

G. W. SMITH & F. F. FLAGG.
ENVELOP MACHINE.
APPLICATION FILED FEB. 19, 1909.

1,039,603.

Patented Sept. 24, 1912.

Fig. 1.

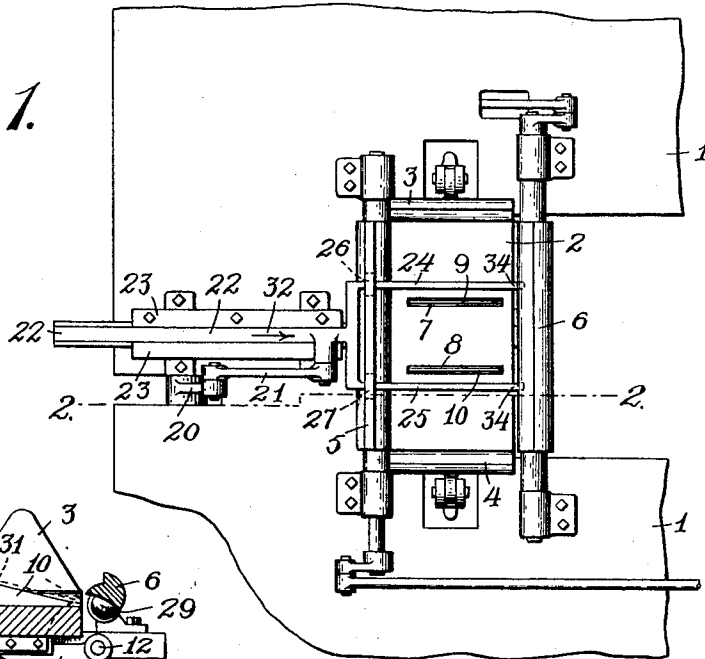


Fig. 3.

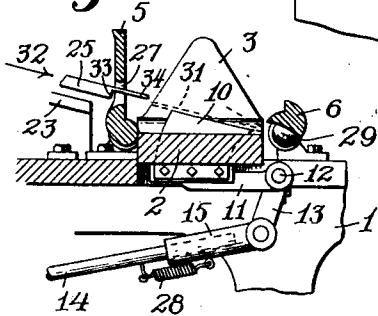
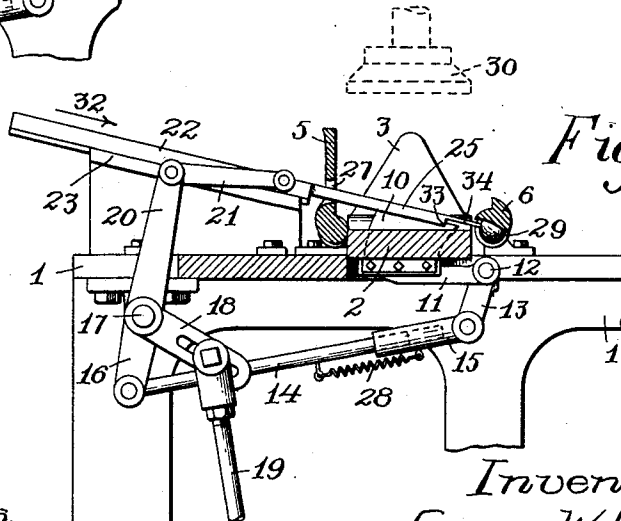


Fig. 2.



Witnesses.

A. D. Tolman.

Envelope Manufacturer.

Inventors
George W. Smith.
Fred F. Flagg.
By Rufus B. Fowler
Attorney

UNITED STATES PATENT OFFICE.

GEORGE W. SMITH AND FRED F. FLAGG, OF WORCESTER, MASSACHUSETTS.

ENVELOP-MACHINE.

1,039,603.

Specification of Letters Patent.

Patented Sept. 24, 1912.

Application filed February 19, 1909. Serial No. 478,786.

To all whom it may concern:

Be it known that we, GEORGE W. SMITH and FRED F. FLAGG, both citizens of the United States, residing at Worcester, in the county of Worcester and Commonwealth of Massachusetts, have invented a new and useful Improvement in Envelop-Machines, of which the following is a specification, accompanied by drawings forming a part of the same, in which—

Figure 1 represents in plan view the folding bed and flap folders of an envelop machine. Fig. 2 is a side view of the parts shown in Fig. 1, represented in section on the plane of the broken line 2—2, Fig. 1, and Fig. 3 is a similar sectional view, but with the operative parts in a different position from that shown in Fig. 2.

Similar reference letters and figures refer to similar parts in the different views.

Our present invention relates particularly to mechanism designed to be used with a stationary folding bed of an envelop machine, and having for its purpose to accomplish the positive and expeditious delivery of the folded envelop from the folding bed, and it consists in the construction and arrangement of parts as hereinafter described and pointed out in the annexed claims.

In the operation of folding an envelop in an envelop machine, the body portion of the extended envelop blank is forced downward by a reciprocating plunger upon a rectangular plate or bed the exact size of the body of the envelop. Arranged upon the four sides of the bed are rocking flap folders, those at the sides of the bed being employed in folding the back flap and seal flap of the envelop, and those at the ends of the bed are employed for folding the end flaps of the envelop. The flap folders stand normally in a vertical position, to allow the body of the envelop to be carried down between them upon the folding bed. The reciprocating plunger in carrying the envelop blank downward pushes it through a rectangular hole in an elevated creasing plate the size of the body of the envelop, by which the flaps of the envelop are turned upwardly to rest against the inner sides of the flap folders. Upon the withdrawal of the reciprocating plunger, the flap folders are swung inwardly to fold the flaps down upon the body of the envelop, first folding the end flaps, next the back flap, and lastly creasing the seal flap, the back flap folder exert-

ing sufficient pressure to cause the adhesion of its gummed surface to the end flaps. Upon the completion of the folding operation by the flap folders, the latter are raised into their normal vertical position, leaving the folded envelop resting upon the folding bed and inclosed within the flap folders as by the sides of a box.

Various mechanisms have hitherto been proposed for the purpose of delivering the folded envelop from the folding bed. For example, a movable bed has been employed, capable of dropping and delivering the envelop from below the folding flaps. This method has been found objectionable, as it did not give sufficient rigidity to the folding bed to receive the pressure of the back flap folder. Pushing bars have been employed for pushing the envelop edgewise in a plane parallel with the upper surface of the folding bed. This method requires that a space be provided beneath one of the flap folders for the delivery of the envelop and, as the movement of the envelop was in a horizontal plane, other means were required to conduct the folded envelop to the drying mechanism. It has been proposed to raise the folded envelop from the surface of the folding bed by means of swinging lifting plates or forks, either supporting the folded envelop in an elevated plane from which it was positively removed by suitable mechanism, such as gripping fingers and the like, or supporting the envelop in an inclined position from which the envelop would slide by gravity, aided by a slight initial impulse.

The above methods have been found objectionable for various reasons. They either required too much time for their operation, thereby reducing the product of the machine, or they were not positive in their action, and the presence of gum upon any of the contacting parts seriously interfered with the movement of the envelop.

It is the purpose of our present invention to provide positive means for the delivery of the folded envelop from the folding bed, in a direction which facilitates its transferrence to the drying mechanism, and by which the delivering and folding mechanisms are capable of such overlapping movements as will allow the product of the machine to be materially increased.

In the accompanying drawings we have shown such parts only of an envelop machine as are necessary to illustrate the na-

ture and mode of operation of our present invention.

The operation of the folding mechanism in the embodiment of our invention is substantially like that now in common use, and will be well understood by those conversant with this class of machines.

Referring to the accompanying drawings, 1 denotes a portion of the supporting table or framework and 2 the folding bed mounted thereon, surrounded by the end flap folders 3 and 4, the back flap folder 5 and a seal flap folder 6, all operatively connected with the driving parts of the machine to act in the order already described in the folding of an envelop blank. The folding bed 2 is provided with transverse slots 7 and 8 for the reception of lifting blades 9 and 10, which are carried upon a swinging arm 11, which is attached to a shaft 12 pivoted in bearings upon the framework of the machine. Extending from the shaft 12 is an arm 13 pivotally connected, by a telescopic link comprising two parts 14 and 15, with an arm 16 carried by a rocking shaft 17 journaled in bearings supported by the framework of the machine. The shaft 17 is provided with a slotted arm 18 pivotally connected by a link 19 with an operating cam, not shown, of suitable shape to impart a rocking motion to the shaft 17 and at the proper period during the operation of folding the envelop. Extending upwardly from the rocking shaft 17 is an arm 20, pivotally connected by a link 21 with a sliding forked envelop pusher 22 sliding in ways 23, mounted in an inclined position upon the framework of the machine and immediately behind the back flap folder 5. The envelop pusher is provided with a pair of pushing bars 24 and 25, which are adapted to pass through openings 26 and 27.

The telescopic sections 14 and 15 of the connected link between the arms 13 and 16 are drawn together by the tension of a spiral spring 28, and the seal flap folder 6 is cut away on its under side at 29, to provide a space for the delivery of the folded envelop which passes through a space between the seal flap folder and the corner of the folding bed, the folded envelop moving in an inclined plane in the proper direction to enable it to be conducted to a drying mechanism, not shown.

The operation of our improved delivering mechanism is as follows:—After the plunger has been lifted from the folding bed, as indicated by the broken lines 30, Fig. 2, and the operation of folding the several flaps of the envelop has been completed, a rocking motion is given to the shaft 12 which carries the lifting blades 9 and 10 attached to said shaft 12 from their lowest position, below the supporting surface of the folding bed, into their highest position as represented in

Figs. 2 and 3, causing the folded envelop, which is represented by broken lines 31, Fig. 3, to be raised in the position shown in Fig. 3 and supported upon the inclined upper edges of the lifting blades 9 and 10. During the lifting movement of the blades 9 and 10, the envelop pusher 22 is moved forward carrying the pushing bars 24 and 25 through the openings 26 and 27 of the back flap folder, which may be accomplished during the movement of the back flap folder from its horizontal to its vertical position, thereby permitting of a slight overlapping of the movements of the back flap folder and the envelop pusher, as represented in Fig. 3. After the envelop lifting blades 9 and 10 have been raised to their highest position, and the envelop pusher advanced into the position shown in Fig. 3, the further movement of the actuating cam through the link 19 will continue the rocking movement of the shaft 17, carrying the pusher 22 forward in the direction of the arrow 32 into the position shown in Figs. 1 and 2. The pusher bars 24 and 25 are notched at their forward ends to provide shoulders 33 which engage with the rear edge of the folded envelop, while the advancing tips 34 pass over the top of the envelop and hold it in contact with the inclined upper edges of the lifting blades 9 and 10.

It is desirable that the entire forward movement of the folded envelop, as it is supported upon the lifting blades 9 and 10, should be accomplished positively by the pushing mechanism, therefore we prefer to give but a slight inclination to the folded envelop as it is supported upon the blades 9 and 10, and less than that required to cause the envelop to be moved by gravity. The inclination of the envelop, however, is sufficient to bring it in alinement with the openings 26 and 27, which are provided in the back flap folder above its axis of rotation, and also to give a downward direction to the envelop as it passes beneath the seal flap folder 6.

The object of connecting the arms 13 and 16 by a telescopic link connection 14 and 15 is to provide for the continued movement of the rocking shaft 17 and the connected envelop pusher after the upper movement of the lifting blades 9 and 10 has been accomplished. The continued rocking movement of the rocking shaft 17 takes place during the withdrawal of the telescopic section 15 from the section 14 and the expansion of the spring 28. During the reverse movement of the rocking shaft 17 and connected envelop pusher, the parts 14 and 15 are drawn together by the spring 28, when the reverse rocking movement of the shaft 12 takes place, causing the lifting blades 9 and 10 to be again depressed below the surface of the folding bed.

We claim,

1. The combination with the folding bed of an envelop machine, rocking flap folders connected therewith, of a movable lifting track for supporting the envelop out of contact with said bed, arranged to hold the envelop in an inclined position with relation to said bed, a reciprocating pusher arranged to reciprocate through openings in the back flap folder above its axis of rotation, engaging the envelop on said track and carrying it positively off from said track beneath the axis of rotation of the seal flap folder, means for lifting said track, and means for reciprocating said pusher.

2. An envelop machine having a folding bed, rocking flap folders connected therewith, and means for transferring the folded envelop therefrom, comprising supporting means for holding the envelop in an inclined position at an angle to said bed, arranged to bring said envelop in alinement with openings below the axis of the seal flap folder and above the axis of the back flap folder, a

reciprocating pusher mounted at the same angle and arranged to pass through the openings in the back flap folder and deliver the envelop through the opening beneath the axis of the seal flap folder, and means for lifting said supporting means and operating said pusher.

3. In an envelop machine, the combination with a folding bed, of lifting blades for raising the folded envelop from the bed, means for imparting a limited movement to said blades, a pusher for pushing the raised envelop from said blades, means for imparting a reciprocating motion to said pusher, and a yielding connection between said pusher and said blades, whereby said blades are raised in advance of the final movement of said pusher.

GEORGE W. SMITH.
FRED F. FLAGG.

Witnesses:

RUFUS B. FOWLER,
PENELOPE COMBERBACH.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."