

No. 672,919.

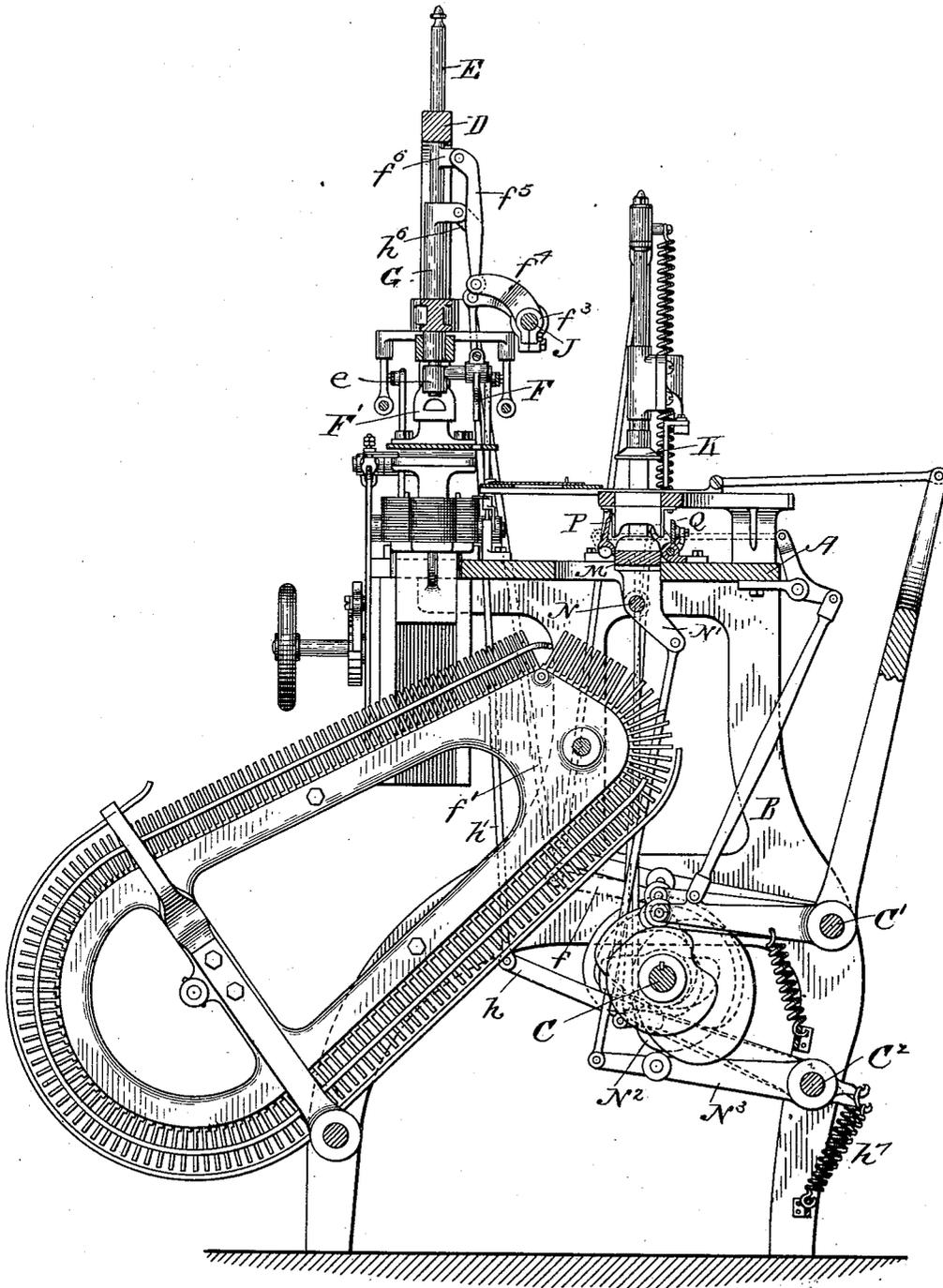
Patented Apr. 30, 1901.

J. A. SHERMAN.  
MACHINE FOR MAKING ENVELOPS.

(No Model.)

(Application filed Oct. 24, 1898.)

4 Sheets—Sheet 1.



WITNESSES:  
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FIG. 1

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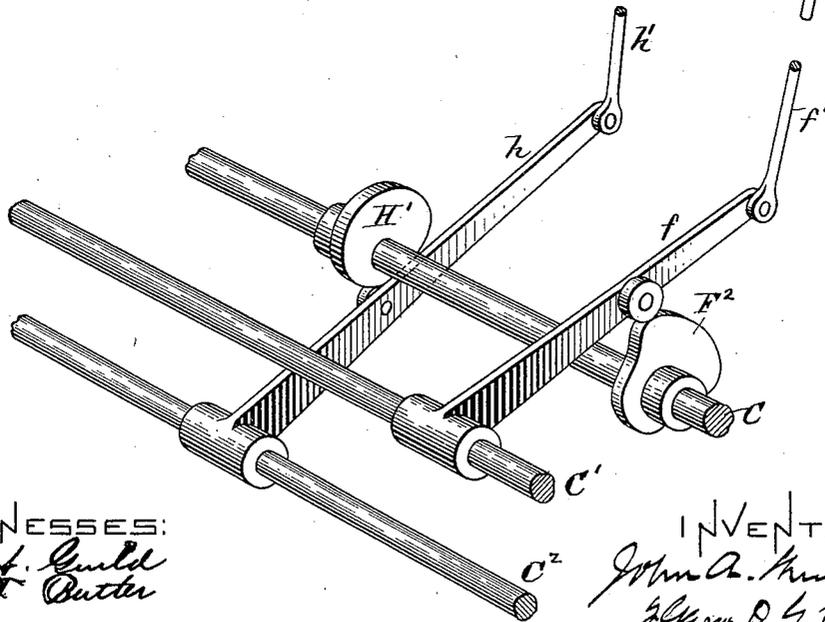
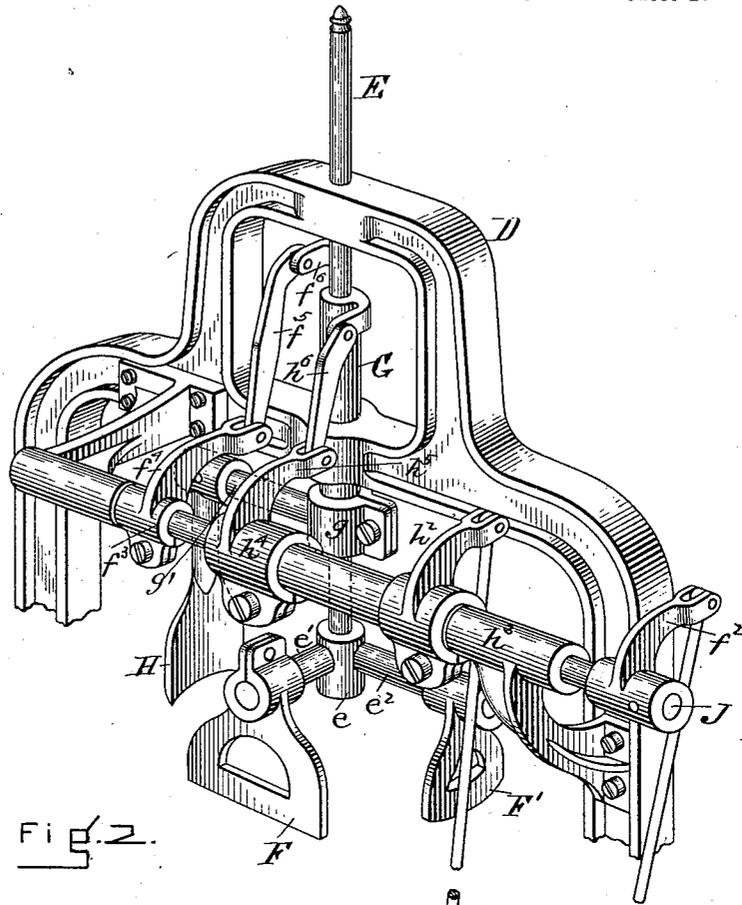
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4 Sheets—Sheet 2.



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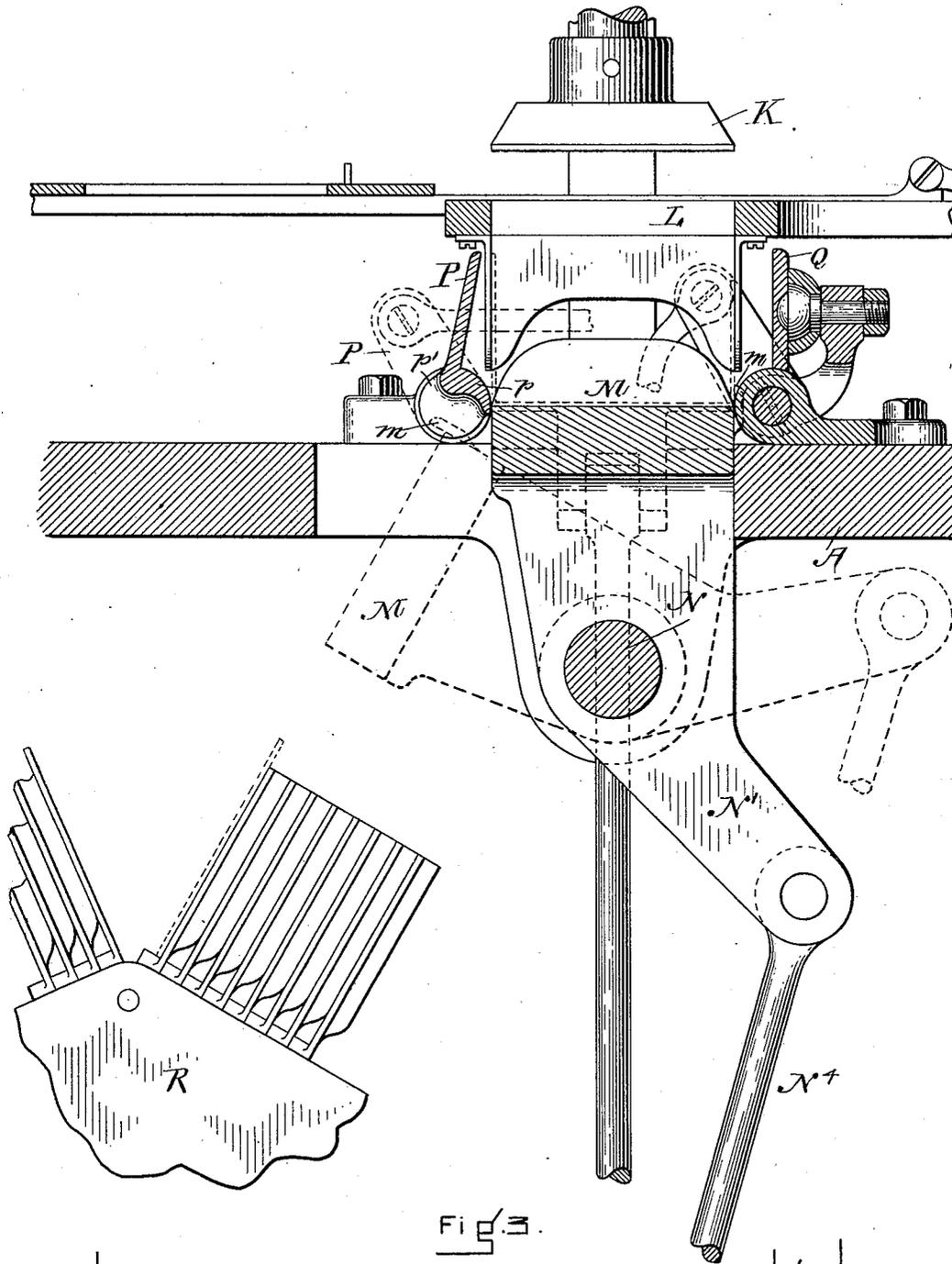


FIG. 3.

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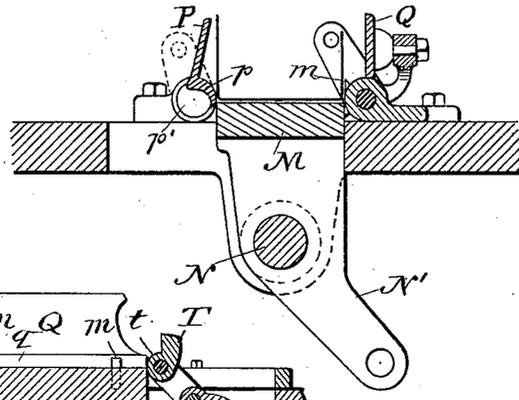


Fig. 4.

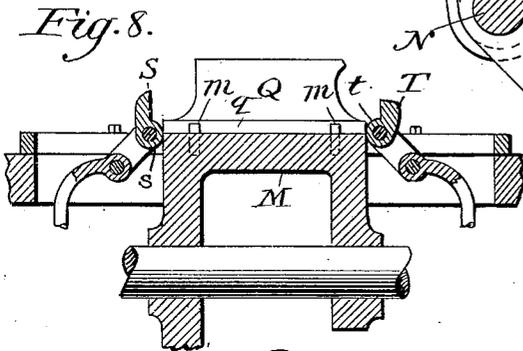


Fig. 8.

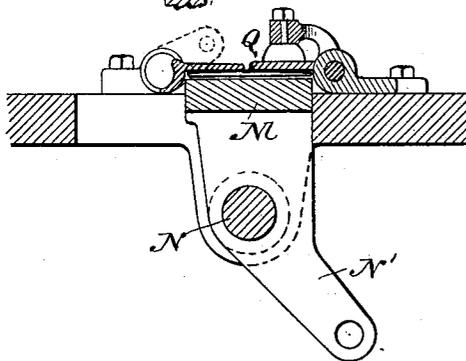


Fig. 5.

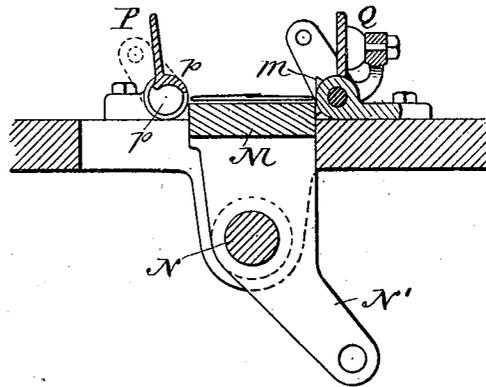


Fig. 6.

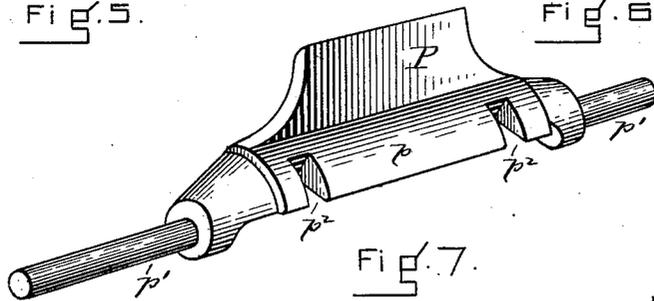


Fig. 7.

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# UNITED STATES PATENT OFFICE.

JOHN A. SHERMAN, OF WORCESTER, MASSACHUSETTS.

## MACHINE FOR MAKING ENVELOPS.

SPECIFICATION forming part of Letters Patent No. 672,919, dated April 30, 1901.

Application filed October 24, 1898. Serial No. 694,379. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN A. SHERMAN, of Worcester, in the county of Worcester and State of Massachusetts, have invented a new and useful Improvement in Machines for Making Envelops, of which the following is a specification.

My invention is an improvement upon the invention described in Letters Patent No. 584,824, dated June 22, 1897, and as the improvement relates merely to certain portions of the machine I have deemed it necessary to only illustrate the parts which operate those portions, showing them, however, in connection with other parts of an operative machine of a kind well known in the art.

In the drawings, Figure 1 represents in vertical section the machine containing the improvements, which I will hereinafter describe. Fig. 2 shows a picker of peculiar construction, its manner of operation being indicated. Fig. 3 shows an enlarged view of the construction and operation of the folding-box, Figs. 4, 5, and 6 being intended to illustrate more especially the front folder and its operation, both of which, it is believed, are new with me. These views are diagrammatic in character. Fig. 7 is a detail in perspective, showing the front folder; and Fig. 8 is a detail in section, showing the two end folders.

A is the table, suitably supported in the usual manner in a frame B, which carries a cam-shaft C, by means of which proper movement is given to the various parts. In the frame are also mounted suitable cross-rods C' C<sup>2</sup>, upon which are fulcrumed certain of the cam-levers, as will be below described.

The picker mechanism consists of an arched frame D, in which slides a vertical spindle E, carrying at its lower end a hub e, from which project two arms e' e<sup>2</sup>, each carrying one of the pickers F F', adjustable thereon. Upon the sleeve G, which slides upon the spindle E, is also mounted a hub g, carrying an arm g', at the end of which is the picker H. Motion is given to the pickers F F' by means of the cam F<sup>2</sup>, which acts upon the cam-lever f, fulcrumed on C', connected by the connecting-rod f' to the rocker-arm f<sup>2</sup>, mounted on the sleeve, fast to the shaft J. A clamp f<sup>3</sup>, also fast to the shaft J, carries a rocker-arm f<sup>4</sup>, which is connected by a connecting-rod f<sup>5</sup>

with a projection f<sup>6</sup> from the spindle E. Thus as the cam F<sup>2</sup> rotates a vertically-reciprocating movement is given to the pickers F F'. The picker H is operated in a similar manner, but independently of the pickers F F', such a course being desirable in some machines. For this purpose the picker H instead of being attached to the spindle E is mounted upon the sleeve G, surrounding said spindle, and slides thereon, and this picker is operated by means of a cam H' through the cam-lever h, fulcrumed on rod C<sup>2</sup>, connecting rod h', which connects the cam-lever, with the rocker-arm h<sup>2</sup>. This rocker-arm is mounted on a sleeve h<sup>3</sup>, carried on the shaft J, but adapted to rock independently of it, the sleeve h<sup>3</sup> also carrying a clamp h<sup>4</sup>, from which projects a second rocker-arm h<sup>5</sup>, connected at its outer end by the connecting-rod h<sup>6</sup> with the sleeve G. Suitable springs f<sup>7</sup> h<sup>7</sup> are of course provided to hold the levers f h against their respective cams.

The construction above described is very simple and is also very useful, for it enables the one-sized frame to be used with machines of different sizes and also with machines intended to make envelops of different styles, the same serving, for example, in making a frame for a machine to make an open-end envelop, as well as a machine to make the envelop of ordinary style, for the location of the pickers upon their arms, as well as the location of the arms themselves upon the rod or sleeve, may be easily changed to suit varying circumstances. Moreover, where the pickers are operated separately one picker can be operated slightly in advance of the other, and hence can serve to pick up one corner of the blank and allow the air to get in under that corner before the other pickers begin to rise, thus preventing the pickers from lifting by suction more than one blank at a time.

The improvement in the folding-box be understood by reference to Figs. 3, 4, 5, 6, and 7, which will now be described.

K is the plunger, which passes down through the creasing-opening L, carrying the blank down upon the bed M of the folding-box in the well-known manner. This bed of the folding-box is mounted on the shaft N and forms the upper end of a rocking lever N', which is rocked by the cam N<sup>2</sup>, acting upon

the cam-lever  $N^3$ , connected to the lever  $N'$  by the connecting-rod  $N^4$ . The shaft  $N$  being located below the plane of the journals of the folding-box and within their vertical planes and approximately in a vertical plane with the middle of the bed, the bed will be firmly supported against the folding pressure of the folders. At the same time it can yield slightly on its axis in case, owing to the fact that the thickness of the paper is slightly greater on one side than the other, either of the side folders tends to exert a greater pressure upon the bed than the other, the backlash being due to the ordinary inaccuracies of fit between the joints of the parts connecting the bed with its source of movement. To the folding-box bed are also attached ears  $m$ , (one only is shown,) which bear against one edge of the envelop when it is in place on the bed, the adjacent folder being notched to receive them.

The folding mechanism proper is similar to the well-known folding mechanism in envelop-machines, except as below described. It consists of a series of folders which operate in the manner well known to fold in turn the various flaps of the envelop.

In the machine shown in the drawings the parts are arranged to make and fold what is known as a "coin-bag," and the folder which operates first is the folder marked  $P$ , the folder  $Q$  operating second and the other folders operating in turn. The other folders are marked  $S$  and  $T$ , the folder  $T$  being adapted to fold the fly-flap of the envelop and of course operating last. The mechanism for operating these folders will not be described, as it is well known to all skilled in the art.

The peculiarity of my folding mechanism lies in the construction and operation of the folder  $P$ . This folder  $P$  is mounted on a shell  $p$ , which is carried at each end by a trunnion  $p'$ , mounted in the usual journal-boxes. The purpose of this shell will be understood from Figs. 4, 5, and 6. When the blank is first driven down by the plunger into position, (see Fig. 4,) it is essential to the proper folding of the envelop that there shall be an edge or bead with which the plunger shall cooperate on all sides to give to the blank a sharp fold or crease. Such a bead is now well known in the art and is formed usually in four sections, one of which forms part of each of the folders. That portion of the bead which forms a part of the folder  $Q$  is lettered  $q$ , that portion which forms a part of the folder  $S$  is lettered  $s$ , and that portion which forms the part of the folder  $T$  is lettered  $t$ . It will be seen by Fig. 4 that when the folder  $P$  is in the position there shown such an edge is supplied by the face of the shell  $p$ .

In Fig. 5 the folders  $P$  and  $Q$  have folded in their respective flaps and the envelop is supposed to have been completed by the folding in of the other two flaps, and Fig. 6 shows the folders open, so as to allow the envelop to

be discharged from the folding-box. It will be noted now that the folder  $P$  is in such a position as compared with its position in Fig. 4 that an opening is left underneath the shell for the purpose of allowing the envelop a free passage under the folder and out from the folding-box. The bed  $M$  now rocks into the position shown in dotted lines in Fig. 3, the ears  $m$  insuring the carrying of the finished envelop into such a position that it will fall off into the drier, which is shown at  $R$ . The bed having rocked in this position returns again to its horizontal position and is ready to receive another blank, at which instant the folder  $P$  is rocked into the position shown in Fig. 4 and the folding-box is again ready for action. The shell  $p$  is notched at  $p^2$  to allow the ears  $m$  their full stroke. It will thus be seen that the folder  $P$  has, in fact, three motions. It moves to the position shown in Fig. 4 and dwells there sufficiently long to receive the blank from the plunger and square up its edge in the manner shown in Fig. 4. It then moves into the position shown in Fig. 5 to do its part of the folding operation and moves back into the position shown in Fig. 6, dwelling there sufficiently to allow the bed to oscillate for the purpose of carrying the finished envelop out of the machine, these movements and dwells being given to the folder  $P$  by means of the cam which operates it, this cam being of the ordinary construction of presser folder-cams except in so far as it may be given an absolutely cylindrical surface at those points where the dwell is to take place.

The main feature of novelty in the folding-box lies in the folder  $P$ , which has all the characteristics of the ordinary folder and is so constructed and operated that it not only serves to furnish a bead or edge which will define one edge of the envelop when the plunger drives down the blank and will fold in the ordinary way when the folding operation takes place, but also will be withdrawn, so that the bed of the box may rock to withdraw the envelop from the box.

By "withdrawing" the shell I mean rocking it back into the position shown in Fig. 6, where it will be seen that there is a space between the under edge of the shell  $p$  and the upper surface of the newly-folded envelop sufficient to allow the bed of the folding-box to carry the folded envelop freely out of the folding-box for the purpose of dropping it into the drier, as is indicated in Fig. 3.

What I claim as my invention is—

1. In an envelop-machine, a picker mechanism consisting of a vertically-reciprocating spindle mounted in a frame, one or more pickers attached to the lower end of said spindle, a sleeve surrounding said spindle also carrying one or more pickers, and means whereby said spindle and sleeve may be reciprocated either independently or in unison, as and for the purposes set forth.

2. In an envelop-machine, a picker mechanism consisting of a suitable frame in which

is carried a vertically-reciprocating spindle having at its lower end one or more pickers and carrying a sleeve adapted to slide thereon and carrying at its lower end one or more pickers, and means whereby said spindle and said sleeve are reciprocated independently.

3. In an envelop-machine the folding-box above described provided with a suitable bed and four folders, the support of one of said folders being cut away to leave a shell adapted to form a bead to border the edge of the folding-box, and a passage under the shell to allow the envelop to be delivered therethrough, and means whereby said folder is oscillated to bring said bead into position, first, to cooperate with the blank-delivery mechanism; second, to fold said blank, and, third, to open a passage under said bead for the delivery of the folded envelop, as and for the purposes set forth.

4. In an envelop-folding box a folder consisting of a folding portion and a shell portion, said folder being mounted at each end in a suitable journal, and said shell being adapted to form a bead, and means whereby said folder is oscillated to bring its bead into position to receive a blank and to dwell in

said position, is then oscillated to fold the blank, and is then given a reverse oscillation to withdraw the bead from the folding-bed and open a passage under said bead for the folded envelop, as and for the purposes set forth.

5. An envelop-folding box having an oscillating folding-bed and four folders, each folder carrying a portion of the bead, the folder toward which said bed oscillates being cut away as described to form a passage thereunder, and means whereby said folder is oscillated after the folding operation to open a passage through which the oscillating bed may carry the folded envelop and is then oscillated in a reverse direction to close said passage and form a bead to receive a fresh blank and is again oscillated in the latter direction to fold the blank, as and for the purposes described.

In witness whereof I have hereunto set my name this 17th day of October, 1898.

JOHN A. SHERMAN.

Witnesses:

CHAS. O. BACHELOR,  
WILLIAM H. NELSON.