapes, 62, 62, (see Fig. 11) in lieu of the separately adjustable rollers, 63, indicated in Fig. 6. This roller may serve as the envelope detacher on the rise of the picker.

The creasing-box or frame, G, is shown above the opening, 79, at which the trap-door, or folding bottom, for the blanks, is provided,

the same being formed in part by the four adjustable corner posts or uprights, 82. Each of these posts is mounted upon a bar or strip, 83, the bar for the post at one rear corner being movable transversely of the machine, while the one for the other rear corner post being movable fore-and-aft, the post being at the forward end thereof; and the forward corner post at the same side of the machine as the rear corner post of the transversely movable bar has the fore-and-aft movement, while the other forward corner post is on a strip having transverse adjusting movements. The ends of the bar, 83, project over and within the opening for the folding bottom. These bars, 83, are guided upon the top of the main table, B, by passing with a close fit through apertured blocks, 84, which are in turn capable of movement in dovetailed grooves, 85, therefor, in the top of the table, B, the movements of the blocks along the grooved table being at right angles to the movements of the strips through the blocks.

The post-supporting bars, 83, are confined in their endwise adjustment relative to the apertured blocks through which they play, by set screws, as seen at 86, while the blocks are immovably held in their adjustments upon the table by the same set-screws, 86, which exert pressure against the tops of the strips to force them down, and also induces an upward pressure upon the blocks which are dovetailed to bind them against the inclined walls of the said grooves in which they are adjustably movable. Upon the top of each post is set a strip, 87, preferably of angle-steel, the tops of the several strips being in a common plane, and these strips form the boundaries of the creasing frame; and they are arranged to have the end of each in contact with an intermediate part of the next strip angularly relative thereto, these strips at the top of each post being arranged at right angles to the length of the bar, 83, on which the post is supported. It will therefore be plain, that by adjusting two of the diagonally opposite posts, transversely of the machine, and the other diagonally opposite pair of posts fore-and-aft in suitable extents, and in the direction of the lengths of the carrying bars, 83, and by further adjusting the posts and their carrying bars with the clamping blocks, 84, along the grooves, 85, in directions at right angles to the direction of the first adjusting movements of the posts with and along the lengths of the said bars, as aforesaid, the rectangular opening of the creasing-box or frame may be brought to any required dimension.

Upon the rear of the folder-frame the abutments or gages, 81, 81, are provided against which the rear edge of the blank may be brought to assume its proper position to be creased by the plunger. The strips, 87, are formed with graduations to constitute scales for convenience in the adjustment, as apparent.

The adjustable creasing plunger will be now described in detail; and it comprises the beam, 100, transversely and horizontally ranging over the table, the same being rigidly fixed at the upper ends of the depending shafts or rods, 102, 102, which play through suitable vertical guide-boxes therefor of the frame, the vertical movement being imparted thereto by the engagement with the rollers, 103, thereof, of the cams, 104, 104, on the main shaft. The said top-beam, 100, has at each side of its center a slot, 105, extended for a considerable distance lengthwise, and with which slotted portions of the top-beam the secondary beams or bars, 106, have detachable and adjustable confinements by suitable studs or bolts, thereof, projected upwardly through the slotted beam and receiving confining nuts at their upper end, as indicated at 107, in Fig. 1. These bars range forward and rearward in parallelism, their length being at right angles to the length of the beam, 100. These bars, 106, 106, are slotted longitudinally, as seen at 108, receiving the detachable and adjustable connection of the upper ends of four depending posts, 109, 109, 109, 109, which posts are to be arranged at the corners of a rectangle corresponding to the size of the envelope to be made; the opposite side pairs of posts are, as plain, adjustable transversely of the machine by moving the bars, 106, 106, toward or from each other and along the length of the beam, 100, while the rear and forward pairs of posts may be adjusted fore-and-aft, the one toward or from the other, by reason of their detachable engagements, as indicated, with the bars, 106, 106. The lower extremities of these four posts, 109, are encircled by a band, 111, of flexible material, preferably thin spring steel, this band having let-off and take-up, capabilities corresponding to the desired dimensions of the creasing plunger, as shown in Figs. 1 and 8; one end, 110, of this band is permanently fixed to one of the posts, it thence passing to and around the other three posts and back to one of its attachments and through a narrow slot, 112, therethrough, thence passing to a winding engagement with the axially vertical drum, 113, which is formed as the lower part of the depending shaft, 114, which has by its upper extremity suitable bearings for rotation in and through the aforesaid main beam, 100. Said winding-shaft, at its upper end, is provided with a ratchet-wheel, 115, with which a pawl, 116, engages for holding the take-up of the strip, while means are also provided for conveniently turning the winding-shaft, the same, as shown, consisting of a fixed collar, 117, on the upper end of the shaft having spanner-holes. The said band, 111, of thin watch-spring steel, or the like, surrounding the lower extremities of the depending posts, 109, constitutes, in conjunction therewith, and the let-off and take-up devices, an efficient creasing plunger with rectangular creasing lower edges, which is

entirely efficient in operation and which may be readily rendered conformable as to length or width or both, to the work at hand, as also are the other devices by these sectional and adjustable constructions herein described.

The folders, H, are formed by sectional and removable blocks, 115, as seen, the blocks, more or less as necessary, being placed and detachably fixed on shafts, 116, one for each folder. Each of these shafts has, by intermediate portions, journal supports in and through bearings of the post, 82, and block, 84, and the end of the shaft is fitted for its rocking support in a socket, 117, in the post opposite the one through which the intermediate part of the shaft has its journal bearing. Each of the shafts may have a spline-groove and the apertured sectional blocks have set-screws passing through them at one side of the aperture and entering at their extremities the groove; or other equivalent means of securing the temporary rigid connection of the block sections on their rock-shaft may be utilized. The rocking movement of each folder-shaft is imparted by the connections constituted by the crank-arm, 118, on the collar, 119, spline-engaged with the rock-shaft, the connecting-rod, 120, between said arm, 118, and an arm of the angular lever, 122, the thrust-rod, 123, between another arm of said lever, and the lever, 124, operated by the cam, 125, which is on the main shaft. The cam imparts the positive movements of said parts in one direction, while the retracting spring, 126, insures their reverse movements. Each connecting-rod, 120, has a detachable engagement with the arm of the angular lever, 122, so as to slide through an opening therein, as the bar, 83, and block, 84, and other conjunctive parts are adjusted in the direction of the length of the groove, the said rod and lever-arm being held rigidly after adjustment by the set-screw, 128.

The mechanism of driving connection for the folders, as will be seen in the drawings, is reduplicated for each of the four folders.

The folders, in addition to the sectional blocks which work at the creased edges of the envelope, may have the members as indicated at *w*, Figs. 2 and 9, for bearing against the portions of the envelope flaps within the folding lines, and these members may be constituted by sectional and removable pieces arranged in angular series and having their supports at the end blocks, 115, of the set on the rock-shaft. The end blocks have, at their inner sides, horizontal T-grooves 140, and against the grooved face is set a block or plate, 142, being held by the bolt, 143, and nut, 144, the head of the bolt lying within the T-groove, its screw-threaded shank extended forwardly through the plate, 142, the nut imparting the clamping action as plain. Said plate, 142, has at its forward face a lug or hub, 145, vertically bored within which the rigid dowel or stud, 146, of one of the sections, 147,—several of which latter constitute the member of the folder,—may enter and be rig-

idly secured by the set-screw, 148. The sections, 147, are step-shaped, as seen in Fig. 7 and also in Fig. 10, the base of the step at one end having the upwardly extended screw-stud, 149, about which the matching and overhanging perforated part, 150, of the next section may be disposed and confined by the nut, 152. More or less of these sections, 147, may be provided to produce the members, *w*, of the folder of the desired length and the angular relations of the members, *w*, one to the other and to the line of the rock-shaft, 116, may be varied at pleasure by loosening the set-screw, 148, of each member and swinging the latter to the desired line, again fastening the set-screw.

The end blocks, 115, of the sectional folders, preferably have the triangular extensions, 154, at the lower part of their outer ends which extensions constitute the ends of the folders and avoid weight and bulk; and as the folders upwardly swing these parts, 154, are accommodated within the recessed inner corners, 155, of the adjustable posts, 82, 82.

It will be perceived in Figs. 1 and 2 that there is a curved plate or finger, 160, which has a temporary projection from the rear of the creasing frame forwardly partially across the opening therein, which, as well known in envelope machines, serves to prevent the drooping of the rear flap of the blank as it comes to place over the creasing frame, which plate or finger retreats rearwardly, before the folding plunger descends. The novelty herein consists in the actuating mechanism of connection intervening between the plunger and the lever-arm, 162;—and, as will be seen, the lever-arm, 162, is extended radially from its connection with the rock-shaft, 163, there being another arm, 164, radially extended from the rock-shaft angularly to the arm, 162, and with which arm, 164, the connecting rod, 165, has attachment, its other arm being connected to the beam, 100, from which the plunger has its depending support.

The folding bottom, 80, has a fulcrum support at its rear side as seen in Fig. 2, upon the one or more lugs, 170, supported under the main table, B, and its swinging motion is imparted by the pivotal connection therewith of the vertical thrust-bar 172, the upward force to which is imparted by the cam, 173. The said thrust-bar, 172, plays through a slide-way in a rigidly supported girder or brace, 174, at the rear of which is pivoted, at the elbow or angle thereof, the lever, 175. The upper arm of this lever is extended to play forwardly and rearwardly within the recess, 176, at the rear of the folding bottom, and the forward movement of this lever is insured in consonance with the downward movement of the folding bottom and the thrust-bar, 172, by reason of the impingement by the roller or stud, 177, which is on the said bar, against the lower inclined arm, of the lever, 175. This insures the expulsion of the

folded envelope to the nipping action of the delivery rolls, 180, 182, which carries them to the receiving tray or box, 183. The spring, 179, one end of which is connected to the cross-girder, 174, and the other end to the lower extremity of the lever, 175, insures the retraction of the envelope expelling lever.

Having thus described our invention, what we claim, and desire to secure by Letters Patent, is—

1. In an envelope machine, the combination with picker mechanism at the front and creasing and folding devices at the rear of the carrier-devices for conveying the blanks from the picker to the creasing mechanism consisting of upper and lower pairs of roller supported carrier-tapes, certain of the roller-supports for which are adjustable transversely of their run, substantially as and for the purpose set forth.

2. In an envelope machine, the combination with picker mechanism at the front and creasing and folding devices at the rear of the carrier-devices for conveying the blanks from the picker to the creasing mechanism consisting of upper and lower pairs of roller supported carrier-tapes, certain of the roller-supports for which are adjustable transversely of their run and also fore-and-aft, substantially as and for the purpose set forth.

3. In an envelope machine, the combination with a support for blanks and picker mechanism at the front, and creasing mechanisms to the rear, of carrier-devices for the blanks consisting of front and rear roller supports, 57 and 59, and the endless tapes, 58, passed around them and the forward upper pair of rollers, 63, 63, and the roll, 64, back of the creasing mechanism, and the tapes, 62, passed around said rolls, 64, 63, the roll, 72, having its lower surface in bearing against the lower course of each upper tape, and the roll, 74, over the upper peripheral portion of which each upper tape, as to the lower course thereof, is passed, whereby the sets of carrier-tapes are separated from each other adjacent the creasing mechanism, substantially as described.

4. In an envelope machine, the combination with blank support, picker mechanism, and creasing mechanism to the rear thereof, of a lower set of carrier tapes and a pair of support-rods, 67, 67, extended horizontally from front to rear of the machine, and having, at their forward extremities the depending members, 66, through which the horizontal rods, 65, are transversely and adjustably supported and connected, the rollers, 63, supported upon the inner extremities of said rods, a roll, 64, suitably hung at the rear of the machine, and the tapes, 62, 62, all arranged substantially as described.

5. In an envelope machine, the combination with a blank support and picker mechanism at front, and expansible and contractible creasing devices to the rear thereof, of upper and lower sets of carrier-tapes, and the rollers, 72 and 74, arranged as described relative

to the lower course of the upper tapes, which are both adjustable fore-and-aft, substantially as and for the purpose described.

6. In an envelope machine, the combination with the upper picker support carrying the picker and the depending shafts or bars, 24, 24, with the cam inclines, the guide-boxes, 32, 32, through which the lower portions of the depending shafts play with a close, sliding fit which boxes are pivotally hung, and apertured guides for upper intermediate portions of said shafts, the apertures of which are elongated fore-and-aft, and an abutment part or roll adjacent the course of movement of each of said cam inclines, substantially as and for the purpose set forth.

7. In the picker mechanism of an envelope machine, the combination with the horizontal vertically reciprocatory beam, d^2 , of the beam, 11, supported thereon at right angles thereto and longitudinally adjustable, the L-shaped supports having the vertical limbs thereof adjustably supported on said beam whereby the horizontal members thereof may be at any desired angle one to another, and the series of picker sections detachably connected upon the horizontal limbs of said L-shaped supports, substantially as described.

8. In the picker mechanism of an envelope machine, the combination with an L-shaped support, 14, supported by and depending from a reciprocatory part, the series of picker sections removably connected upon the horizontal member of said L-support and having the groove, 18, in the opposite sides thereof and the trough-shaped cap having the inturned flanges 19, 19, engaged with the upper portions of the said sections substantially as and for the purpose described.

9. In an envelope machine, the combination with an upper horizontal picker support and a picker carried thereby and the depending shafts or bars, 24, 24, with the cam inclines and means for imparting vertically reciprocatory movements thereto, and an abutment adjacent the course of movement of each of said depending bars, 24, for exerting a cam-forcing action thereon as they rise whereby a rearward movement is also imparted thereto, substantially as and for the purpose set forth.

10. In an envelope machine in combination, a picker composed of detachably confined sections, and a reciprocatory support therefor, a creasing frame having the sides thereof adjustably movable, carrier-tapes between the picker and creasing frame, a creasing plunger which is contractible and expansible and folder-wings comprising adjustable rocking supports and detachably connected folder sections, and means for actuating the several instrumentalities, substantially as and for the purpose set forth.

11. In an envelope machine a creasing plunger consisting of adjustably mounted corner supports and a band of flexible material passed and confined in tension around said corner supports, for the purpose set forth.

12. In an envelope machine an expansible and contractible creasing device consisting of adjustably mounted corner supports and a band of flexible material passed and confined in tension around said supports, a terminal portion of the band being passed through one of said corner supports, and a take-up and let-off device for engagement by said band-terminal, for the purpose set forth.

13. In an envelope machine, the combination with the four adjustably mounted depending corner posts, one thereof having the slot, 112, and the winding-shaft, 114, rotatably supported within said post, the flexible band passed in tension around said corner supports, a terminal portion of the band being passed through a slot in one thereof and to a winding engagement with said shaft and the ratchet-wheel on the shaft and detent pawl to engage the ratchet-wheel, substantially as described.

14. In an envelope machine, the combination with a creasing frame having sides thereof movable whereby the size of the rectangular opening bounded thereby may be varied, of a creasing plunger which comprises corner adjustable supports, and a band of flexible material passed and confined in tension around said corner supports, for the purpose set forth.

15. In an envelope machine in combination, the main beam, 100, supported horizontally and having combined therewith means for imparting vertical reciprocatory movements thereto, the bars, 106, 106, ranging fore-and-aft and adjustable transversely along the beam, 100, the posts, 109, having fore-and-aft adjustments along said bars, 106, the vertical shaft, 114, having the winding portion, 113, the flexible band passed in tension around the lower extremities of said posts and having the terminal portion thereof passed through a slot in one of the posts and extended to a winding connection with the said shaft, substantially as described.

16. A rectangular creasing box or frame having its boundaries composed of four endwise movable strips arranged with the end of each next to an intermediate part of the next angularly arranged one, and the upper surface of all of said strips being in a common plane, for the purpose set forth.

17. In an envelope machine, a rectangular creasing box or frame having its boundaries composed of four suitably supported and endwise movable strips or bars arranged with the end of each to be in contact with an intermediate part of the next angularly arranged one, and all of said strips having their upper surfaces in a common plane, substantially as and for the purpose set forth.

18. In an envelope machine, the combination with the main table or support of four bars or strips, 83, which are arranged, the one at right angles to the next, and each movable endwise and also at right angles to its length and carrying at its inner extremity a post,

and a bar or strip, 87, supported at the top of each post, said so-supported bars having their upper surfaces in a common plane and adapted to form a closed rectangular creasing frame, substantially as and for the purpose set forth.

19. In an envelope machine, the combination with the main table or support having the grooves, 85, in right angular arrangement as specified, and the apertured blocks, 84, adjustably movable lengthwise along the groove, strips or bars, 83, adjustably movable through the apertured blocks at right angles to the length of the said grooves, the posts having the angularly arranged strips supported at the inner ends of said bars, 83, and means for confining said bars and said blocks in their adjusted positions, substantially as described.

20. In an envelope machine, the combination with the main table or support, of four bars or strips, 83, which are arranged, the one at right angles to the next, and each movable endwise and also in a direction at right angles to its length each of said bars having thereover a shaft mounted for rocking movements and provided with detachably confined folder sections, said shafts being longitudinally and transversely movable in conjunction with said bars, 83, substantially as and for the purpose set forth.

21. In an envelope machine, the combination with the rock-shafts which are adjustably mounted for movements longitudinally and also at right angles to their lengths and having detachable folder sections and provided with crank-arms, 118, of a lever mounted for a swinging movement on a fixed axis opposite each folder-shaft, and a connecting rod between the said lever and rock-shaft crank-arm having a suitable connection with one thereof, and an adjustably sliding connection with the other, and means for operating each of said swinging levers, substantially as described.

22. In an envelope machine, the combination with the main table or support, B, having the four dovetailed grooves, 85, in right angular arrangement, the dovetailed blocks, 84, with transverse apertures therethrough, the bars, 83, movable through said apertured blocks and a set screw passed vertically through the upper portion of each of said blocks to exert a downward pressure upon the bar, 83, inducing also a confining bind between the dovetailed block and the borders of the groove therefor and the parts 82, mounted upon the bars and having the strips 87 substantially as described.

23. In an envelope machine, the combination with dovetailed grooved table, dovetailed and apertured blocks, 84, strips, 83, supporting, at their end, the posts, 82, with the strips, 87, the rock-shafts having journal-supports through the blocks and posts, and having the crank-arms, 118, the hub, 119, of each of which surrounds the shaft next to the block, 84, and the set screws, 86, all substantially as shown.

24. In an envelope machine, the combination with the main table or support of four bars or strips, 83, which are arranged the one at right angles to the next and each movable
 5 endwise and also at right angles to its length and carrying at its inner extremity a post, 82, and a bar or strip, 87, supported at the top of each post and adapted to form a closed, rectangular, adjustable creasing frame, the shafts,
 10 116, having rocking-bearing supports at intermediate portions thereof through one of the posts, 82, and by its end in a socket in an opposite post, folder sections detachably connected with said shafts, and means for rocking
 15 the said shafts, and also means for confining the said bars, 83, in their adjusted relations, substantially as and for the purposes set forth.

25. In an envelope machine, the combination with an expansible and contractible creasing frame, of rock-shafts located horizontally thereunder at right angles and mounted for their rocking movements upon support-bearings which are adjustable longitudinally
 25 and also at right angles to their length and folding sections consisting of apertured blocks having non-rotatable, detachable engagements with the said shaft and means for imparting the rocking movements to each of the
 30 shafts, substantially as described.

26. In an envelope machine, a folding-wing comprising a rock-shaft which is adjustable substantially as described and having folder sections detachably connected thereupon, one
 35 or both of the end sections of the folder-wing carrying an obliquely inclined bearing member, the lower face of which is in a plane coincident with the folding face of the folder sections, substantially as described.

27. In an envelope machine, the combination with folding mechanism comprising a rock-shaft which is adjustable substantially as described, and having folder sections detachably connected thereupon, one or both of

the end folder sections carrying an obliquely 45 inclined and inwardly extended bearing member, *w*, which is composed of step-formed and detachably united sections, 147, 147, the lower faces of which are in a plane coincident with the working face of the folder sections, substantially as described. 50

28. In an envelope machine, the combination with the rock-shaft having detachably connected folder sections, substantially as described, one or both of the end folder sections having a detachably connected block or 55 plate, 142, with the vertically apertured part, 145, provided with set-screw, 148, of the obliquely arranged bearing member, *w*, having the stud, 146, to enter the apertured part, 60 145, substantially as described.

29. In an envelope machine, the combination with the rock-shaft having detachably connected folder sections, substantially as described, an end one thereof having the T- 65 groove, 140, of the block, 142, with the vertically bored part, 145, the headed bolt engaged in said T-slot and having its shank extended forwardly through said block, 142, receiving the confining nut, 144, and the ob- 70 liquely arranged supplemental bearing part, *w*, having the stud, 146, all arranged as shown.

30. In an envelope machine, the combination with the folding bottom and cam-operated thrust-bar, 172, having the roller stud, 177, 75 the lever, 175, intermediately pivotally supported one arm of which is extended within the aperture of the folding bottom, and the other lying angularly across the path of movement of said stud, 177, and a means for insur- 80 ing the retracting movement to said lever, substantially as described.

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