No. 821,529. PATENTED MAY 22, 1906.

B. PAHLITZSCH.

FOLDING MECHANISM FOR ENVELOP MACHINES.

APPLICATION FILED MAY 6, 1903.

2 SHEETS—SHEET 1.

Fig. 1.

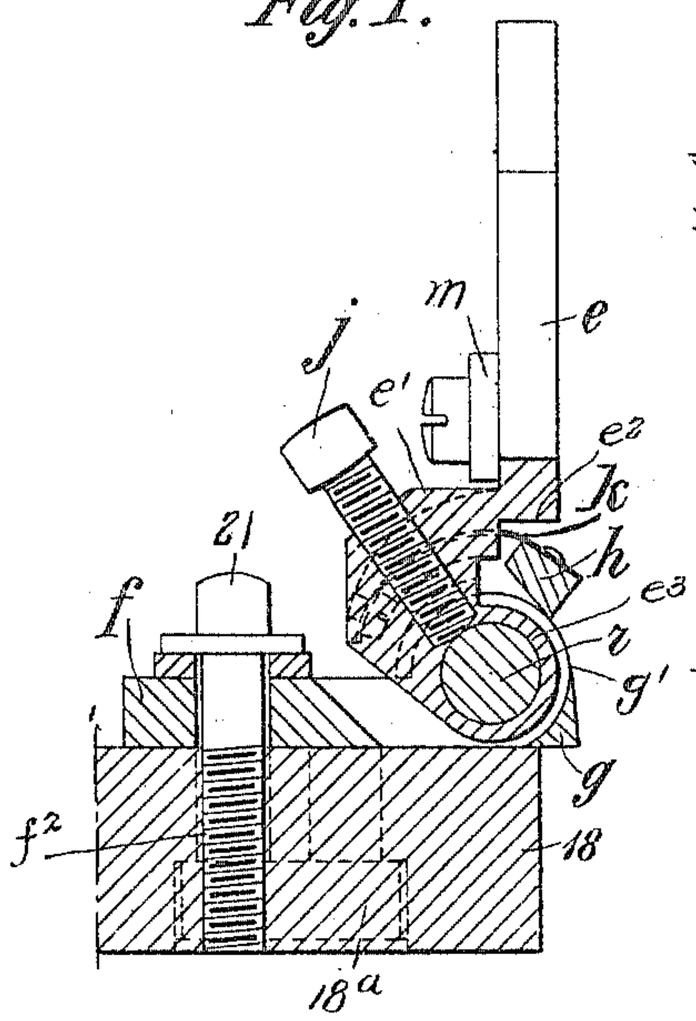


Fig. 2.

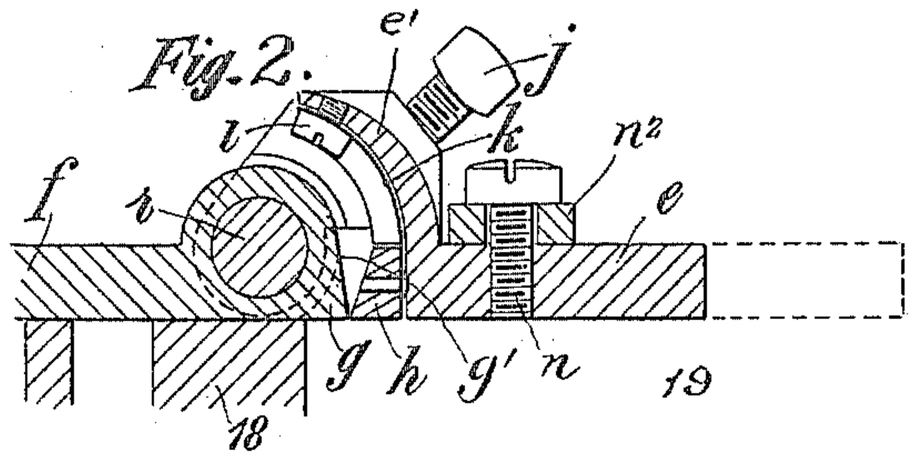


Fig. 3.

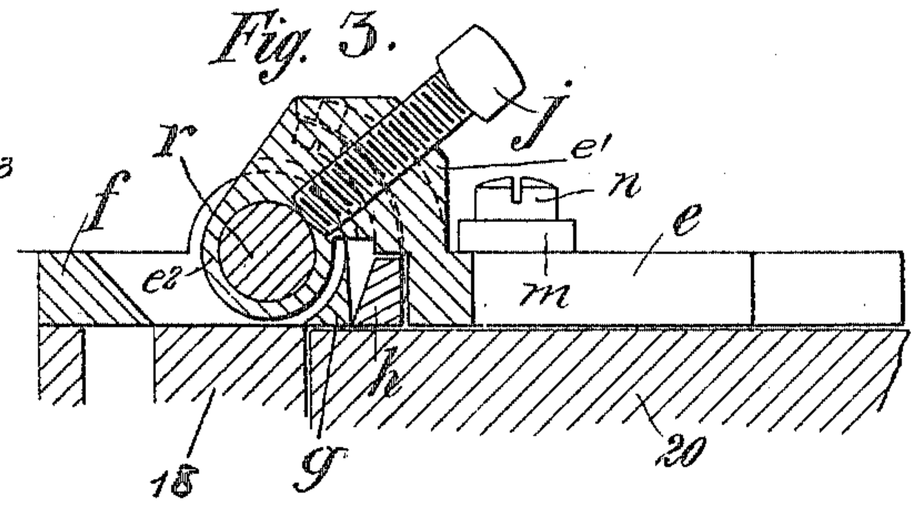
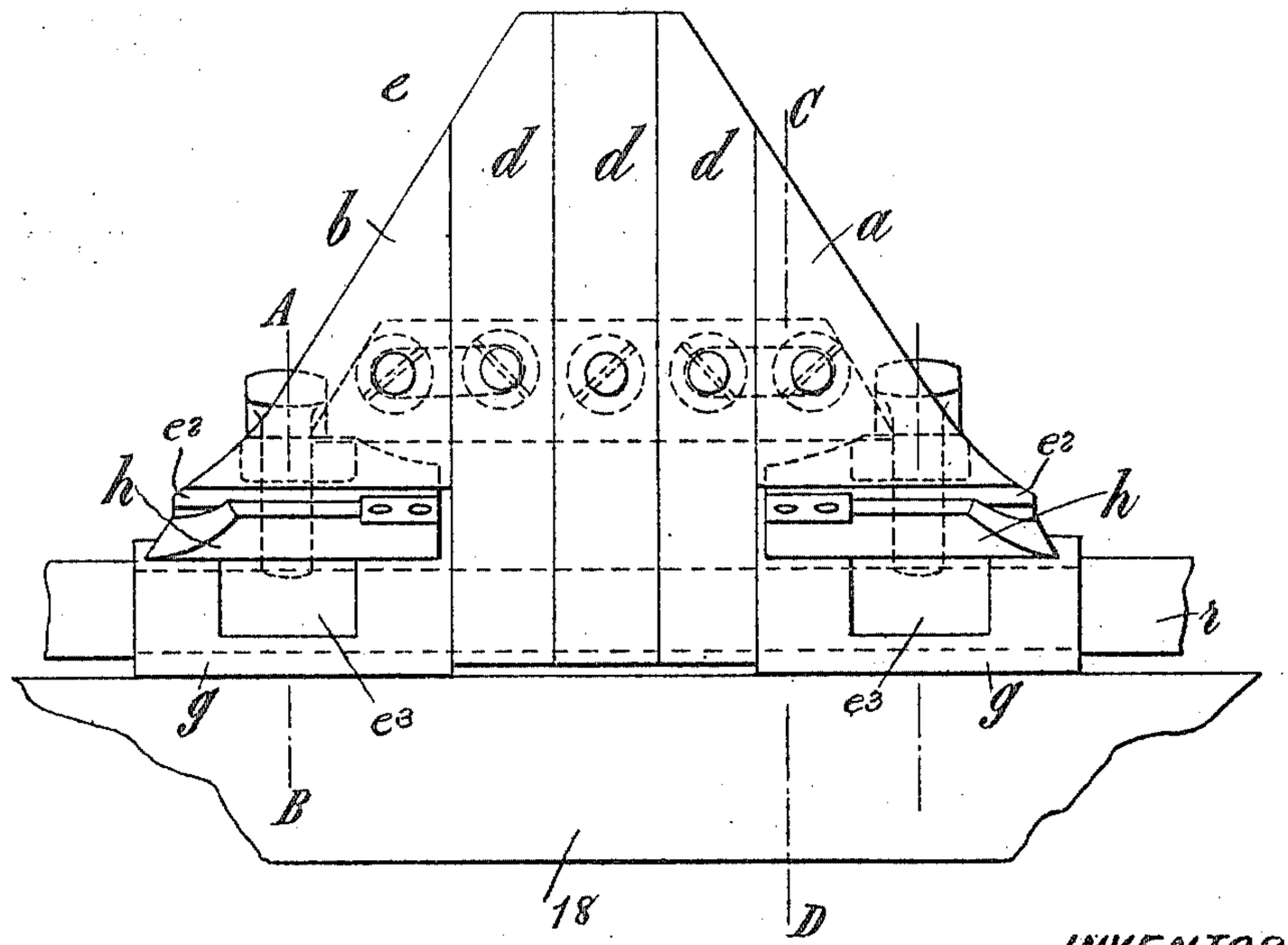


Fig. 4.



WITNESSES

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No. 821,529. PATENTED MAY 22, 1906.

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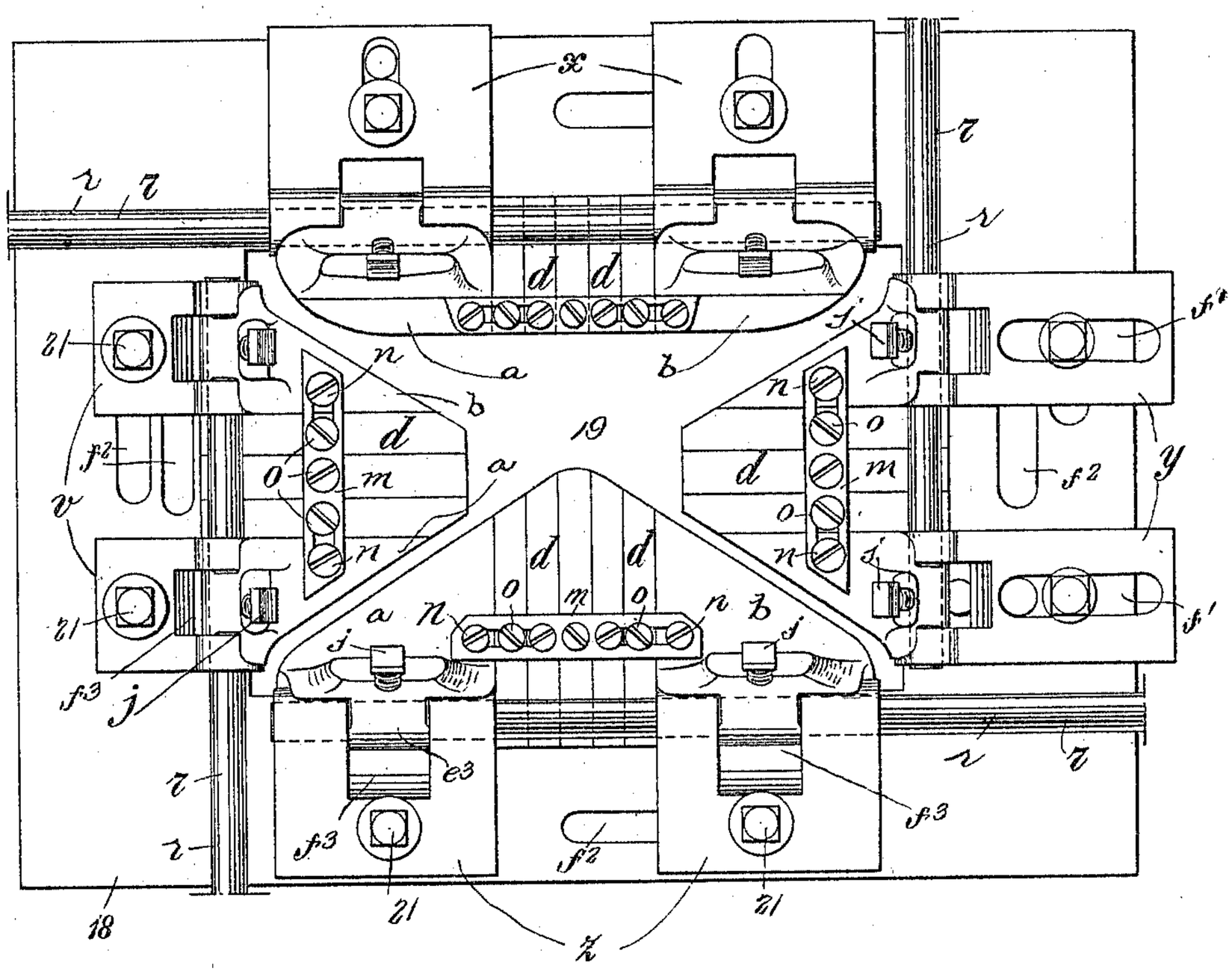
FOLDING MECHANISM FOR ENVELOP MACHINES.

APPLICATION FILED MAY 9, 1903.

2 SHEETS—SHEET 2.

Fig. 5.



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UNITED STATES PATENT OFFICE.

BRUNO PAHLITZSCH, OF BERLIN, GERMANY, ASSIGNOR, BY MESNE ASSIGNMENTS, TO UNITED STATES ENVELOPE COMPANY, A CORPORATION OF MAINE.

FOLDING MECHANISM FOR ENVELOP-MACHINES.

No. 821,529. Specification of Letters Patent. Patented May 22, 1906.

Application filed May 9, 1903. Serial No. 156,473.

To all whom it may concern:

Be it known that I, BRUNO PAHLITZSCH, a manufacturer, a subject of the King of Saxony, residing at 13 Simeonstrasse, Berlin, Germany, have invented a certain new and useful Folding Mechanism for Envelop-Machines, of which the following is a specification.

My present invention relates generally to machines for folding the flap portions of previously-cut envelop-blanks, and the particular improvement now sought to be protected has to do more especially with the flap-folders of such machines.

One purpose of the invention is to provide a novel and simple construction of flap-folder that can be easily and quickly adjusted relatively to its companion folders and the base-plate of the machine, whereby to provide for the making of envelops of various sizes.

Another purpose of the invention is to provide a novel and improved construction of flap-folder that can be readily expanded or contracted widthwise, so as to adapt it to the making of various-sized envelops.

Another and important feature of the invention resides in providing a flap-folder with an auxiliary yieldable pressing element located at the base or hinged end thereof, said element operating slightly in advance of the working face of the folder and constructed to engage, press, and crease the envelop-flap along the folding-line just prior to the action of the folder proper, means being provided for causing the auxiliary pressing element to move slightly forward during the downward swinging movement of the flap-folder, whereby to prevent what is known as "backdrawing" of the envelop-blank, and thus insuring a smooth and perfect fold.

A still further purpose of the invention resides in constructing a flap-folder embodying a fixed and a movable member hinged together, the under or base surface of said movable member that comes into contact with the base-plate on which the envelop-blank is laid being level with the under or base surface of the fixed member of the folder, so that these surfaces, as also that of the folding-base, when in the operative position all lie in the same plane. By this means it is possible to employ a folding base-plate of a size corresponding to the largest envelop for folding envelops of a considerably smaller size.

To these and other ends the invention resides in the features of construction and novel combination and arrangement of parts hereinafter described in detail and then more definitely pointed out in the claims.

In the annexed drawings, Figure 1 is a section on the line A B of the flap-folder shown in Fig. 4, the said flap being shown in a position at right angles to the base-plate. Fig. 2 is a section taken on the line C D of Fig. 4, the movable member of the flap-folder being shown in its operative position. Fig. 3 is a section similar to Fig. 1, the movable member of the folder being shown in its operative position lying upon the surface of the base-plate. Fig. 4 is a view looking at the under or working face of the movable member of the flap-folder shown in Fig. 1; and Fig. 5 is a top plan view of a part of the base-frame of an envelop-machine, showing the flap-folders in operative position.

Referring to the drawings, the reference-numeral 18 designates a part of the frame of an envelop-machine which bounds the opening 19, wherein is situated the usual base-plate 20, upon which the envelop-blanks to be folded are placed. This base-plate 20 is of the ordinary "drop" type, pivoted at one end and adapted to swing downward to permit the completed envelop to slide therefrom to a suitable table or like receiver. (Not shown.)

As has been previously stated, the prime object of the present invention is to provide an envelop-machine with novel flap-folders that are adjustably mounted relatively to each other, so as to adapt the machine to the making of envelops of various sizes, and these flap-folders coöperate with the base-plate 20, whatever may be their position of adjustment, it being understood that the same base-plate employed in making large envelops is also used when the flap-folders are adjusted to do small work.

The flap-folders have a hinged connection with the frame 18 around the opening 19 and are mounted to swing toward and from and into and out of contact with the base-plate 20 during the folding operation. As all the flap-folders are substantially alike in construc-

tion, a detailed description of one will suffice for all.

Each flap-folder as a whole comprises two stationary members *f* and a movable member *e*. The stationary members are in the form of hinge-blocks and are adjustably connected at one end to the frame 18 by means of screw-bolts 21, which pass through openings or slots *f'*, formed in said end, and in corresponding openings or slots f^2, formed in the frame 18, all as clearly shown in Fig. 5 of the drawings. The slots *f'* in the blocks *f* permit its flap-folder to be moved toward and from the flap-folder situated directly opposite, and the slots f^2 permit one of the blocks *f* to be moved nearer to or farther from its companion block as is necessary when the flap-folder *e* is adjusted widthwise, as will presently appear. The forward portion of each hinge-block is bifurcated, as at f^3, and is provided with an enlargement in which is formed a transverse opening through which a rock-shaft *r* freely passes. The extreme front end of each hinge-block *f* is formed with an angular extension *g* at the base, the front wall of which curves upward and backward to provide a cam or eccentric face *g'*, for a purpose presently to appear.

The movable member of each flap-folder consists of two substantially triangular-shaped plates *a* and *b*, each having an upwardly and rearwardly extending wall *e'* at its base or rear end, the under face of said wall being curved, as shown, and the said rear end of each plate is rabbeted, as at e^2, Figs. 1 and 3, for a purpose presently to appear. Extending outward and downward from each wall *e'* is an eye member e^3, which is located between the bifurcated end of the block *f* and through which the shaft *r* passes, the said plates *a* and *b* being each fixed to said shaft by means of a set-screw *j*, as clearly shown in Figs. 1 and 3 of the drawings. By this construction it will be seen that the rear or hinged end of the plates *a* and *b* stand away from the front end of the stationary members *f* of the folders, leaving a space between the said stationary and movable members, and located in this space between each pair of said members is an auxiliary yieldably-mounted presser element in the form of a block *h*. These blocks are each attached to one end of a flat blade-spring *k*, the opposite end of the spring being secured to the upwardly and rearwardly extending wall *e'* by means of a screw *i*. The springs *k* are arched or bowed, as shown, and follow the curved under face of the wall *e'*, the tendency of the springs being to draw the blocks into contact with the eccentric face *g'* at the end of the stationary member *f*.

As will be seen by referring to Fig. 1 of the drawings, the under face of each yieldable presser-block *h* extends slightly in advance of the working face of the folder-plates *a* and *b* when said plates are in an upright position, and when they are moved downward through rocking movement of the shaft *r* said blocks continue to move in advance of the working face of the plates *a* and *b*, and consequently engage the flaps of the envelop-blank to be folded just prior to the action of the folder. During downward movement of the flap-folders the said yieldable blocks *h* ride over the said eccentric faces *g'*, and as the folders approach the limit of their downward movement the blocks are pushed slightly forward by the said eccentric faces, and this has a tendency to also push the flap of the envelop-blank slightly forward, thus preventing backdrawing of the paper and insuring a smooth and perfect fold.

Each flap-holder may consist of the two triangular plates *a* and *b* alone, as when they are used upon small envelops; but for large envelops these plates are separated and extension or filling pieces *d* are interposed between them, one, two, or more of such filling-pieces being employed, the number depending of course upon the size of the envelop being made. These filling-pieces extend to a point slightly beyond the shaft *r* and are grooved out, as shown, to partially surround the shaft. A slotted bar *m* is secured at its opposite ends by screws *n* to the top face of the plates *a* and *b*, and attaching-screws *o* pass through the slots in said bar *m* and enter the filling-pieces *d*, whereby they are attached firmly in position and form a part of the flap-folder. It will be apparent that the flap-folders are thus adjustable lengthwise and that their width may be varied without removing the plates *a* and *b* from the shaft *r*. When adjusting the folders widthwise, the attaching-screws 21, which pass through the stationary elements or hinge-blocks *f*, are moved in the slots f^2, formed in the frame 18, the lower ends of said screws each being in threaded engagement with a block 18^a, that slides in a grooved way formed in the under side of theframe 18, as shown in dotted lines in Fig. 1.

By referring to Figs. 2 and 3 of the drawings it will be seen that the bottom face of each hinge-block *f* is on a level with the upper surface of the base-plate 20 and that the working face of the flap-folder is also in the same plane. Hence it will be apparent that the said blocks may be adjusted forward so as to overhang the marginal edge of the base-plate 20, which would be the case when making small envelops, and the same base-plate used for making large envelops may thus be employed when the flap-folders are adjusted for the making of small envelops.

In addition to the function performed by the angular extension *g* on the hinge-blocks *f*, as already described, said extensions in themselves serve to prevent backdrawing of the flaps of the envelop-blank during the folding

operation. This is due to the fact that the under face of each extension *g* lies in substantially the same plane as the upper face of the base-plate 20, these faces of the extensions being in contact with the said upper face of the base-plate during the folding operation, and as they are arranged on all sides of the base-plate the vertical walls of oppositely-arranged angular extensions *g* form stops or abutments between which the side and end edges of the partially-folded envelop-blank are confined, and they thus prevent back-drawing of the flaps of the blank during the folding operation and insure a perfect fold along the folding-lines.

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

1. In an envelop-machine, the combination with the movable base-plate, of pairs of hinge-blocks arranged at opposite sides of the base-plate and adjustable over the face thereof, a rock-shaft journaled in each pair of hinge-blocks, a flap-folder secured to each shaft and movable into and out of contact with the base-plate, and a yieldable presser element supported from each flap-folder and located at the base end thereof.

2. In an envelop-machine, the combination with the base-plate, of a flap-folder having its under face movable to and from the upper face of the base-plate, means for adjusting the flap-folder toward and from the center of the base-plate, a movable presser element carried by the base end of the flap-folder, and means for yieldably supporting said presser element.

3. In an envelop-machine, the combination with the base-plate, of a hinge-block having its under side lying in the plane of the base-plate and adjustable over the face thereof, an angular boss on the inner end of the hinge-block, a rock-shaft journaled in said block, a flap-folder secured to said shaft and movable toward and from the base-plate, and a freely-movable presser element supported from the flap-folder and interposed between the base end thereof and the said angular boss.

4. In an envelop-machine, the combination with the base-plate, of a hinge-block having its under face lying in the plane of said plate and adjustable over the face thereof, a rock-shaft journaled in said block, a flap-folder secured to said shaft and movable toward and from the base-plate, and a freely-movable presser element supported from the flap-folder and located at the base end thereof.

5. In an envelop-machine, the combination with the base-plate, of a rock-shaft located above the plane of said plate and adjustable toward and from the center thereof, a flap-folder secured to said rock-shaft, a freely-movable presser element located at the base end of said flap-folder, and means for supporting said presser element.

6. In an envelop-machine, the combination with the base-plate, of a rock-shaft located above the plane of said plate and adjustable toward and from the center thereof, a flap-folder secured to said rock-shaft and adapted to make facial contact with the upper face of the base-plate, a freely-movable presser element located at the base end of said flap-folder, and yieldable means carried by the flap-folder for supporting said presser element.

7. In a flap-folder for envelop-machines, a fixed member, a movable member hinged thereto, a presser element interposed between the adjacent hinged ends of said members, means for movably supporting the presser element, and means for causing said presser element to move in an arc differen from that of the movable member during the operation of the latter.

8. In a flap-folder for envelop-machines, a fixed member, a movable member hinged thereto, a yieldable presser element interposed between the adjacent hinged ends of said members, means carried by the movable member for supporting the presser element and means for causing said presser element to move in an arc different from that of the movable member during operation of the latter.

9. In a flap-folder for envelop-machines, a fixed member having a cam-face at one end, a movable member hinged to said fixed member, a presser element interposed between the adjacent hinged ends of said members, and means for movably supporting the presser element whereby the latter will be free to ride over the said cam-face on the fixed member during the downward movement of the movable member.

10. A flap-folder for envelop-machines comprising a folder member having a yieldable presser element located at the base end thereof, said element having a pressing-face normally situated slightly in advance of the under face of the said folder member.

11. In an envelop-machine, the combination with the movable base-plate, of an adjustable block having an angular extension at the front end thereof, the under face of said extension lying in surface contact with the upper face of the base-plate when the latter is in normal position and adjustable thereover, and the vertical wall of said angular extension constituting a stop or abutment for a folded edge of an envelop-blank, and a swinging flap-folder movable toward and from the base-plate and over the said angular extension.

12. In an envelop-machine, the combination with the movable base-plate, of an adjustable block having an angular extension at the front end thereof, the under face of

said extension lying in substantially the plane of the upper face of the base-plate when the latter is in normal position and adjustable thereover, and the vertical wall of said angular extension constituting a stop or abutment for a folded edge of an envelop-blank, and a swinging flap-folder movable toward and from the base-plate and over the said angular extension.

13. In an envelop-machine, the combination with the movable base-plate, of an adjustable block having an angular extension at the front end thereof, the under face of said extension lying in substantially the plane of the upper face of the base-plate when the latter is in normal position and adjustable thereover, and the vertical wall of the extension constituting a stop or abutment for a folded edge of an envelop-blank, means for permitting forward adjustment of said block, and a swinging flap-folder movable toward and from the base-plate and over said angular extension.

14. In an envelop-machine, a flap-folder having a freely-movable presser element located at the base end thereof and provided with a presser-face normally situated slightly in advance of the under face of said folder, means for freely supporting said presser element, and means for causing the element to move bodily in the direction of length of the folder, during downward movement thereof.

15. A flap-folder comprising a folder member having a freely-movable presser element located at the base end thereof and provided with a presser-face normally situated slightly in advance of the under face of said folder member, and means for freely supporting said presser element whereby it may have a movement bodily in the direction of length of the folder.

16. A widthwise-adjustable flap-folder for envelop-machines, comprising two end plates, filling-pieces interposed between the adjacent edges of said plates, a bar attached at its opposite ends to said plates, and means for attaching said filling-pieces to the bar.

17. In a flap-folder for envelop-machines, a pair of hinge-blocks, a folder-plate hinged to each block, a removable filling-piece interposed between the adjacent edges of said plates, and a bar secured to said plates and said filling-piece.

18. In a flap-folder for envelop-machines, a pair of hinge-blocks, a shaft passing freely therethrough, a pair of folder-plates each secured at one end to said shaft, a removable spacer interposed between the adjacent edges of said plates, said spacer being grooved transversely at its rear end and partially embracing the said shaft, and means for removably attaching the spacer to the folder-plates.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

BRUNO PAHLITZSCH.

Witnesses:
WOLDEMAR HAUPT,
HENRY HASPER.