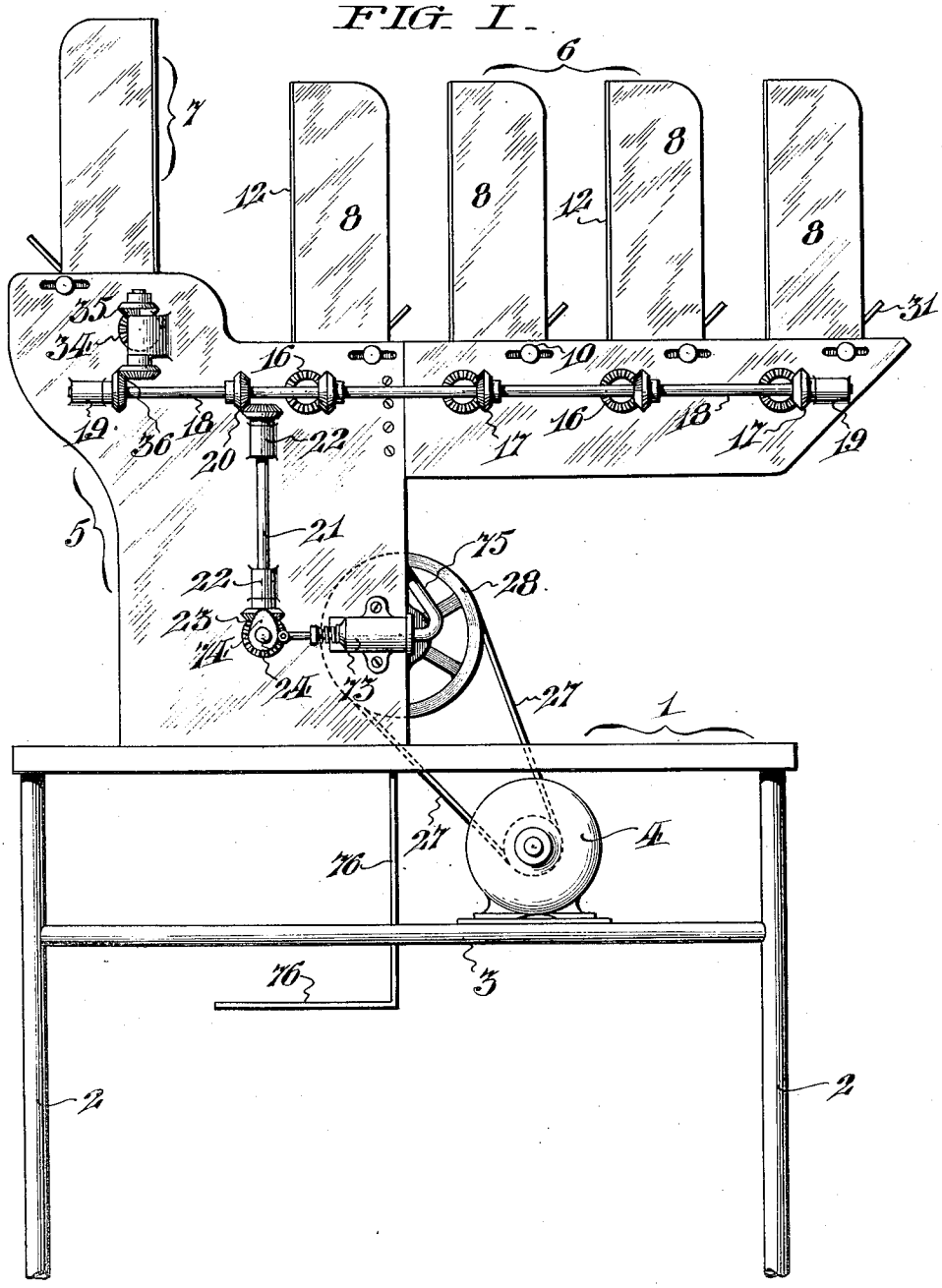
April 28, 1931. E. L. BOUTON 1,803,049

ENVELOPE FILLING MACHINE

Original Filed Oct. 13, 1925 5 Sheets-Sheet 1

FIG. 1.



INVENTOR:
Eldrid L. Bouton,
BY Alfred J. Batton
ATTORNEY.

April 28, 1931. E. L. BOUTON 1,803,049

ENVELOPE FILLING MACHINE

Original Filed Oct. 13, 1925 5 Sheets-Sheet 2

FIG. II.

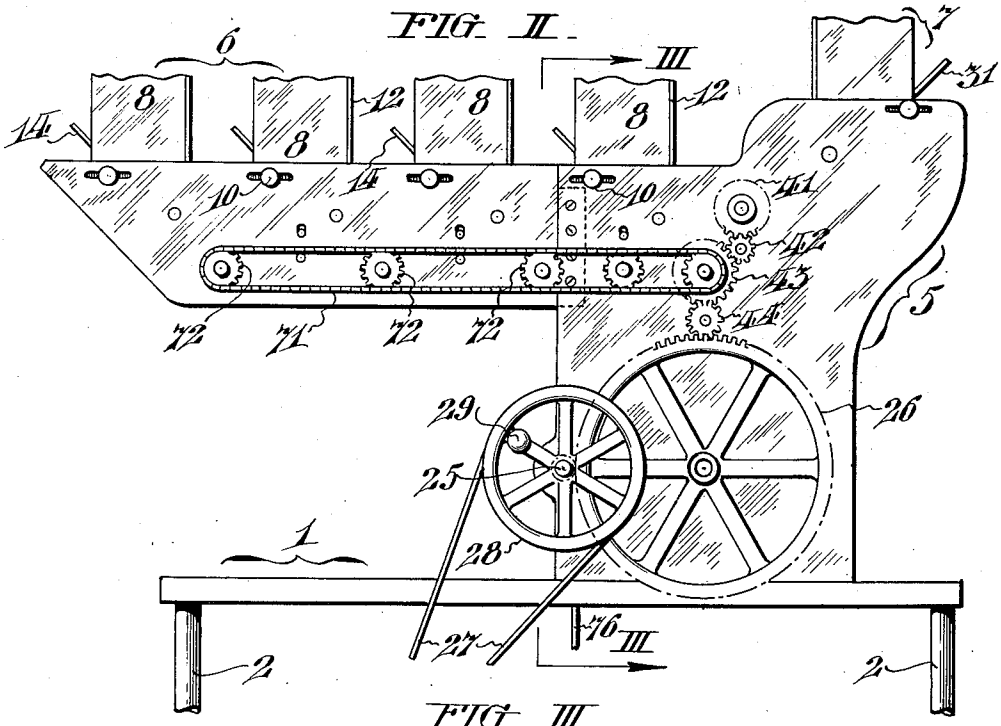
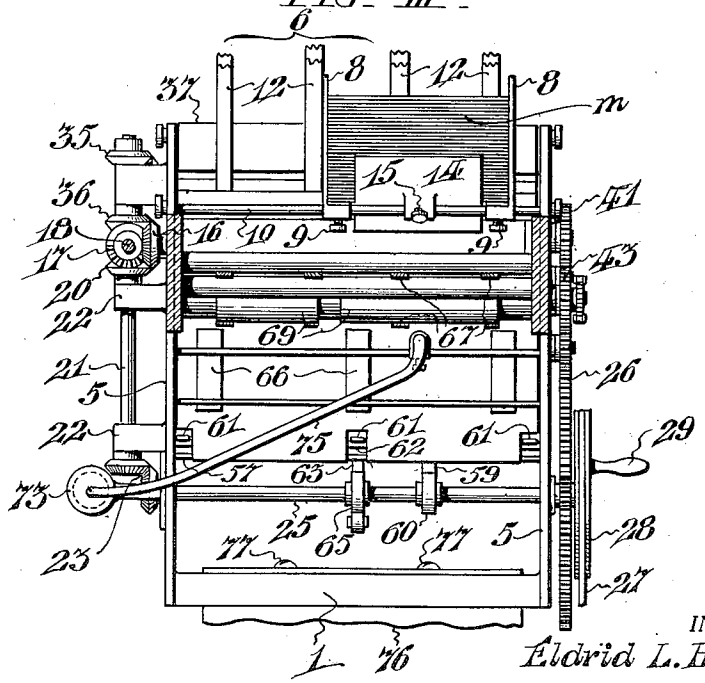


FIG. III.



INVENTOR:
Eldrid L. Bouton,
BY
Alfred J. Bouton
ATTORNEY.

April 28, 1931. E. L. BOUTON 1,803,049

ENVELOPE FILLING MACHINE.

Original Filed Oct. 13, 1925 5 Sheets-Sheet 3

FIG. IV.

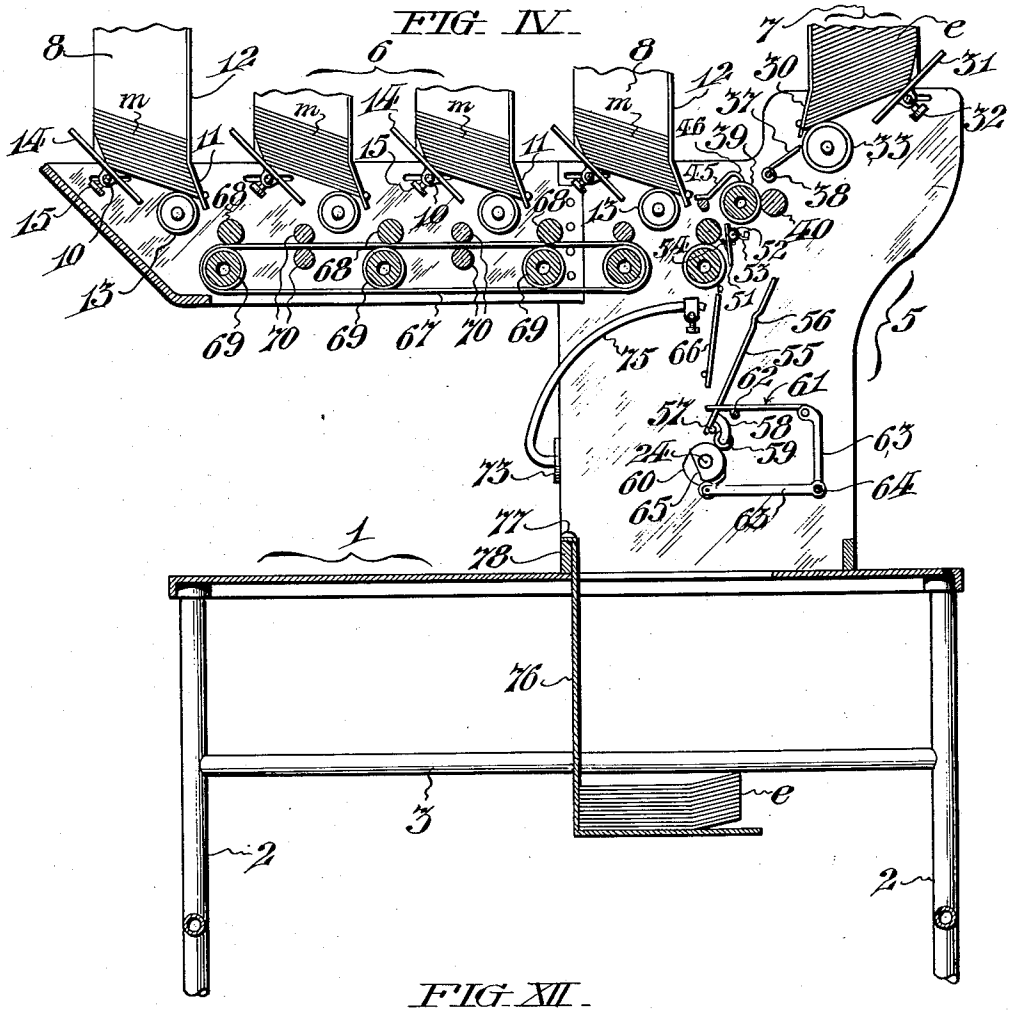
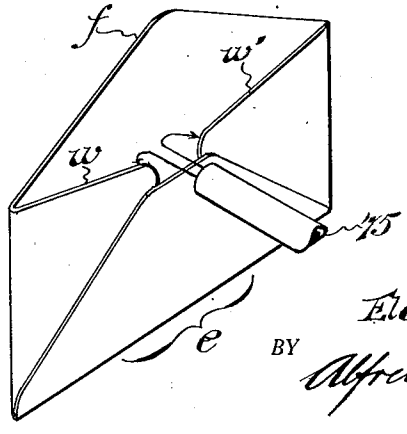


FIG. XII.



INVENTOR.
Eldrid L. Bouton,
BY Alfred I. Bratton
ATTORNEY.

April 28, 1931. E. L. BOUTON 1,803,049

ENVELOPE FILLING MACHINE

Original Filed Oct. 13, 1925 5 Sheets-Sheet 4

FIG. V.

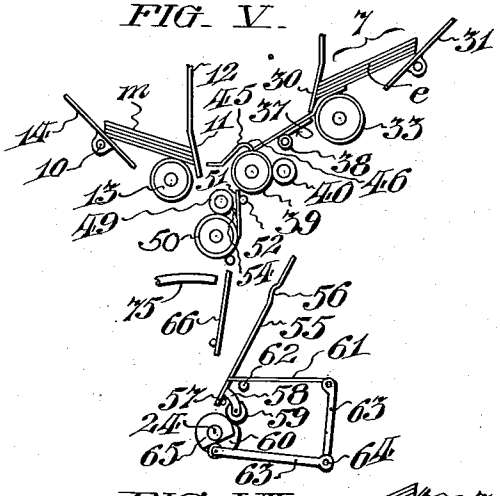


FIG. VI.

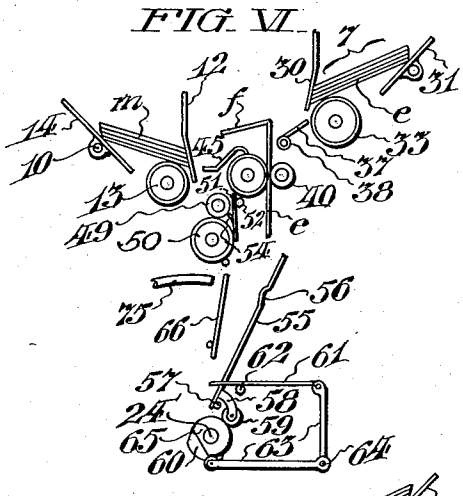


FIG. VII.

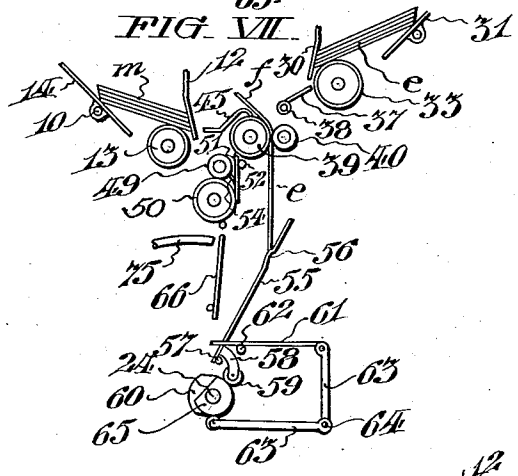


FIG. VIII.

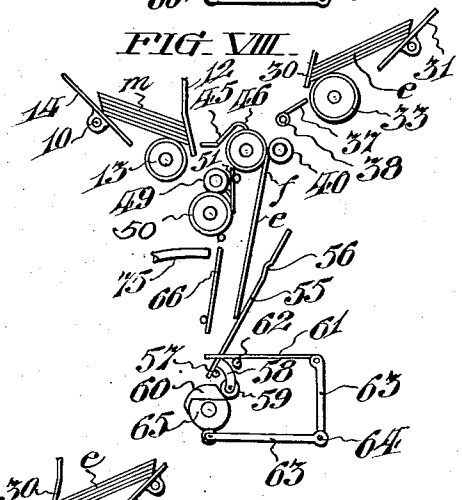
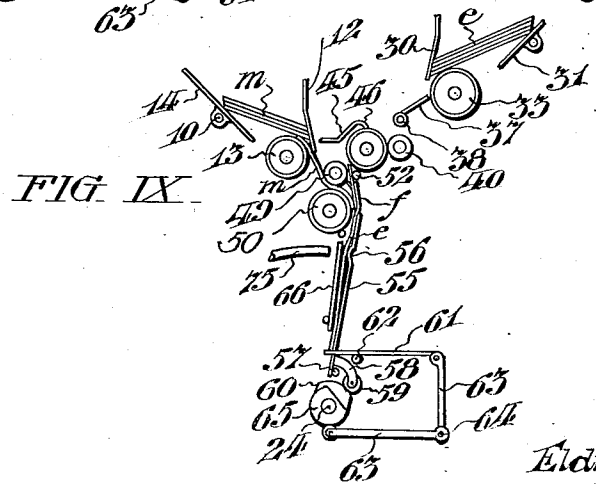


FIG. IX.



INVENTOR.
Eldrid L. Bouton
BY Alfred J. Bratton
ATTORNEY.

April 28, 1931. E. L. BOUTON 1,803,049

ENVELOPE FILLING MACHINE

Original Filed Oct. 13, 1925 5 Sheets-Sheet 5

FIG. X.

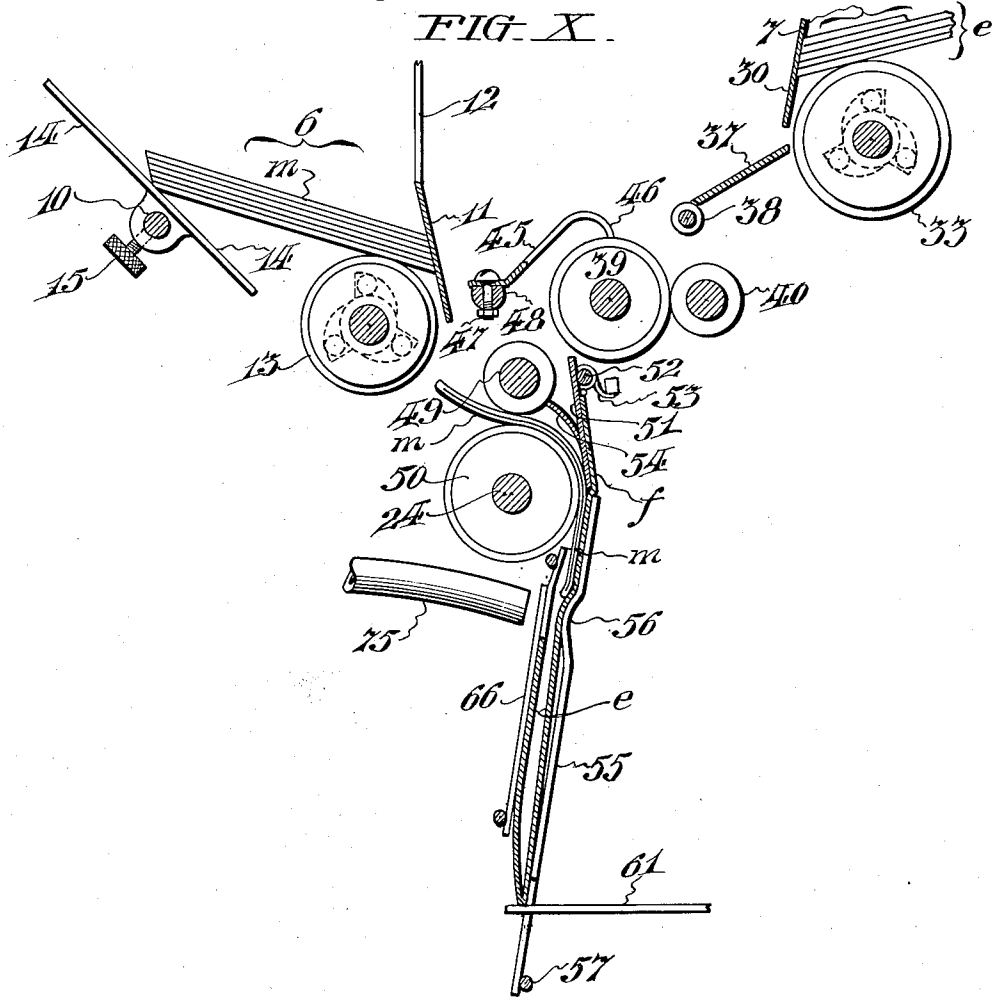
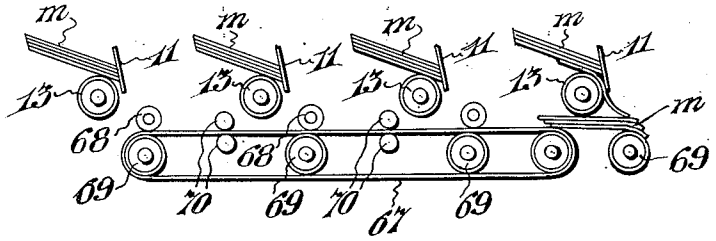


FIG. XI.



INVENTOR.
Eldrid L. Bouton,
BY
Alfred J. Bratton
ATTORNEY.

Patented Apr. 28, 1931 1,803,049

UNITED STATES PATENT OFFICE

ELDRID L. BOUTON, OF PHILADELPHIA, PENNSYLVANIA

ENVELOPE-FILLING MACHINE

Refile for application Serial No. 62,285, filed October 13, 1925. This application filed February 14, 1927. Serial No. 168,203. Renewed March 13, 1931.

This invention relates to envelope filling machines such as are ordinarily employed for inserting circular letters or other mail matter into envelopes. The primary object of my invention is the provision of a machine of the type referred to which is adapted to accommodate various sized matter as well as being characterized by an hitherto unknown output or capacity.

Another object is to provide a machine which is more efficient in operation while capable of ready adjustment from inserting individual letters to accommodating a plurality thereof.

A further object inhering to my improvements is the prevention of fouling or choking successive envelopes due to irregularities in their form; or, in the texture of the inserted matter.

Having the foregoing general objects in view, and others that will appear as the nature of my improvements are fully explained, this invention consists essentially in certain novel constructional features, the combinations and arrangements of parts hereinafter described, typically illustrated in the accompanying drawings, and tersely defined by the appended claims.

While the form of my invention illustrated and explained in detail herein is believed, at this time, to be a preferred embodiment thereof, it will be obvious the same is susceptible of change and variation to meet different requirements; therefore, the right is reserved to modify such disclosure, as may be deemed desirable, without departing from the scope of said invention or sacrificing any of its advantages.

In the drawings:

Figure I—is a side view of a machine embodying the present improvements, and capable of either manual or power operation.

Figure II—is a reverse view thereof, with parts broken away for convenience in illustration.

Figure III— is a sectional view, taken approximately as indicated by the arrowed lines III—III in Figure II.

Figure IV—is a broken longitudinal section through the machine.

Figures V—IX are detail views illustrating the consecutive steps involved in filling successive envelopes with one or more folded pieces of mail matter.

Figure X—is an enlarged detail view along the lines of Figure IX to better illustrate certain parts hereinafter fully explained.

Figure XI—is a detail view of the means effective to feed a plurality of folded matter into an individual envelope; and,

Figure XII—is a perspective view of the manner in which consecutive envelopes are slightly expanded to receive the folded matter.

Referring more in detail to the drawings, and in accordance with this invention, the embodiment chosen for illustration, it will be noted, conveniently embodies a table 1, mounted on a plurality of legs 2, with provision of a sub-platform or intermediate support 3 for an electric motor 4, functional to drive the machine as hereinafter fully explained.

Mounted upon the table 1 aforesaid are vertically spaced wall members 5, which support the mail matter container or containers 6, as well as the envelope reservoir or magazine 7. Each container 6, it will be seen, comprises opposed side walls 8, which are relatively movable by means of thumb screws 9 along a horizontal adjustable bar 10, and a front wall or stationary deflector 11, having vertical strips 12. The front wall 11 is forwardly inclined or disposed somewhat tangential relative to an intermittently actuable feed roller 13, while each container 6 is provided with a deflector plate or bottom 14, adapted to be locked medially of the aforesaid container on the horizontal bar 10, through the medium of a clamping screw 15; as will be well understood by those conversant with the art to which this invention appertains.

Each of the feed rollers 13 is provided at one side of the machine—Figure 1—with a bevel gear 16, adapted for intermittent rotation by means of an associated mutilate or dwell spaced gear 17 on a horizontal shaft 18 journalled in bearings 19. This shaft 18 is arranged for rotation, through the medium

of a bevel couple 20, at the upper end of a vertical shaft 21, journaled in bearings 22, and receiving motion by way of a second bevel couple 23 and transverse shaft 24 co-ordinated with a drive-shaft 25 through speed reduction gears 26. Power is imparted to the shaft 25, from the motor 4, through the instrumentality of a belt drive 27, and band pulley 28, that is conveniently provided with a hand grasp 29, whereby the machine may be manually operated, if desired. Thus it will be readily seen that the entire set of feed rollers 13 are co-ordinated for intermittent rotation with respect to one another so that mail matter may be successively removed therefrom in pro-ordered sequence.

Similarly the envelope reservoir 7 is laterally adjustable to accommodate different sizes and widths of envelopes, while it is provided with a stationary deflector 30, and an adjustable deflector 31 under control of a clamping screw 32, as before described in connection with the mail containers 6. The reservoir 7 is also provided with an associated feed 33, adapted for intermittent rotation through the medium of a bevel and mutilated or dwell spaced gears 34, 35 respectively, co-ordinated with the hereinbefore referred to horizontal shaft 18, by means of a bevel couple 36; in a manner perfectly obvious without further explanation.

Immediately in advance of the envelope feed roll 33 is a stationarily supported inclined guide plate 37, closely contiguous with a freely journaled roller 38, over which the consecutively withdrawn envelopes *e* pass, and are tripped from oblique into vertical position for entry between pull-out rollers 39, 40; as later on fully explained. The pull-out roller 39 is provided at one end with a spur gear 41—Figure II—in mesh with an idler 42 in turn cooperating with a similar gear 43, driven through the medium of a second idler 44, from the larger of the reduction gears 26, hereinbefore described; and as clearly shown—conventionally—by the figure referred to. On the other hand, the pull-out roller 40 is freely journaled in the wall members 5, for frictional drive by the roller 39.

Associated with the pull-out roller 39 is an envelope flap opener 45, conveniently consisting of a springy metal plate having a curved toe portion 46, and suitably clamped, by bolts 47, to a transverse bar 48, intermediate the wall members 5.

Subjacent the leading mail matter feed roller 13, and the pull-out roller 39, is a second pair of pull-out rolls 49, 50, the former of which is freely journaled and the latter power driven through the medium of the spur gear 43, above referred to; and which is secured on the shaft thereof after conventional practice. Co-operative with the pull-out rolls 49, 50, I provide a pendant deflector plate 51 supported, by pintles or a transverse rod 52, intermediate the wall members 5 and under the action of an appropriate spring 53. This deflector plate 51 is formed with a projecting tongue 54 which closely approaches the upper pull-out roll 49, and is functional to initially deflect the entering mail matter *m*—such as a letter or circular—into the envelope *e*, as later on explained.

Associated with the mechanism just described is a time controlled rockable envelope-receiving member 55, conveniently consisting of a flat plate having an integral or removable lateral rib piece or backbone 56, the purpose of which will be later on set forth. This member 55 is fulcrumed at 57, and provided with a projecting arm 58 having a roller 59 at its free end cooperative with a cam 60 on the transverse shaft 24; and said member 55 is vertically slotted at one or more points to accommodate a reciprocable envelope receiver 61. This envelope receiver and tripper 61 is supported by a transverse bar 62, while it is co-ordinated by a cranked lever 63, pivoted at 64, for intermittent reciprocation by means of a cam 65 on the shaft 24, as will be readily understood by anyone conversant with such mechanism.

In special relation with respect to the rockable member 55, is a stationary plate 66, against which the enevelope *e* is held by said rockable member, during insertion of the mail matter *m*, as best shown in Figure X.

Means consisting of an endless conveyor 67 is associated with the mail containers 6, as shown by Figures IV and XI, in combination with individual pull-out rolls 68, 69, as well as gravity influenced pinch rolls 70; said pull-out rolls being coordinated by a chain and sprocket drive 71, 72, respectively, with the spur gear 43, aforesaid, and as clearly indicated on Figure II.

In conjunction with the several mechanisms, above described, I provide a pulsator 73, operable by a cam 74, on the shaft 24; said pulsator having a suitable outlet conduit or jet pipe 75, trained to a position medially of the side wings *w*, *w'*—Figure XII—of each successive envelope *e*, and adapted to emit a puff of air to expand said envelope into mail receiving position, as best appreciated from Figure X.

76 is a sub-platform or stacker for the filled envelopes *e*, and it is conveniently secured by screws 77 to a cross-bar 78, supported transversely between the spaced wall members 5, hereinbefore referred to.

Having outlined the various elements and mechanisms, involved in my novel envelope filling machine, I will now proceed to a detailed explanation of their co-operative relation; as well as setting forth the manner of iinserting one or more pieces of folded mail matter *m* into the consecutive envelopes *e*, reference being had for this purpose more particularly to Figures V–X, inclusive.

Assuming the reservoir or magazine 7 has been replenished with envelopes *e*, and one or all of the containers 6 supplied with folded mail matter *m*; when the machine is set in operation, it will be best seen from Figure V that consecutive envelopes *e* are intermittently withdrawn from the reservoir 7, by the feed roller 33 into the guide plate 37, and passing over the free roller 38 are brought into abutment with the curved toe 46 of the flap opener 45. This abutment of the leading—or bottom—edge of the envelopes *e* with the curved toe 46 effects deflection of said envelope edge between the pull-out rollers 39, 40, as shown by Figure VI. The roller 39, revolving to the right, feeds the envelope *e* downwards until the flap *f* thereof impinges on the aforesaid toe 46, as evidenced in Figure VII, and concurrently therewith the leading edge is moved into position on the backbone 56, of the receiving member 55, continued rotation of rollers 39, 40, advances the envelope *e* from the position just described to that illustrated in Figure VIII, with simultaneous part withdrawal of a piece of folded mail matter *m* from the leading container 6, by the associated feed roller 13; or, into position for entry between the pull-out rollers 49, 50. Immediately following the movements just set forth, the envelope receiving member 55 is rocked to the left-hand as viewed in the drawings; or, into juxtaposed relation with respect to the stationary plate 66, whereupon the leading edge of the envelope *e* rests upon the reciprocable support 61, which has been concurrently moved forward through the medium of the cam 60, as hereinbefore set forth; or as will be fully understood from the respective showings in Figures VIII and IX. Particular attention is directed to the fact, at this juncture, that the envelope *e*, as will be best seen from Figure X, is supported between the member 55 and plate 66, with the flap *f* abutting—or held back by—the spring influenced deflector plate 51, which tends to slightly expand the envelope body, as clearly illustrated in the figure just referred to. Simultaneous with the arrival of the envelope *e* at the location just described the folded piece of mail matter *m* is moved, by the pull-out rollers 49, 50, into envelope entering position, being deflected thereto by the tongue 54, and simultaneous emission of a puff of air through the conduit or jet pipe 75, brought about through actuation of the pulsator 73, by the associated cam 74. Immediately following the full insertion of the mail matter *m* into the envelope *e*, the reciprocable support 61 is tripped by the mechanism hereinbefore described, whereupon the consecutively filled envelopes drop onto the sub-platform 76, as shown in Figure IV, where they stack ready periodic removal.

From the foregoing it is thought that the filling of envelopes *e*, with more than one folded piece of mail matter *m* through the medium of the conveyor 67, associated pull-out rolls 68, 69, and pinch rolls 70, will be fully appreciated without further detailed explanation herein.

Attention is directed to the fact that the backbone 56, may be dispensed with, as it is mainly useful when handling envelopes of a flexible character, while I find the use of an air blast, while advantageous, is not absolutely essential, as the deflector plate 51 effects the necessary degree of envelope opening.

Obviously, the matters of combination, arrangement, structure, design and detail, may be modified without departing from the underlying principles of this invention, it should, therefore, be clearly understood that said invention is not restricted to the specific features typified by the drawings other than insofar as specified by the appended claims. It should, furthermore, be understood that the language used in the following claims is intended to cover all of the generic aspects of the invention hereinbefore set forth, and all statements of the scope of such invention which, as a matter of language, might be construed as falling within their fair and reasonable limits.

Having described my invention what I claim as new and desire to secure by Letters Patent is:—

1. In a machine for filling envelopes, the combination of an adjustable magazine for envelopes, a similar container for folded mail matter, pull-out rolls for withdrawing individual envelopes and folded mail matter, flap opening means, pull-out rollers progressing the withdrawn envelope and folded mail matter into filling position, a pendant deflector co-operative with the envelope flap to open the envelope body, reciprocatory means supporting the envelope between relatively movable members during the filling operation, and co-operative rolls for advancing the folded mail matter into the envelope.

2. In a machine for filling envelopes, the combination of an adjustable magazine for the envelopes, a similar container for folded mail matter, pull-out rolls withdrawing individual envelopes and folded matter, a stationary flap opener, progressing rollers for the successively withdrawn folded matter and envelopes, a spring influenced deflector co-operative with the envelope flap, an intermittently reciprocable support for the envelope during the filling operation, an associated rockable member, co-operative with the spring influenced deflector aforesaid to effect slight opening of the envelope body, and means for advancing the folded matter into the opened envelope.

3. In a machine for filling envelopes, the combination of an adjustable magazine for

the envelopes, a similar container for folded mail matter, pull-out rolls withdrawing individual envelopes and folded matter, a stationary flap opener, progressing rollers for the successively withdrawn folded matter and envelopes, a spring influenced deflector cooperative with the envelope flap, an intermittently reciprocable support for the envelope during the filling operation, an associated rockable member—having a lateral rib—cooperative with the spring influenced deflector aforesaid to effect slight opening of the envelope body, and means for advancing the folded matter into the opened envelope.

4. In a machine of the type described, the combination of a machine for envelopes embodying fixed and adjustable deflector, a similar container for folded mail matter, means for withdrawing individual envelopes and folded matter, a flap opener, a spring influenced flap deflector, an associated rockable member functional in co-operation with the flap deflector to slightly open the envelope, means for supporting the envelope during filling and reciprocatory to release the same after filling, all co-ordinated for cooperative action in the manner and for the purpose set forth.

5. In a machine of the type described, the combination of a magazine for envelopes embodying fixed and movable deflectors, a succession of similar containers for mail matters, co-ordinated means functional to withdraw individual envelopes and pieces of mail matter from the several containers in sequence, a flap opener, a spring influenced flap deflector, rockable means functional in co-operation with the flap deflector to slightly open the envelope, means supporting the envelope during filling and adapted to release the same when filled, and means for advancing a succession of pieces of mail matter with the individual envelopes.

6. In an envelope filling machine of the type described, an envelope receiving and supporting plate, and means for rocking the same from envelope receiving into envelope filling location, said plate having a lateral rib, for the purpose of rearwardly deflecting the entering portion of the envelope specified.

7. In an envelope filling machine of the type described, an envelope receiving and supporting rockable plate having a lateral rib, a projecting arm, and a cam device cooperative with said arm to intermittently rock the plate, for the purposes specified.

8. In an envelope filling machine of the type described, a pendant deflector and envelope-flap engaging member, in combination with a receiving and supporting member fulcrumed at its lower edge, and means for vertically rocking said latter member.

9. In an envelope filling machine of the type described, a spring influenced deflector and envelope-flap engaging member, in combination with a vertically rockable envelope supporting member fulcrumed at its lower edge, said deflector and supporting members co-operating so that the envelope flap crease is subjacent the lower edge of the deflector member to thereby force the envelope open sufficient to receive mail matter.

10. In an envelope filling machine of the type described, a spring influenced pendant deflector with an associated friction roller, in combination with a vertically rockable envelope receiving member, said friction roller functioning to feed folded mail matter and for advancing the same into the envelope.

11. In an envelope filling machine of the type described, a spring influenced pendant deflector member, in combination with a vertically rockable envelope supporting member having a lateral rib, said members cooperating to deflect an envelope flap rearwardly relative to its body portion just above the connecting crease.

12. In an envelope filling machine of the type described, means for feeding consecutive envelopes on to a vertically rockable receiving plate, envelope supporting fingers cooperating with said plate, cam mechanism functional to intermittently reciprocate said fingers to release successively filled envelopes, a pendant deflector plate, and a stationary plate in spacial relation to the rockable plate functional to maintain the envelope slightly open by pressure of the deflector plate against the envelope flap.

13. In a machine of the character described, the combination of envelope and enclosure magazines, means for feeding envelopes and enclosures respectively therefrom, a flap opener, a deflector plate and a plate cooperating with the deflector plate to clamp the envelope flap therebetween and having means thereon to distend the mouth of the envelope to receive its enclosure, and means for feeding enclosures into the said envelopes.

14. In a machine of the type described, the combination of envelope and enclosure magazines, means for feeding envelopes and enclosures respectively from said magazines, a movable envelope receiving and supporting plate having a lateral rib thereon, means for moving said plate from envelope receiving to envelope filling position, means for feeding envelopes to said plate, means operable when the plate reaches envelope filling position to distend the mouth of the envelope, and means for feeding enclosures into said envelopes.

15. In a machine of the type described, the combination of an envelope magazine, enclosure magazines, means for feeding envelopes and enclosures from said magazines, a pair of rolls adjacent said envelope magazines between which the envelope is adapted to pass, and means for opening the flap of the envelope, whereby the flap straddles one of said

rolls and is flattened by continued movement between the rolls.

16. In a machine of the type described, the combination of an envelope magazine, enclosure magazines, means for feeding envelopes and enclosures therefrom, a deflector plate, an envelope supporting plate fulcrumed at its lower edge and arranged to swing vertically for clamping the flap of the envelope against one side of said plate, and means for directing an enclosure against the opposite side of said plate whereby the enclosure is flexed into vertical position, and means for feeding the enclosure into said envelope.

17. In a machine of the type described, the combination of an envelope magazine and enclosure magazines, means for feeding envelopes and enclosures from said magazine and flexing them to vertical position, a reciprocating stop against which the envelope is fed, means for distending the mouth of the envelope when on said stop, means for inserting an enclosure into said envelope, and means for reciprocating said stop into and out of the path of travel of the envelope.

18. In a machine of the character described, the combination of an envelope and enclosure magazines, means for feeding envelopes and enclosures respectively therefrom, a flap opener, a pendent resiliently mounted deflector plate, and an envelope supporting plate cooperating with the deflector plate fulcrumed at its lower edge and arranged to swing vertically to clamp the envelope flap therebetween and having means thereon to distend the mouth of the envelope to receive its enclosure, and means for feeding enclosures into said envelope.

19. In an envelope filling machine of the type described, an envelope receiving and supporting plate fulcrumed at its lower edge, means for rocking the plate vertically from envelope receiving into envelope filling location, and a deflector located above the said plate when the latter is in envelope filling position, the lower edge of the deflector and the upper edge of the said plate being contiguous and the said deflector and plate being adapted to clamp the flap of an envelope between them.

In testimony whereof I affix my signature at Philadelphia, Pennsylvania, the 5th day of February, 1927.

ELDRID L. BOUTON.