

C. O. LILJEROS.  
PACKING MECHANISM.

APPLICATION FILED MAY 18, 1904. RENEWED JUNE 2, 1911.

1,050,476.

Patented Jan. 14, 1913.

5 SHEETS—SHEET 1.

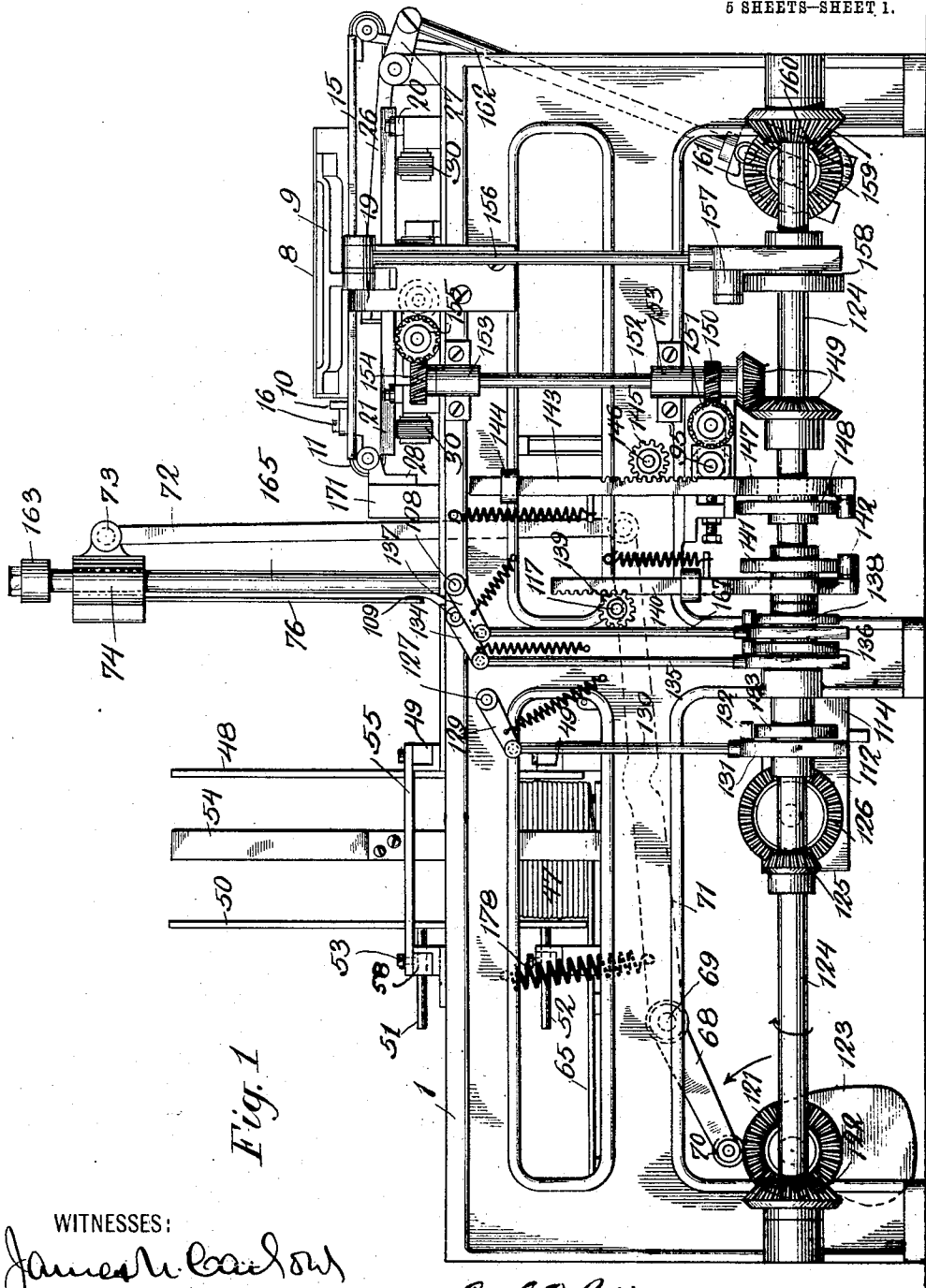


Fig. 1

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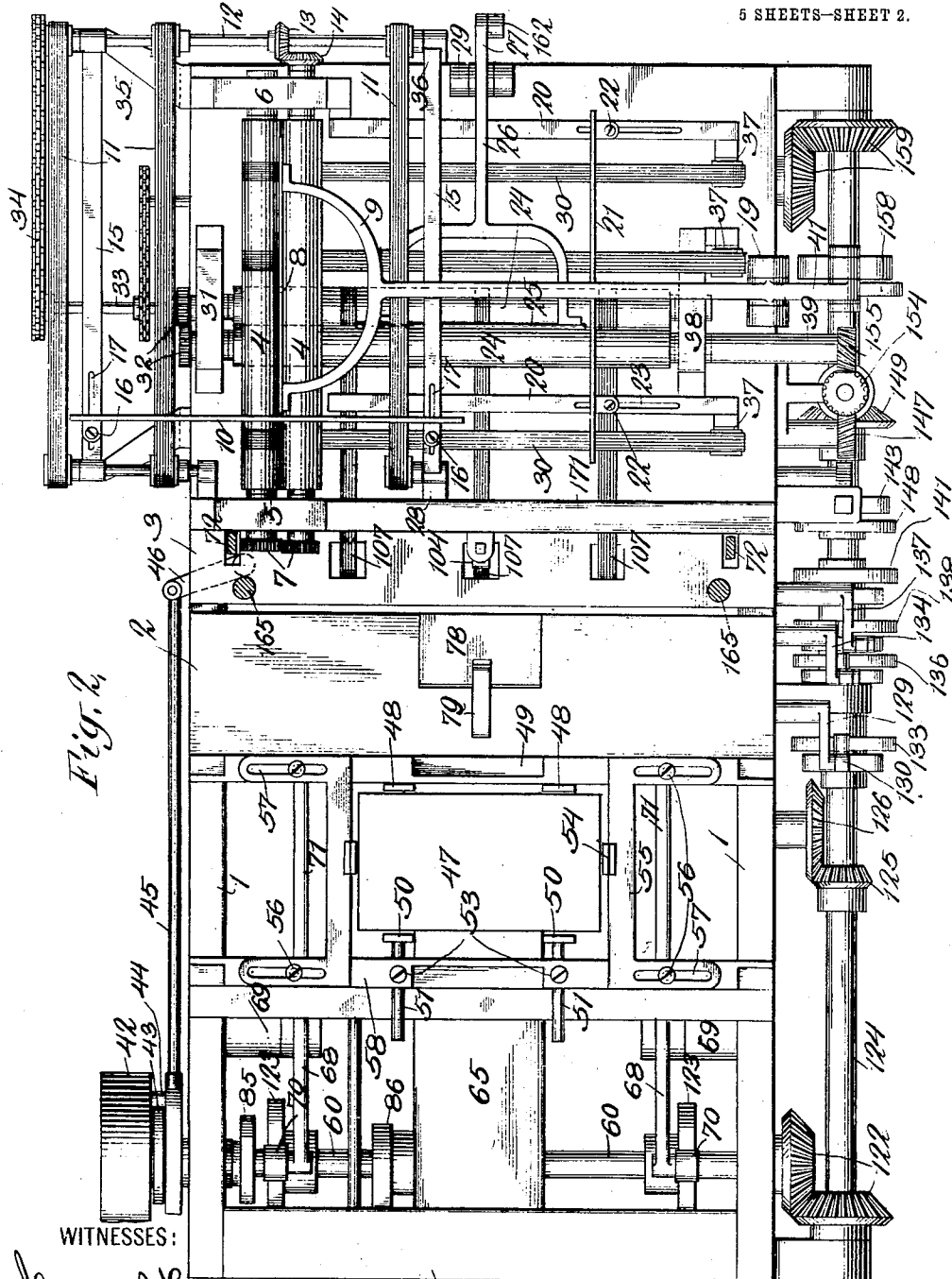


Fig. 2.

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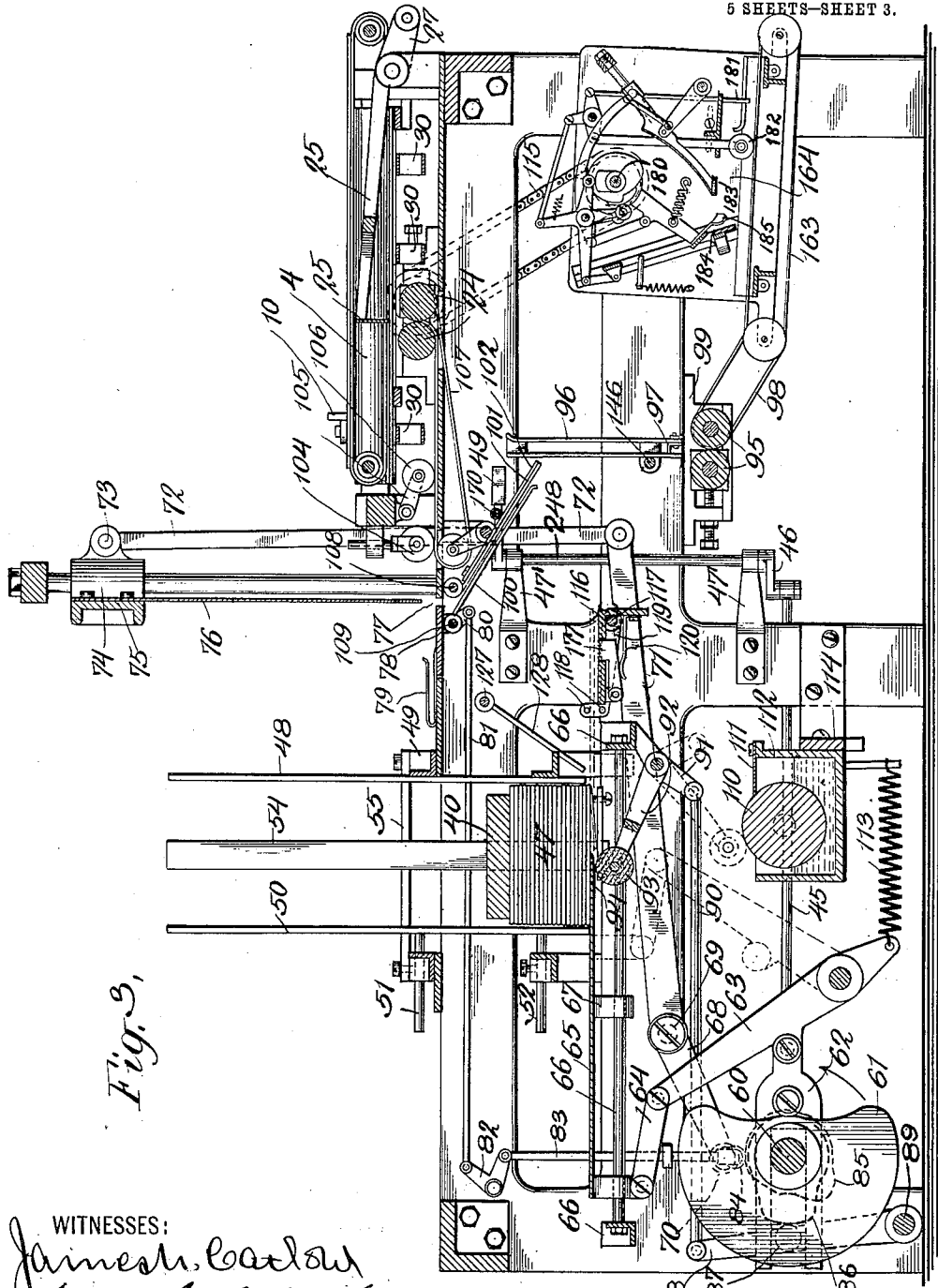


Fig. 3.

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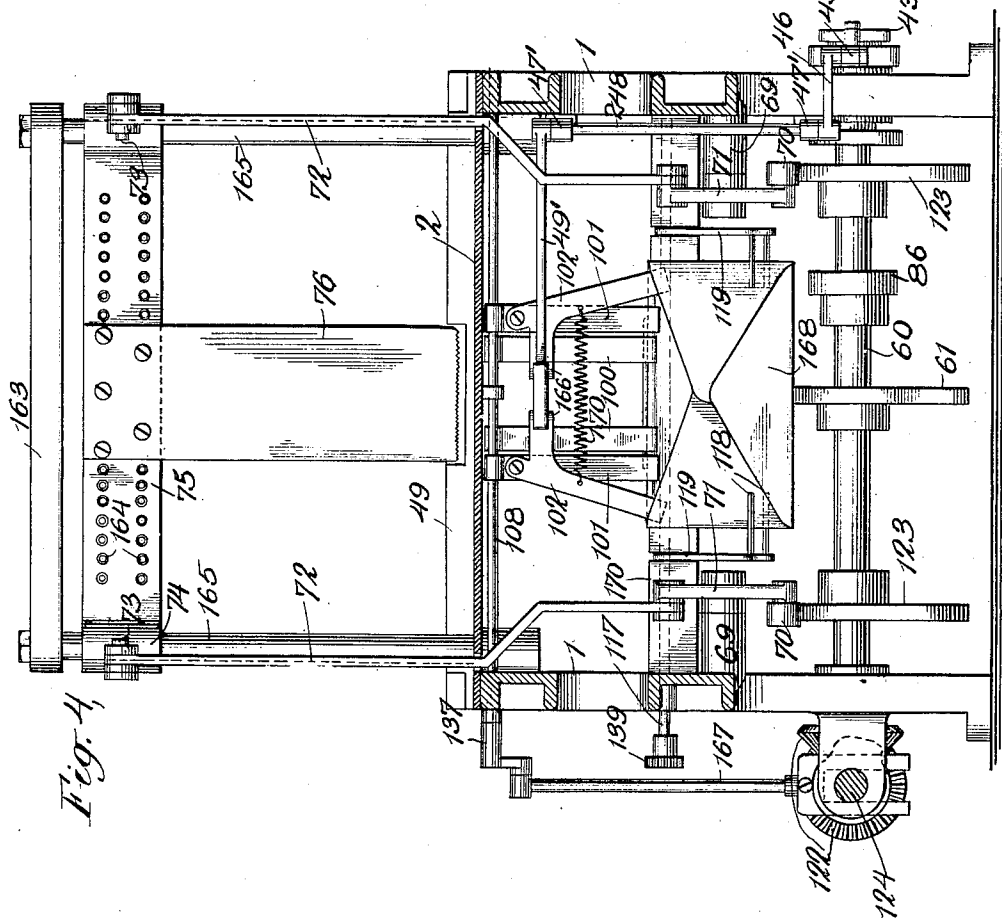


Fig. 4.

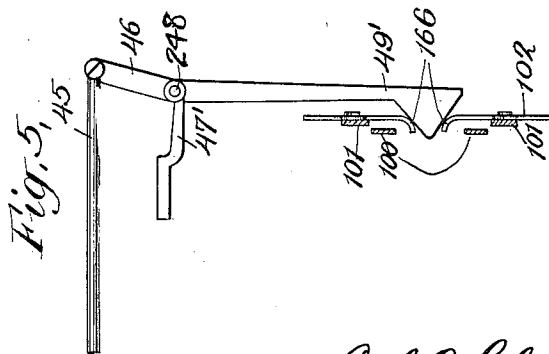


Fig. 5.

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6 SHEETS—SHEET 5.

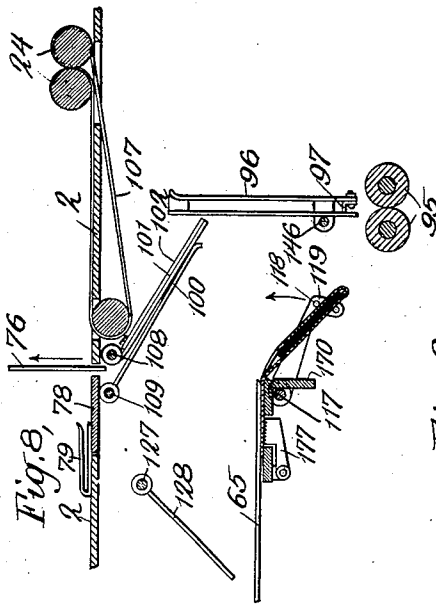


Fig. 8

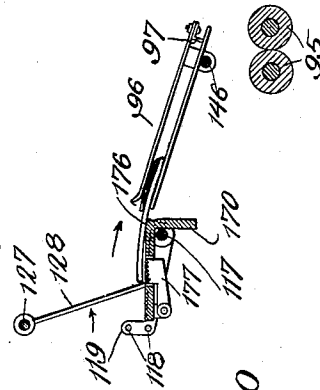


Fig. 9

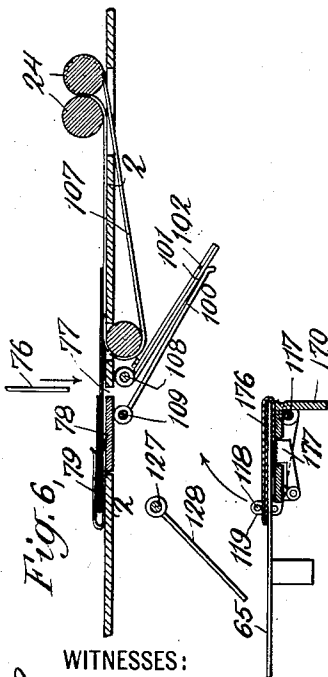
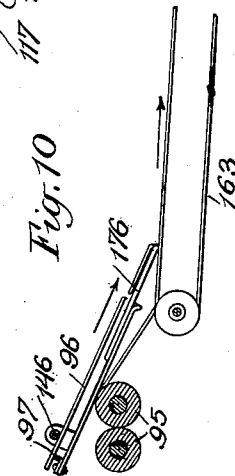


Fig. 6

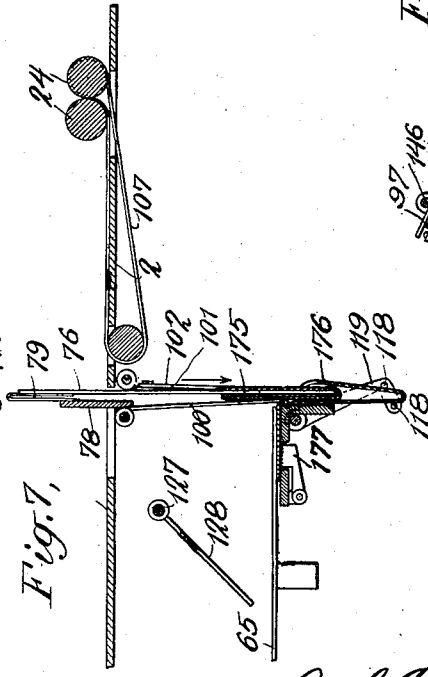


Fig. 7

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# UNITED STATES PATENT OFFICE.

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## PACKING MECHANISM.

1,050,476.

Specification of Letters Patent.

Patented Jan. 14, 1913.

Application filed May 18, 1904, Serial No. 208,524. Renewed June 2, 1911. Serial No. 630,765.

*To all whom it may concern:*

Be it known that I, CARL O. LILJEROS, a citizen of the United States, and resident of the borough of Brooklyn, city of New York, county of Kings, and State of New York, have invented certain new and useful Improvements in Packing Mechanism, of which the following is a specification, taken in connection with the accompanying drawings, which form a part of the same.

This invention relates to packing mechanism and relates especially to mechanism for folding paper, such as circulars or similar printed matter, for inserting the same in envelopes and for closing the envelopes by sealing or by inserting the flap into the same.

In the accompanying drawings illustrating an embodiment of this invention and in which the same reference numeral refers to similar parts in the several figures, Figure 1 is a side view. Fig. 2 is a plan view partly in section. Fig. 3 is a longitudinal vertical sectional view. Fig. 4 is a transverse section. Fig. 5 is a detail. Figs. 6, 7, 8, 9 and 10 are diagrammatic sectional views showing the operation of the mechanism.

In the illustrated embodiment of this invention, the paper which may be in the form of a printed circular or otherwise, is passed through the folder and may be given a longitudinal fold and a transverse fold therein and this paper may be given a second transverse fold and simultaneously inserted into an envelop by the inserter. The envelop is fed from a stack by a feeder which holds the envelop in position in connection with a gripper which may operate if desired. The gripped envelop is engaged by the oscillator and oscillated into vertical receiving position. Swinging guides then engage it and the opener operates on the separating of the opener arms to open the back of the envelop and at that time the inserter forces the paper through the guides into the envelop. The oscillator then swings the filled envelop back, the feeder releases it and an ejector throws the filled envelop into a receiver. From the receiver the envelop passes through sealing rolls which close its previously moistened flap, or, if desired, the flap need not be moistened and in such case the filled envelop

passes through a suitable closer which inserts the flap into the envelop and effectually closes it.

The folder indicated in the drawings comprises the feed tapes 11 mounted on 60 suitable wheels on the shaft 12 and cooperating to bring the paper against the gage 10, this gage, as is indicated in Fig. 2, being adjustable in position and being readily fastened in any desired position by the bolts 65 16 which operate in suitable slots 17 in the supporting members 15. These supporting members are mounted in suitable extensions 35, 36 and 28 and secured to the table 3. The shaft 12 is indicated as driven by the 70 sprocket chain 34 from the shaft 33, this shaft being driven through the spur gears 32 from the shaft 39. This shaft is rotated by the skew gears 154 and 155 from the vertical shaft 152 running in the bearings 75 153, see Fig. 1. The bevel gears 149 drive this shaft from the cam shaft 124 which carries the bevel gear 122 and is mounted in suitable bearings in the frame 1. The bevel gear 121 on the drive shaft 60 cooperates 80 with the bevel gear 122 and operates these shafts in unison when the drive pulley 42 is engaged by a suitable belt or rotated in any other desired way. The paper fed by the tapes 11 against the gage 10 is engaged 85 by the longitudinal folding knife 8 and forced down through the cooperating longitudinal folding rolls 4. These rolls are mounted in suitable bearings 5 and 6 secured to the folding table and carry tapes 90 30 which run over the rolls 37 also mounted in the table. A longitudinal fold is thus formed in the paper in the usual way. The folding rolls are geared together by the 95 spur gears 7 and are rotated by the bevel gears 13, 14 from the shaft 12. The folding knife is mounted in the yoke 9 at the outer end of the lever 41 which operates in the bearings 19 secured to the table. The 100 rod 156 pivoted to this arm 41 carries the cam follower 157 cooperating with a suitable cam 158 on the cam shaft 124. In this way, the longitudinal folding knife is depressed at suitable intervals forcing the 105 paper through the folding rolls.

The tapes 30 carry the folded paper against the gage 21 secured in position by the bolts 22 operating in adjusting slots 23 in the supporting members 20 mounted on the table. After engaging the gage 21 a 110

transverse folding knife 25 forces the paper between the cooperating transverse folding rolls 24, these rolls carrying the feed tapes 107, as is usual in this art and the rolls being mounted in the bearings 31 and 38 and geared together by the spur gears 32. The transverse folding knife 25 is mounted in a yoke at the outer end of the lever 26 pivoted in bearings 29. The short arm 27 of this lever is pivoted to the rod 162 and as indicated in Fig. 1 the lower end of this rod carries a suitable cam follower 161 which cooperates with the cam 160 driven by the bevel gears 159 from the cam shaft 124. In this way, the transverse folding knife is depressed at the proper intervals and makes a transverse fold in the paper. If desired, suitable presser rolls 106 and 104 may be employed to cooperate with the tapes 107 and to grip to some extent the folded paper fed to the inserter.

As indicated in Fig. 3, a suitable envelop box is formed by the vertical guiding members 48 mounted in the transverse piece 49 and the members 50 mounted on the rods 51, 52 and adjustably held in position in the transverse members 58 by the screws 53, see Fig. 2. The other guiding members 54 are mounted in suitable supports 55 secured to the transverse pieces 49 and 58 by the screws 56 which operate in suitable slots 57, thus making an adjustable envelop box of skeleton construction which is securely mounted upon the frame 1. The pile of envelops 47 resting in this box with their flaps downward may be pressed down properly by a suitable weight 40 resting on top of the pile and these envelops are fed from the box one by one by the feeder 65 which engages the flap of the lower envelop and forces it forward. This feeder is in the form of a knife or blade mounted to reciprocate accurately on the rods and supports 66. The link 64 is pivoted to this feeder and to the feeder lever 63 which rocks about a bearing in its lower end and may have the spring 113 secured thereto. This lever is pivoted to the cam follower 62 which engages the feeder cam 61 on the drive shaft 60, so that at proper intervals the rotation of the drive shaft in the direction indicated in Fig. 3 throws forward the feeder 65 into the dotted position indicated. This movement carries an envelop from the stack 47 into position over the holding plate 116, the envelop flap being held between the feeder blade and the spring-pressed gripper 177 pivoted to the holding plate and held upward with the proper pressure by the spring 120. In this gripped position the envelop is between the pins 118 on the oscillator arms 119 which are mounted on the shaft 117. This shaft carries the pinion 139 as indicated in Fig. 1, and the rack bar 140 engages this pinion. The cam follower 142 at the lower end of

this rack bar engages the cam 141 on the cam shaft 124 and in this way gives the oscillator a partial rotation at the proper time so as to carry the envelop 176 from the position indicated in Fig. 6 to the vertical receiving position indicated in Fig. 7, the oscillator pins 118 still loosely engaging the envelop back, as is indicated. The guides 100 which may have the form of thin plates or strips are indicated in Fig. 3 as mounted on the shaft 109. Similar guides 101 may be mounted on the shaft 108 so as to oscillate from the position indicated in Fig. 3 to the vertical position indicated in Fig. 7. The shafts 108 and 109 are provided with the cranks 137 and 134 respectively which are spring-pressed and pivoted to the rods 167 and 135 operated by suitable cams 138 and 136 on the cam shaft. A suitable opener is preferably mounted on the guides and may take the form of pivoted opener arms 102 indicated in Fig. 4 as pivoted upon the guides 101. These arms are shown as normally held together by a light spring 170 and as being provided with the cam faces 166 which can be engaged by the opener wedge 49' to spread the arms into the open position indicated in Fig. 4, although it is understood that the opener may be operated in any desired way, preferably entering the envelop and moving into engagement with its lateral edges. The wedge 49 is pivoted about the shaft 248 in the brackets 47' and the arm 46 secured to its shaft is pivoted to the link 45. The cam follower 44 engages a suitable cam 43 on the drive shaft, as is indicated in Fig. 2, and thus spreads the opener at the proper intervals. It will thus be seen that after an envelop has been fed to the holding plate and oscillated into the vertical position indicated in Fig. 7 that the guides are swung down into vertical position, the opener arms being close together at this time and entering the opening in the back of the envelop. Immediately thereafter the wedge spreads these arms and the opener is extended into the position indicated in Fig. 4, the guides and opener thus forming a channel which positively directs the paper 175 forced downward by the inserter 76 into the envelop, this operation being indicated in Fig. 7. If desired, a movable elevator 79 may be employed which is shown as secured to the elevator plate 78 which normally forms part of the inserting table 2, this elevator having the closed or hook form indicated in Fig. 3. The short arm 80 is secured to this elevator and is pivoted to the link 81. The bell crank 82 is pivoted to this link and to the rod 83 which carries the cam follower 84 cooperating with the cam 85 on the drive shaft 60. As indicated in Fig. 4, an inserter yoke 75 is formed with the bearings 74 at either end which slide on the heavy rods 165 tied together at

their upper ends by the brace 163 and rigidly supported from the frame 1. The pins 73 pivot the links 72 to this yoke and these links are pivoted at their lower ends to the inserter levers 71 moving about the pins 69. The short arms 68 of these levers carry the cam followers 70 which engage suitable cams 123 on the drive shaft 60, see Figs. 3 and 4. The yoke 75 is provided with a number of holes 164 so that blades of suitable width may be readily secured thereto, the inserter blade 76 being rigidly secured to the yoke and operated through the mechanism described to force the paper 175 through the opening 77 down through the guides and into the envelop 176, as is indicated in Fig. 7, the elevator 79 being also thrown upward as indicated in that figure on the commencement of this downward movement so as to hold the folded end of the paper 175 against the adjacent side of the inserter 76, thus assisting in forming the second transverse fold in this paper.

When the inserter 76 has moved upward the opener is released and the guides are withdrawn into the position indicated in Figs. 3 and 8. The oscillator 119 then moves in the direction indicated by the arrow in the latter figure and carries the filled envelop back on top of the feeder 65. This feeder thereupon moves backward, the envelop flap being prevented from moving therewith by the serrated upper face of the gripper 177 and by the ejector 128 which moves forward at this time, throwing the envelop 176 into the receiver 96, see Fig. 9. The ejector is indicated as comprising the arms mounted on the shaft 127. The crank 129 is secured to this shaft as indicated in Fig. 1 and a suitable spring, as indicated, and also the rod 130 may be secured to this crank. The yoke 131 on the lower end of this rod carries the cam follower 132 which coöperates with the cam 133 on the cam shaft, thus giving the ejector a quick movement at the proper time. As indicated in Fig. 3, the receiver or shoo-fly 96 is mounted on the shaft 146 and may be composed of several plates spaced apart and closed at the lower end by an adjustable bottom piece 97. When this bottom piece is in position the filled envelop 176 thrown into the receiver is carried forward by the receiver and thrown therefrom upon the tapes 163 of the closing or flap-inserting mechanism 164. The shaft 146 of the receiver carries the pinion 145 engaged by the rack bar 143 running in the bearing 144. The yoke 147 at the lower end of this rack bar carries a suitable cam follower which engages the cam 148 on the cam shaft. The filled envelop is carried by the tapes 163 into engagement with the stop pins 181. Thereafter its rear edge is engaged by the clamp 184; the lifter 183 moves under the flap and

engages and raises the edge of the envelop back and thereafter the tucker 185 tucks the flap into the opening thus formed. The clamp is then released and the discharge rolls 182 come down into the position indicated, pressing the envelop against the tapes 163 and discharging it. These parts are operated from suitable cams on the shaft 180 which is driven by the sprocket chain 115 from the shaft 33 and this flap-inserting mechanism 164 operates, as has been fully described in my copending application No. 198,890, filed March 19, 1904.

If desired, the envelops may be sealed and for this purpose a water box 112 is mounted on the bracket 114. The box carries the roll 110 rotated in any desired manner and engaged by the scraper 111. The moistening roll 93 of rubber or similar material is mounted in the arms 92 which are rigid with the crank arm 91. The link 90 is pivoted to the crank arm and its other end is pivoted to the lever 88 rotating about the stud 89. The cam follower 87 on this lever engages the cam 86 on the drive shaft 60 and thus at the proper interval raises the moistening roll from its dotted position in contact with the water drum. In its raised position indicated in Fig. 3 in full lines, the moistening roll 93 engages the moistening face 94 secured to the lower surface of the feeder 65. The forward movement of the feeder moistens this face 94 which subsequently engages the gummed flap of the envelop. After being filled, as has been described, the envelop 176 passes into the receiver 96 which in this case is open at the bottom, the bottom piece 97 being removed. When the receiver is raised into the vertical position indicated in Fig. 3, the filled envelop falls downward and passes between the sealing rolls 95 which are mounted in suitable brackets 99 and are relatively adjustable as indicated. As is seen in Fig. 1, one of these rolls carries the skew gear 151 engaging a similar gear 150 on a shaft 152 so as to rotate these sealing rolls, the belt 98 driving the tapes 163 from the shaft on which the positively driven roll is mounted.

It is, of course, understood that those familiar with this art may make many changes in the number, form and proportions of parts of this mechanism, parts of the same may be omitted and parts may be employed in connection with other devices without departing from the spirit of this invention or losing the advantages of the same. I do not, therefore, desire to be limited to the details of the disclosure which has been made in this case, but

What is claimed as new and what I desire to secure by Letters Patent is set forth in the appended claims.

1. In packing mechanism, a folder to fold and feed paper, a feeder to feed an envelop,

a holding plate cooperating with said feeder to hold said envelop in position and having a gripper to engage the same, an oscillator to engage said envelop and oscillate the same into receiving position, guides to engage said envelop, an opener entering said envelop and spreading and opening the same, an inserter engaging said paper and folding and inserting the same through said guides into said envelop, an ejector to eject said envelop from said holding plate and means to close said filled envelop.

2. In packing mechanism, a feeder to feed an envelop from a stack, a holding plate to support said envelop and having a gripper to cooperate with said feeder and hold said envelop in position, an oscillator to oscillate said envelop into receiving position, movable guides to engage said envelop, an opener to enter said envelop and open the same, and an inserter to insert material through said guides into said envelop.

3. In packing mechanism, a feeder to feed an envelop, a holding plate having flap clamping means to engage and hold said envelop in receiving position, guides engaging said envelop, an opener entering said envelop and opening the same and means to insert material through said guides into said envelop.

4. In packing mechanism, means to feed and hold an envelop in receiving position, guides comprising an opener to engage and open said envelop, and an inserter adapted to engage the paper at its leading edge and force said paper through said guides into said envelop.

5. In packing mechanism, means to feed and hold an envelop in receiving position, an inserter blade to insert the paper in the envelop, guiding means, means to cause the guiding means and subsequently the inserter blade to enter the envelop to insert the paper within the envelop.

6. In packing mechanism, an inserter to enter the envelop, guiding means on one side of the path of said inserter to laterally support paper carried by said inserter in said envelop, means to cause the guiding means and subsequently the inserter to enter the envelop.

7. In packing mechanism, means to feed and hold an envelop in receiving position, guiding means engaging said envelop, means to insert material into said envelop and closing means for inserting the flap into said envelop.

8. In packing mechanism, means to feed and hold an envelop in receiving position, means to insert material into said envelop and closing mechanism comprising a lifter to raise the edge of the back of said envelop and a tucker to tuck the flap of said envelop into the opening thus made.

9. In packing mechanism, means to insert

material into an envelop, means to feed the filled envelop to a closing mechanism, means to raise the edge of the back of said envelop and a tucker to tuck the flap of said envelop into the opening thus made.

10. In packing mechanism, means to insert material into an envelop, means to raise the edge of the back of said envelop and a tucker to tuck the flap of said envelop into the opening thus made.

11. In packing mechanism, means to feed and hold an envelop in receiving position, guiding means comprising an opener to enter and open said envelop, means to insert material through said guiding means into said envelop and means for tucking in the flap of the envelop to close said filled envelop.

12. In packing mechanism, means to hold an envelop in receiving position, flat pivoted guides, an opener pivoted about a shaft parallel to the axis of said guides, means to spread said opener laterally within said envelop and means to feed paper between said flat guides and opener into said envelop.

13. In packing mechanism, means to hold an envelop in receiving position, flat pivoted guiding means comprising an opener, means to move said guiding means to substantially perpendicularly engage the inner face of the front of said envelop, means to spread said opener laterally within said envelop and means to feed material between said guiding means into said envelop.

14. In packing mechanism, means to hold an envelop in receiving position, flat guiding means comprising an opener, means to move said guiding means to substantially perpendicularly engage the inside of the front of said envelop, means to move said opener to engage the back of said envelop and means to feed material through the guiding passage formed by said guiding means and said opener into said envelop.

15. In packing mechanism, means for holding an envelop in receiving position by clamping the flap, a movable opener to engage said envelop, means to spread said opener within said envelop and an inserting knife to move along said opener into said envelop.

16. In packing mechanism, flap clamping means to hold an envelop in receiving position, guiding means to engage the opening in said envelop and an inserter to move in contact with said guiding means into said envelop.

17. In packing mechanism, a feeder to feed an envelop from a stack by engaging the flap of the same, a gripper to cooperate with said feeder and hold said envelop flap in position, an oscillator to oscillate the body of said envelop into receiving position for filling the same and for returning said envelop body after filling, means for inserting

material into said envelop, and means for closing said filled envelop.

18. In packing mechanism, means to hold an envelop in receiving position, means to form a transverse fold in paper, an inserter to form a second fold in said paper and simultaneously insert the same into said envelop and an elevator to engage the folded end of said paper and raise the same toward said inserter as said inserter engages said paper.

19. In packing mechanism, a feeder to feed an envelop by engaging the flap of the same, a gripper to cooperate with said feeder and hold said envelop flap in position and an oscillator to oscillate the body of said envelop and hold the same in receiving position.

20. In packing mechanism, gripping means to engage and hold an envelop flap and an oscillator to oscillate the body of said envelop and hold the same in receiving position.

21. In packing mechanism, means to hold an envelop in receiving position, an inserter to force material into said envelop and an elevator to engage an end of said material and raise the same toward said inserter as said inserter moves forward.

22. In packing mechanism, means to hold an envelop in receiving position, guiding means to engage said envelop, an inserting knife moving in contact with said guiding means to force paper into said envelop and an elevator to engage the end of said paper and raise the same toward said inserter.

23. In packing mechanism, means to hold an envelop in receiving position, an inserter to engage the paper at its leading edge, guides comprising an opener to engage and open said envelop and lying on either side of the path of said inserter to laterally support the paper carried by said inserter into the said envelop.

24. A packing mechanism, means to feed and hold an envelop in receiving position, an inserter blade to engage the leading fold of paper to feed it into the envelop, guiding means to previously enter said envelop and arranged on either side of the path of said inserter to laterally support paper carried by said inserter into said envelop.

25. In packing mechanism, means to feed

and hold an envelop in receiving position, an inserter blade to insert the paper in the envelop, guiding means arranged on either side of the path of said inserter, means to cause the guiding means and subsequently the inserter blade to enter the envelop, and engage the paper at its leading edge and laterally support it as it is inserted into the envelop.

26. In packing mechanism, a feeder to feed an envelop from a stack, a gripper to cooperate with said feeder and hold said envelop flap in position, an oscillator to oscillate the body of said envelop into receiving position for filling the same and for returning said envelop body after filling, means to insert material into said envelop and means to close said filled envelop.

27. In a device for folding a sheet of paper and inserting it into an envelop, the combination of a support for the sheet, and a single means arranged to engage with and fold the sheet and then by a continued movement to insert the folded sheet into an envelop.

28. In a packing mechanism, means for opening an envelop, means for inserting an article into the envelop, and means for tucking the flap of the envelop within the opening thereof.

29. In a packing mechanism, means for opening an envelop, means for inserting an article into the envelop, means for tucking the flap of the envelop within the opening thereof, means for sealing the flap on the outer side of the envelop, and means for delivering the envelop from said opening and filling means either to said tucking means or to said sealing means.

30. In a packing mechanism, means for opening an envelop, means for inserting an article into the envelop, means for tucking the flap of the envelop within the opening thereof, and means for delivering the envelop from said opening and filling means to said tucking means and constructed to reverse said envelop end for end while in transit.

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