

July 16, 1929.

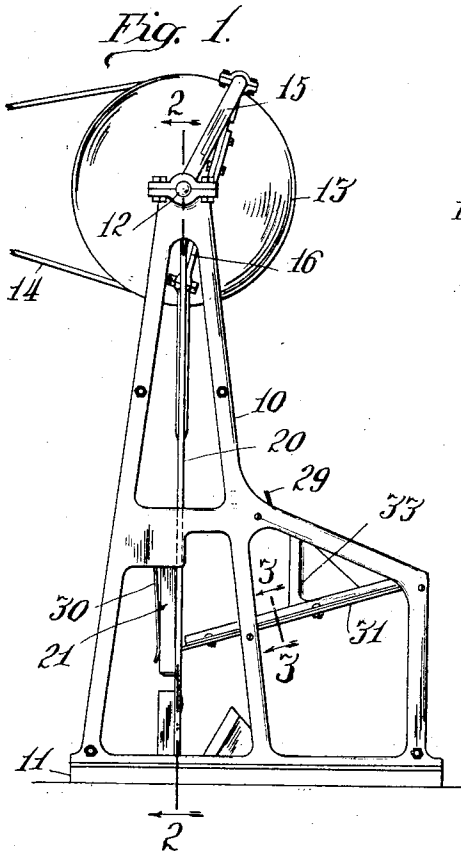
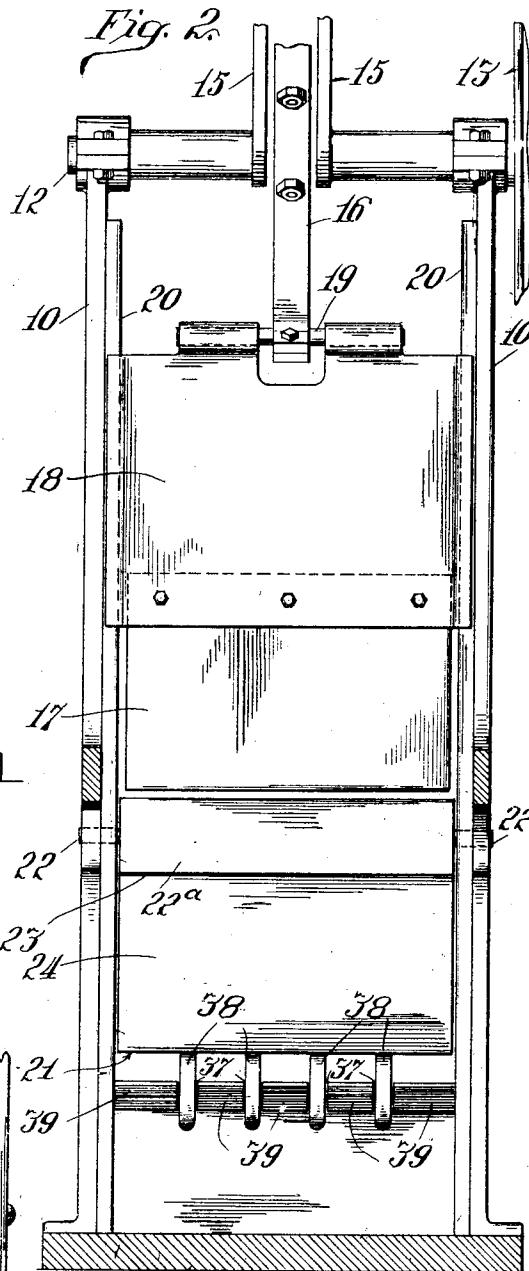
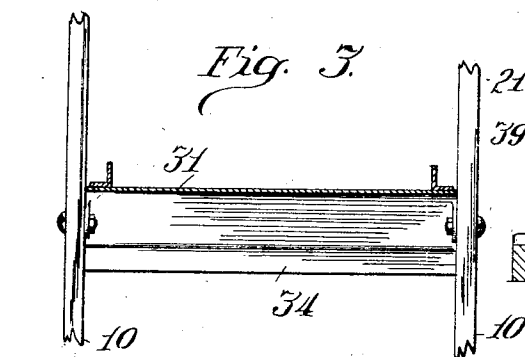
M. STEVENS ET AL

1,720,699

ENVELOPE FILLING MACHINE

Filed July 25, 1927

2 Sheets-Sheet 1



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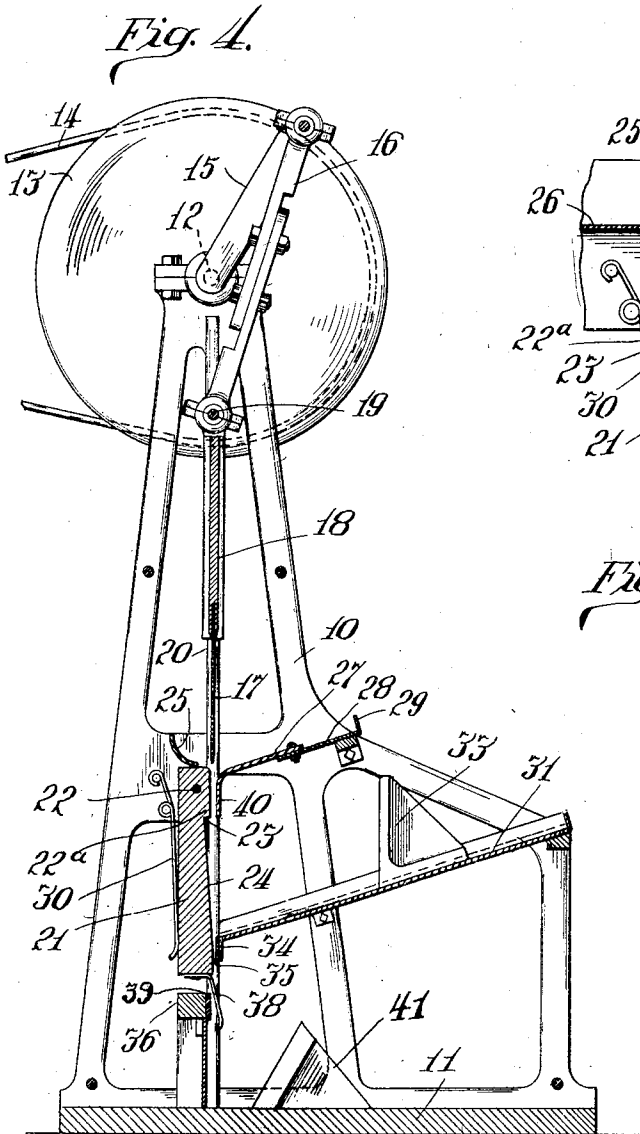
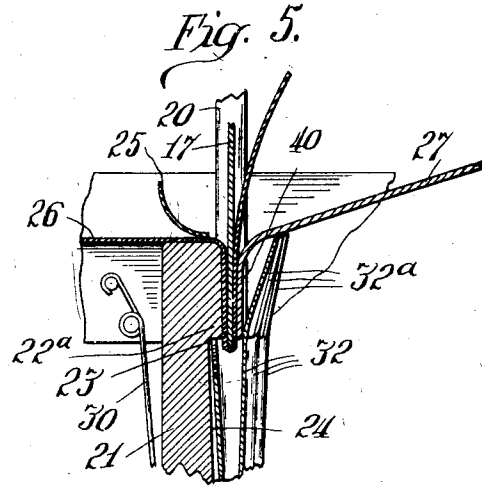
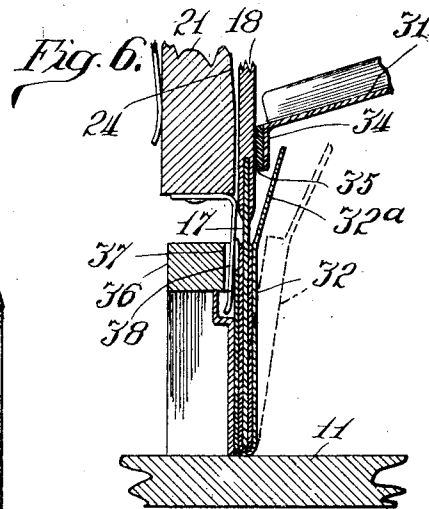
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ENVELOPE FILLING MACHINE

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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE.

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ENVELOPE-FILLING MACHINE.

Application filed July 25, 1927. Serial No. 208,086.

Our invention relates to means whereby bulletins, leaflets, or other simple matter in sheet form and capable of being folded to a comparatively thin edge, will be suitably folded in keeping with the size of the selected envelope and then automatically inserted into the envelope and the envelope with its insert delivered from the machine, ready for use or mailing.

The object of the invention, as well as its advantages, will be readily comprehended from the following detailed description of the drawings, wherein:—

Figure 1 is a side elevation of a machine embodying our invention.

Figure 2 is a vertical sectional view taken on the line 2—2 of Figure 1, looking in the direction of the arrows.

Figure 3 is a detail sectional view taken on the line 3—3 of Figure 1.

Figure 4 is a central vertical sectional view taken at right angles to Figure 2.

Figure 5 is a detail vertical sectional view illustrating the folding and inserting element at the initial point of its operation.

Figure 6 is a somewhat similar view illustrating said element in the complete inserting position.

In the exemplification of our invention, as disclosed in the drawings, 10 illustrates side frames, of any suitable type, supported on proper base as at 11; the top of the frame being formed to rotatably mount shaft 12 having a drive wheel 13 which may be driven by any suitable motive power through the medium of a belt or chain as at 14. The shaft 12 is provided with crank-arms 15, 15 the free or outer ends whereof have pivotal connection with the link 16 as shown. The link is preferably made in two parts as shown to permit adjustment of the length of the link for the purpose of providing the necessary stroke in keeping with the travel of the folder and insertor plate 17 which is preferably shown secured to a vertically reciprocating plate 18. The plate 18 is pivotally secured at 19 to the extensive crank-arm 16. The plate 18 is adapted to ride in a suitable vertical slideway 20 arranged in the side-frame members 10, 10.

The frame of the machine, at a suitable point, beneath the normal position of the holder and insertor plate 17 is provided with

a vertically hung plate or member 21, preferably of polished wood, pivotally secured at 22 at its upper end so as to permit slight oscillatory movement of plate 21. This member 21 is preferably of width equal or somewhat greater than the width of the envelopes used and is kerfed or cut-away on its forward face at 23 to provide the forwardly sloping surface 24 beneath the shoulder 22^a which is at a predetermined point beneath the pivotal point 22.

Mounted immediately above the top of member 21, and extending transversely of the machine throughout the width of the folder and insertor 17, is a curved spring plate 25 curving downwardly and forwardly toward the path of member 17, to constitute a guide for the sheets or leaflets to be inserted and shown at 26 in Figure 5.

The frame on the opposite side of the longitudinal vertical center is provided with a sloping plate or table 27 preferably provided with an extensible portion 28, the outer end whereof is flanged upwardly as at 29 to provide a stop for the sheet of paper or leaflet which is fed into the machine from the left hand side thereof as viewed in Figures 1 and 4, in advance of its engagement by the folder and insertor 17. The member 21 is held in normal position by a suitable spring as at 30, see Figure 4, which tends to force the lower end of the member 21 into the path of the downwardly moving folder and insertor 17 and provides more or less frictional engagement with one side of the envelope intended to receive the folded sheet or leaflet.

At a suitable point beneath the sloping plate 27, the machine is shown provided with a downwardly sloping plate or table 31 which is intended to receive the envelopes, shown at 32, into which the sheets or leaflets are intended to be inserted. The table 31 is provided with a suitable follower as at 33 adapted to place the envelopes under slight pressure; the follower being intended to slide through the action of gravity on the smooth surface of the table and cause the envelopes to move toward the member 21 and therefore into the path of the reciprocating plate 17. The lower longitudinal edge of the table 31 is shown provided with a downwardly depending flange 34 which is preferably pro-

vided with a corrugated rubber covering or strip 35 adapted to effect frictional holding relation with the adjacent side of the envelope as the latter is being forced downwardly between the opposite face of the member 21 and the inner lower flanged edge of the table 31.

The lower part of the machine at a point beneath the free end of member 21 (which preferably extends slightly beneath the flange 34 of table 31) is provided with a transversely disposed bar 36 supported in any suitable manner and provided on its forward vertically disposed surface with a number of slots as at 37, see Figure 2, adapted to receive the depending spring blades or fingers 38 carried by the lower end of member 21. The fingers or blades 38, which are preferably of resilient sheet metal, are bowed so as to be disposed into the path of the reciprocating folder and insertor 17. The fingers or plates, when the member 21 is oscillated out of the path of the folder and insertor 17, are intended to move out of the path of the folder and insertor and into the slots 37. The vertical face of bar 37, intermediate of the slots 37, is shown provided with rubber pads or strips 39 preferably provided with a corrugated or serrated surface to afford a frictional holding surface for the adjacent side of the downwardly traveling envelope and to cause the latter to be held at the bottom of the machine when the folder and insertor 17 resumes its upward travel.

Our improved device is especially intended for folding and inserting bulletins, letters, leaflets and the like, namely any sheet of material capable of being folded to a comparatively thin edge and to insert the same into suitable sized envelopes preparatory to mailing. It is apparent that the length of travel of the folder and insertor, the width or size of the guide plate or table 27, may be varied to adapt the device to various sizes of sheets and appropriate sized envelopes; and for that reason certain of the parts have been shown removably and adjustably connected together in a suitable manner.

In its operation, the table 31 is provided with the proper sized envelopes set on edge with the flap and address receiving side disposed away from the path of the folder and insertor 17; that is to say the envelopes are arranged on the table 31 with their flaps bent upwardly as shown at 32^a in Figure 5. The relation between the guide plate 27 and table 31 is such that the top open side of the envelope will be disposed beneath the downwardly curved edge 40 of the guide plate 27 and located in the kerfed portion of member 21 immediately beneath the shoulder 23 as shown in Figure 5; the envelopes being forced toward the pathway of the folder and insertor 17 by the pressure caused by slide-block or follower 33 on the stack of envelopes. It is

apparent that the flaps 32^a of the envelopes 32 will be held out of the path of the folder and insertor 17 by the curved or flanged portion 40 of the plate 27. The table 31 having been provided with a suitable quantity of envelopes arranged as just described, the machine is set into operation and the letters, bulletins, leaflets or other sheet material, are then fed into the machine across the top of pivoted member 21 and beneath the arcuate plate 25; the latter tending to smooth out the paper sheet and also preventing the improper feeding of a plurality of sheets instead of the single sheet or leaflet. The extensible guide plate or table 27 is adjusted so that the aligning flange 29 will prevent the too far inward feeding of the sheet or pamphlet, in order that the plunger plate or member 17 may engage with the sheet or leaflet at a proper intermediate point and cause the same to be folded in a manner which will permit its insertion into the selected envelope. As each sheet or succeeding leaflet or bulletin is fed into the machine, member 17 will engage with the same and force it downwardly between the pivoted upper end of plate or member 21 and between the downwardly depending lip or flange 40 of guide plate 27 at which time it will enter into the opened top of the envelope 32 which is disposed immediately beneath the downward traveling member 17 with the sheet or leaflet and cause the latter to be forced into the envelope as shown in Figure 5 where the initial insertion of the folded sheet of paper or leaflet is illustrated. As the plunger or member 17 continues its downward travel, toward the bottom of the envelope, the insert will be forced entirely into the envelope 32 because the latter is held against downward movement by the forwardly disposed position of the lower end of member 21, through the action of spring 30, and the frictional surface provided by the rubber strip 35 which covers the depending flange or lip 34 of the envelope holding table 31. The member 17 continues its travel downwardly until the insert reaches the bottom of the envelope 32, thus causing the envelope with its insert to be forced downwardly past the frictional surface 35 and into the lower part or discharging end of the machine; the member 21 being moved slightly about its pivotal point 22 against the action of spring 30. The distance beneath the discharge throat consisting of the lower free end of member 21 and the frictional strip 35 it will be understood must be sufficient to permit the envelope with its upstanding flap 32^a to entirely clear the frictional surface 35 when the member 17 has reached the limit of its downward stroke, at which time the member 17 returns upwardly and is withdrawn from the insert and envelope and back to its normal upward position. As soon as the member 17 travels upwardly beyond the

frictional lip or surface 35, spring 30 will force swinging member or plate 21 back to the position shown in Figure 4, causing the spring fingers or strips 38 to force the envelope with its insert out of the path of travel of the plunger and onto the receiving base or table 11; the latter being provided with any suitable rack or holding block as at 41 adapted to maintain the envelopes in upright position if desired.

With the bar 36 provided with the frictional pads 39, which will be in engagement with the adjacent side of the filled envelope, the latter will be held against any upward movement with member 17, as the resistance offered thereby will be greater than that encountered through the upward movement of the smooth faced element 17.

Our invention has been exemplified by a machine which is adapted to function in the manner hereinbefore described in terms which have been employed merely as terms of description and not as terms of limitation, as the invention may have expression in somewhat different form without, however, departing from the spirit of our invention.

What we claim is:—

1. A machine of the character described comprising a downwardly sloping envelope holding table arranged to cause the envelopes to slide toward the lower end thereof, means for yieldingly maintaining the envelopes on edge in upright position, means for holding the envelope-flaps upwardly and away from the advanced open side of the envelope, an insert receiving guideway disposed above the envelope holding portion, a vertical slide-way arranged to intersect said receiving guideway, a reciprocating member in the vertical slide-way adapted to travel across the path of the insert and to engage the insert at an intermediate point so as to fold the same and to depress the insert into the aligned envelope therebeneath and to carry the envelope and its folded insert beyond the envelope holding table, friction means arranged along the path of said blade beneath the envelope holding table for preventing improper downward movement of the envelope in advance of the blade, and means for holding the envelope with its insert against upward movement of said reciprocating blade when the latter returns from its lowest position.

2. A machine of the character described comprising a reciprocating insert folding and envelope filling blade, an insert receiving table disposed transversely of the path of said blade and adjustable for aligning the inserts and for determining their positions relative to said blade, said table having a downwardly disposed flange adjacent to the path of said blade, an oscillatingly mounted member adjacent to the path of said blade and provided with a shoulder on its forward

face in alignment with the lower end of said flange, said member sloping forwardly toward the lower free end which is normally disposed in the path of the blade, said member and the downwardly disposed flange of the table being arranged to fold the insert when the blade passes therebetween, a downwardly sloping envelope-holding table arranged beneath said insert receiving table adapted to hold the envelopes in upright positions, with the envelope-flaps out of the path of said blade and lapping said flange, while the open side of the foremost envelope extends beneath said shoulder whereby the envelope is held in open position to receive the descending blade with the folded insert, means for stripping the filled envelope from said blade arranged beneath the envelope holding table, and means carried by the lower end of said oscillating member for forcing the filled envelope out of the path of the blade and succeeding envelope.

3. A machine of the character described comprising a vertically disposed slide-way, a blade carrying member vertically movable in said slide-way, a spring-controlled vertically disposed member pivotally secured at its upper end adjacent to said slide-way, the face of said member disposed toward the slide-way being recessed and sloping forwardly toward the lower end, means for yieldingly holding said member in normal position with its lower end in the path of the descending blade, means coincident with the upper pivoted end of said member and cooperating therewith to provide an insert receiving path disposed transversely of said slide-way, an envelope-receiving table beneath said insert-receiving path adapted to hold the envelopes in upright positions and to force the same toward said vertical slide-way and the open side of the envelope into the recessed face of said member, friction means cooperating with the lower free end of said member for stripping the filled envelope from said blade when the latter reaches the bottom of its stroke, and means carried by the lower end of said member for forcing the filled envelope away from the slide-way upon upward movement of the blade.

4. A machine of the character described comprising a vertical reciprocating blade, an insert receiving ledge slotted for passage of said blade, one side of said ledge consisting of a vertically disposed block pivoted at its upper end and recessed on its forward face to receive the open rear side of an envelope, an envelope receiving portion for holding a stack of envelopes in upright position so as to successively present the open tops of the envelopes to the downwardly traveling blade, means for engaging the flaps of the envelopes to maintain them in open position, the lower end of said pivoted block being yieldingly

held in the path of said blade, the lower end of said block and the envelope receiving portion constituting a throat through which the envelope with the insert and said blade pass
5 when the blade with the insert reaches the bottom of the envelope, said throat being formed to hold the envelope and insert against upward movement with the blade, and spring fingers carried by the lower end of said block for forcing the filled envelope away upon upward movement of the block. 10

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CERTIFICATE OF CORRECTION.

Patent No. 1,720,699.

Granted July 16, 1929, to

MERRILL STEVENS ET AL.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 3, line 39, claim 1, for the word "member" read "blade"; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 10th day of September, A. D. 1929.

(Seal)

M. J. Moore,
Acting Commissioner of Patents.