V. W. NEWMAN.

MACHINE FOR INSERTING MAIL MATTER.

APPLICATION FILED JULY 27, 1915.

1,172,824.

Patented Feb. 22, 1916.

2 SHEETS-SHEET 1.

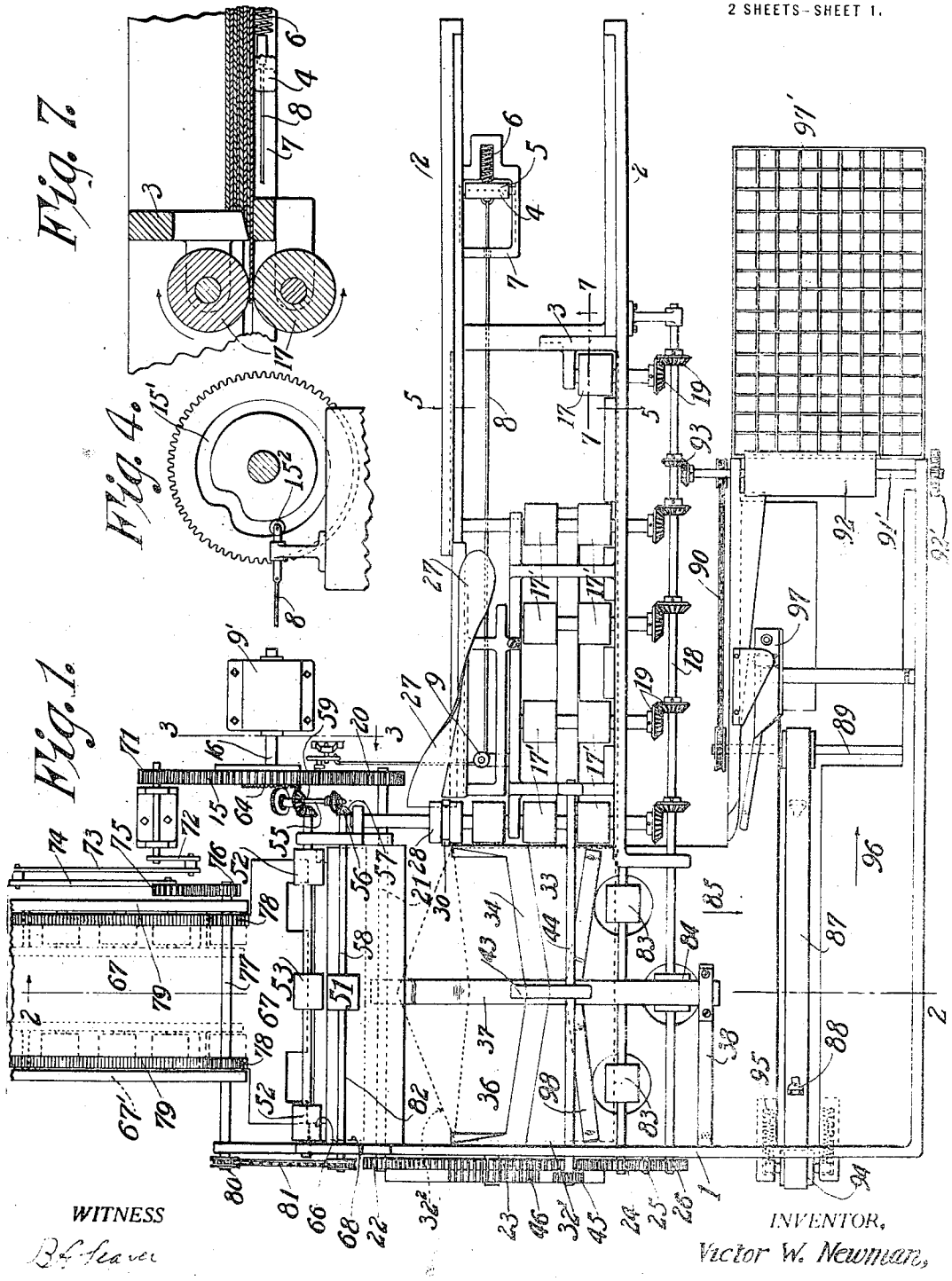


Fig. 7.

Fig. 4.

Fig. 1.

WITNESS

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2 SHEETS—SHEET 2.

Fig. 3.

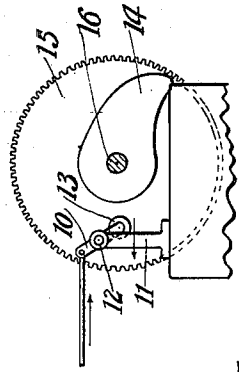


Fig. 5.

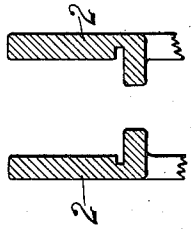


Fig. 6.

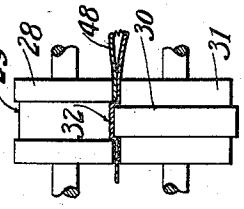


Fig. 2.

WITNESS

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MACHINE FOR INSERTING MAIL-MATTER.

1,172,824. Specification of Letters Patent. Patented Feb. 22, 1916.

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To all whom it may concern:

Be it known that I, VICTOR W. NEWMAN, a citizen of the United States of America, residing in the city of Springfield, county of Hampden, and State of Massachusetts, have invented certain new and useful Improvements in Machines for Inserting Mail-Matter, of which the following is a specification.

This invention relates to improvements in machines for inserting mail matter, such as circulars, letters, telephone bills, tax notices, etc., into envelops; automatically sealing the envelop and then delivering the envelop with its sealed contents into a suitable receptacle for mailing.

The invention, broadly considered, comprises a receptacle for receiving a pile of envelops in their ordinary or closed position, and means for automatically advancing and opening the envelops one by one to open or turn the flap into the same plane as the body of the envelop to permit the insertion of the matter to be mailed; means for positively holding the flap open during the insertion of the material that is to be inserted in the envelop, means for automatically advancing the envelop, after the insertion of the mailable matter, to a suitable sealing device, and means for moving the sealed envelop and its contents to a receiving receptacle.

I am aware that it is not broadly new to provide mechanism for accomplishing these different sets of operations but as far as I am aware the mechanism here shown and described is believed to be new.

Referring to the drawings: Figure 1 is a top plan view of the construction showing the various sets of mechanisms for accomplishing the results referred to; Fig. 2 is a vertical, transverse, sectional view on the line 2—2 of Fig. 1, showing the mechanism for advancing a sheet of paper or other matter to be inserted in the envelop, the mechanism for inserting the mailable matter into the envelop, the devices for holding the flap open during the insertion of the mailable matter and the conveyer belt for moving the envelop to the sealing mechanism; Fig. 3 is a detail view of the device for advancing or feeding one envelop at a time from the bottom of the stack to the devices for automatically opening the flap of the envelop, the view being taken on the line 3—3 of Fig. 1, looking in the direction of the arrows; Fig. 4 is a modification of the construction shown in Fig. 3; Fig. 5 is a detail sectional view on the line 5—5 of Fig. 1, showing the grooves in the side of the frame which receive the opposite edges of the envelop; Fig. 6 is a detail view of the coöperating rollers which are designed to engage the envelop at the crease line of the fold of the flap for the purpose of straightening it out to permit the ready insertion of the mailable matter; Fig. 7 is a detail view of the envelop feeding device.

Referring to the drawings in detail: 1 designates the main framework of the machine, the ledges or runways on which the pile of empty envelops are placed are indicated at 2. A suitable stop device is indicated at 3 for permitting only one envelop at a time to be drawn from the bottom of the pile. The bottom envelop is withdrawn by means of the slide 4 which is formed with pins or sharp points 5 for engaging an envelop. This slide is normally held in a retracted position by means of the coiled spring 6 and is guided in its movements by means of the frame 7. Attached to the slide is a cord 8 which passes over a roller 9. The cord then passes to a lever 10 that is pivotally mounted on a standard 11 at the point 12. The opposite end of the lever 10 is provided with an anti-friction roller 13 which is engaged by a cam 14. This cam is driven by means of the gear wheel 15 that is mounted on a shaft 16 to which the driving motor 9′ is secured. It will be observed that as the gear 15 is rotated the cam 14 will engage the roller 13 and operate the cord 8 to remove the envelop from the stack. After this envelop has been withdrawn it is carried forward by means of the pair of rollers 17 which are driven from the main shaft 18 through the beveled gears 19. The shaft 18 is operated from the wheel 15 by means of the pinion 20 that is secured to the shaft 21. The opposite end of the shaft 21 carries a pinion 22 which meshes with a large spur gear 23 and this in turn, drives the pinion 24, idler 25, and the pinion 26, the pinion 26 being secured to the main shaft 18. As the envelop is drawn forward by the rollers 17 it is advanced by the pairs of rollers 17′ past the flap opening device 27, which comprises a piece of sheet metal bent to form a warped surface, whereby the flap is opened and turned into a horizontal position. After it leaves the part 27 the flap is next engaged on its opposite sides adjacent the folding

line 32 of the flap, shown on an enlarged scale, in Fig. 6. The upper roller 28 is formed with a groove 29 which receives a rib 30 which is secured to the roller 31. The envelop in its open position is now delivered onto the platform 33 (as shown in dotted lines 32′) which is formed with an inclined surface 34 leading to an opening 36.

In order to hold the flap 32^2 in an open position, a flexible arm 37 is secured to the support 38 above the platform 33. This arm is bent at the point 39 forming the downwardly extending part 40 which engages the flap of the envelop (see Fig. 2) and the upwardly extending part 42. In order to operate this arm at the proper period in the operations of the machine to open the flap and extend the opening of the envelop, a cam, indicated at 43, is secured to the shaft 44. This shaft is periodically driven by means of the gear 45 which engages the segmental row of teeth 46 of the gear wheel 23. When the cam 43 engages the flexible arm 37 the same is pressed downwardly into engagement with the flap 32^2 of the envelop, indicated at 32′.

Referring now to the mechanism for receiving and holding the circulars or other matter that is to be inserted in the envelop, 49 represents an adjustably inclined platform on which the circulars 50 in pack form, are placed in a vertical position. These circulars are fed downward, one at a time, by means of the rollers 51 and 52, formed of or covered with a suitable adhesive mat.

53 is a supporting roller located intermediate the rollers 51 and 52. The weight 54 holds the circulars pressed tightly against the rollers 52 and 53 and it will be observed that the platform 49 is inclined and adjustable so that the weight automatically slides or rolls downward against the pack of circulars 50. In order to operate the rollers 51 and 52 intermittently, a shaft 55 carries a pinion 56 which meshes with a pinion 57 at its upper end which drives shaft 58 (see Fig. 2) on which the rubber covered roll 51 is placed. The shaft 55 and the sleeve 57′ respectively, have pinions 62 and 63 at their lower ends which engage the segmental gears 64 and 65 that are secured to the face of the wheel 15. The sleeve 57′ operates the roller 52 through the bevel pinions 59. When the shaft 55 and sleeve 57′, through which the shaft 55 passes, are intermittently rotated the rollers 51 and 52 are operated successively to withdraw the lower or inner circular from the stack 50 and cause it to be moved downward in the groove 66 into a position in the path of the circular inserting slide 67 and in front of the folding rollers 68 and 68′. It will be observed that the upper roller 51 is first operated for a short period of time to start the lower one of the circulars, as shown by the dotted line 50′. After the roller 51 comes to rest the rollers 52 are next operated to complete the removal of the circular from the pack and cause it to be moved into the position shown by the reference 70.

The forward edge of the shelf 49 is provided with a slight bur or ridge 49′ to prevent the removal of more than one sheet or circular at a time. The lower edge of the circular to be inserted will engage the vertically adjustable stop 69, this stop being employed to limit the downward movement of the circular or other mailable matter that is to be inserted into the envelop. The slide 67 is now operated to engage the matter indicated at 70, that is to be inserted in the open envelop. This slide is operated from the motor 9′ by means of the pinion 71 to which a crank 72 is connected. Connected to this crank is a link 73 which in turn is connected to a second link 74, which drives a sector 75. This sector operates a pinion 76 that is secured to a shaft 77 which extends across the forward end of the slide 67 and to which the pinions 78 are connected. The pinions 78 engage racks 79 on the upper side edges of the reciprocatory slide 67 for moving the same forward into engagement with the circular indicated in full lines at 70 for forcing the same into the envelop, as indicated at 32′. The slide 67 is mounted on rollers, shown at 67′. 77 carries the sprocket gear 80 over which passes a chain 81 which drives the shaft 82 on which is secured a roller 68 whereby the circular is folded by means of the slide 67 and the rollers 68 and 68′ when the slide engages the circular and moves it between the rollers 68 and 68′ into the envelop. The envelop is now carried forward by means of the pairs of rollers 83 and 84 in the direction of the arrow 85 into a position over the endless conveyer belt 87 on which are secured the catches 88. The rollers 83 and 84, it should be stated, are driven from the pinions 24 and 26. The endless carrier 87 is operated by means of the shaft 89 which is connected by means of the sprocket chain 90 to the shaft 91 on which is secured a roller 92. The shaft 91 is driven by the gears 92′ and 93′. The shaft 91′ is, in turn, driven from the main shaft 18 through the bevel-gears 93. The upper and lower rollers 92 are for the purpose of drawing the envelops past the sealing device and delivering them into the receptacle 97′. The pulley 94, has its shaft yieldably mounted by means of the springs 95 in order to take up any slack in the conveyer belt 87. The envelop is now caught by the catches 88 and carried in the direction of the arrow 96 to a suitable sealing device 97 where the flap

of the envelop is moistened and automatically closed as it is moved along by means of the endless carrier 87 and the rollers 92. After it leaves the roller 92 it is deposited in a receptacle 97', as stated.

Fig. 4 shows a modified construction for operating the slide 4 which comprises a cam shaped groove 15' formed in the face of the wheel 15 which is engaged by a roller 15^2 that is attached to the cord 8, suitable means being provided for slidably supporting the roller. It is clear that a reciprocating movement will be imparted to the slide 4 against the tension of the spring 6.

In operation, the parts are so timed that the slide 67 operates to insert the circular or other matter into the envelop at the proper time, and that, the slide 67 serves the purpose of advancing the envelop with its contents to the pairs of rollers 83 and 84 where it is then caught by the catches 88 and carried to the sealing device 97. As soon as one envelop is filled another is delivered to take its place, and, at the proper moment the roller 51 is operated to separate a circular from the stack as shown at 50'. The roller 52 is operated after roller 51 comes to rest to advance and removes a circular from the stack 50 as stated. The roller 53 serves merely as a support. The cam 43 is so timed to permit another opened envelop to take its place. The springs 98 serve the purpose of preventing the adjacent rear edge of the envelop from rising or tipping when the spring arm is depressed to open the flap. I have, therefore, described a machine for successfully opening an envelop, inserting the mailable matter therein, and sealing the same ready for mailing or delivering.

What I claim is:

1. In a machine of the class described, the combination, a device for receiving the empty envelops in which mailable matter is to be inserted, means for advancing the lowermost one of said envelops, one at a time, to a position for inserting the mailable matter, means in the path of the movable envelop for opening the flap, comprising a warped surface, and a pair of inter-engaging rollers to engage the folding line of the flap for causing the flap to lie in the plane of the envelop, means to retain the flap open during the period that mailable matter is being inserted, a receptacle for receiving a stack of the matter to be mailed, means for advancing one sheet at a time of said matter to a position transversely of the envelop, means for engaging the insertible matter intermediate of its length for moving the same into the envelop, a sealing device, means for advancing the envelop to a position for sealing the same, as described.

2. In a machine of the class described, means for advancing an envelop to a position for inserting the matter to be mailed, a device to open the flap of the envelop, a device to retain the envelop in its open position comprising a flexible arm engaging the flap and having a downwardly inclined bent portion to directly engage the flap, means to prevent the envelop from tipping, a receptacle for receiving the matter to be inserted, means to intermittently advance one sheet at a time into a position transverse to the plane of the open side of the envelop into which the matter is to be inserted, a slide adapted to engage the mailable matter and fold the same intermediate of its length, folding rollers positioned between the slide and the open edge of the envelop and between which the mailable matter passes, means to carry the envelop after the mailable matter is inserted to a sealing position, means to advance the same toward a suitable receptacle past the sealing mechanism, said means comprising an endless belt, and catches thereon for engaging the envelop, as described.

3. A flap opening device for envelops, comprising in combination, rollers for moving an envelop, a warped surface to initially open the flap, and means to engage the opposite sides of the flap at its folding line to permanently open the envelop.

4. A device for retaining the flap of an envelop in an open position, comprising, a platform having an opening to receive the envelop, the flap being located over the opening, a device to separate the walls of the envelop, and means to move the device against the flap to move the flap into the opening.

5. A feeding means for inserting mailable matter into an envelop, comprising in combination, a reciprocable slide, means for reciprocating the slide, a pair of folding rollers between which the slide moves to form a fold in the mailable matter after said matter has assumed a position transverse to the plane of the slide, and means for operating the slide and rollers, as described.

6. A machine of the class described, comprising, in combination, a platform formed with an opening to receive an envelop in an open position, means to retain the envelop in such position, means to feed a sheet across the opening in the platform and to fold and insert the sheet in the envelop, feed rolls, said means serving to move the envelop to the feed rolls, conveying devices, sealing devices, said rolls serving to advance the filled envelop to the conveying devices, and said conveying devices serving to convey the filled envelop to the sealing devices.

VICTOR W. NEWMAN.