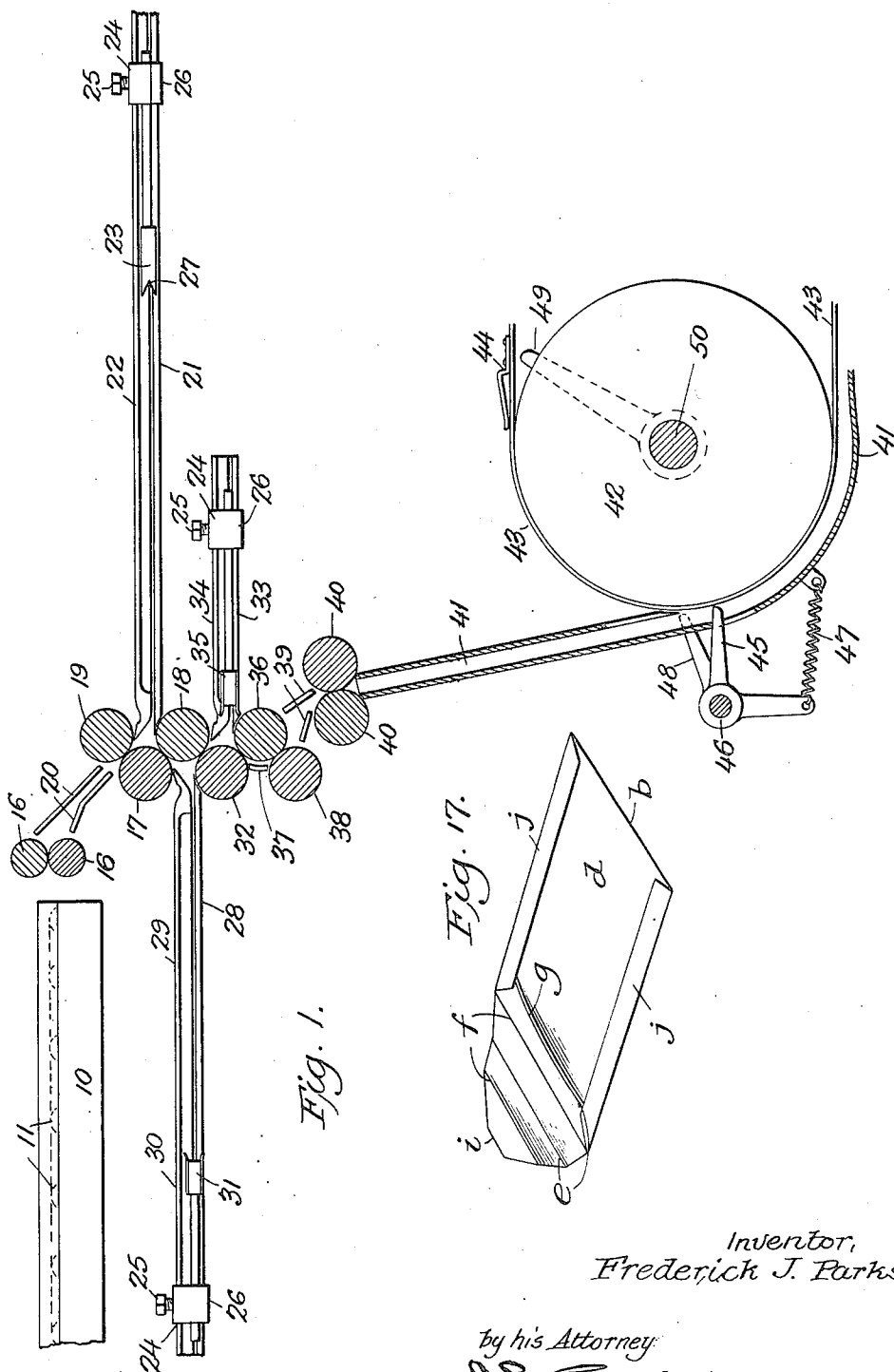


1,316,737.

F. J. PARKS.
MANUFACTURE OF ENVELOPS.
APPLICATION FILED APR. 11, 1917.

Patented Sept. 23, 1919.
4 SHEETS—SHEET 1.



Inventor,
Frederick J. Parks,

by his Attorney

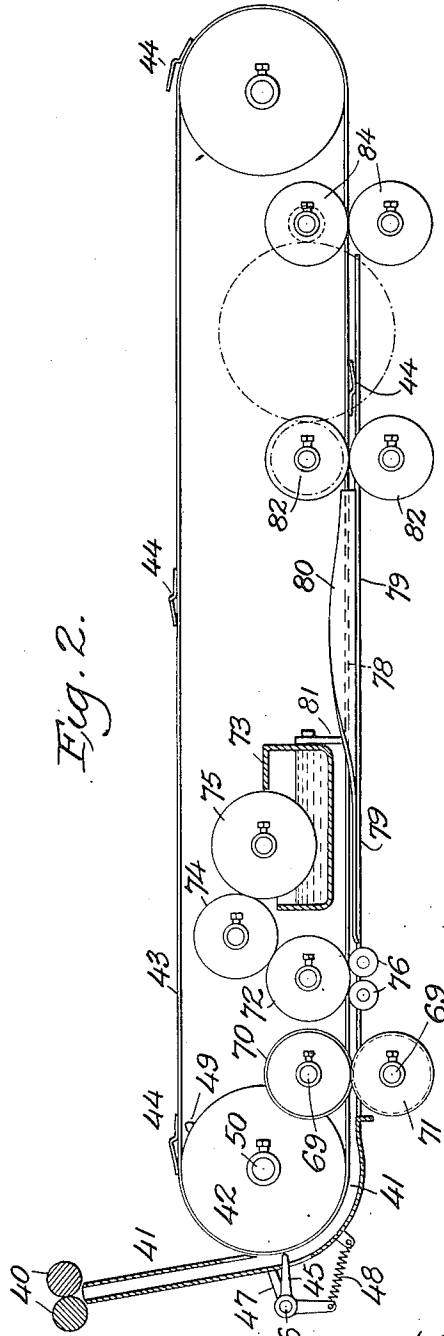
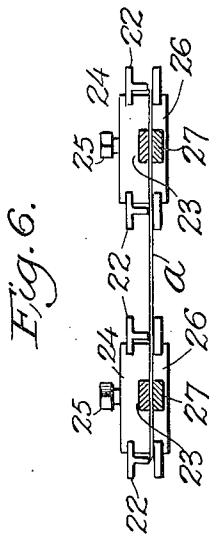
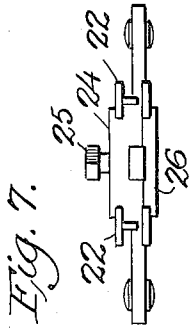
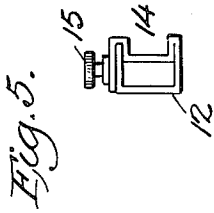
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4 SHEETS—SHEET 2.



Inventor,
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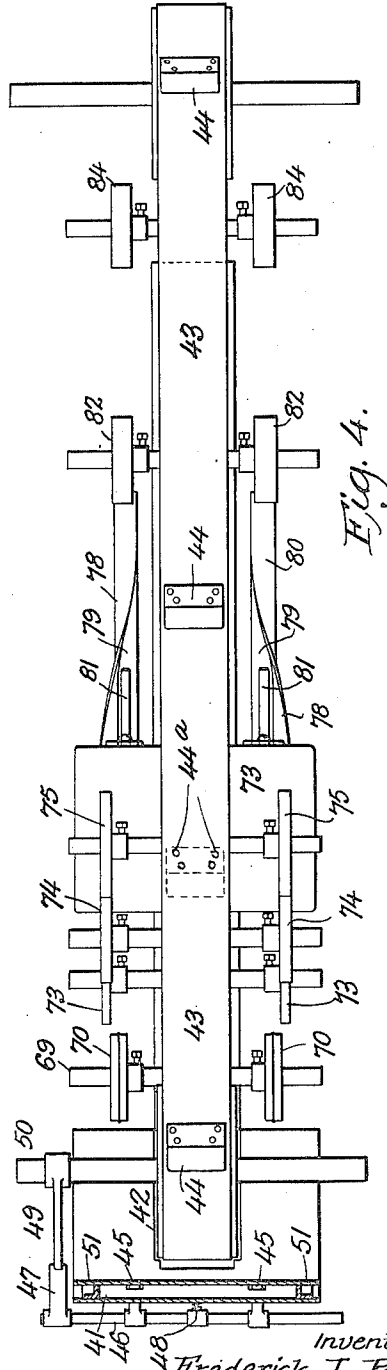
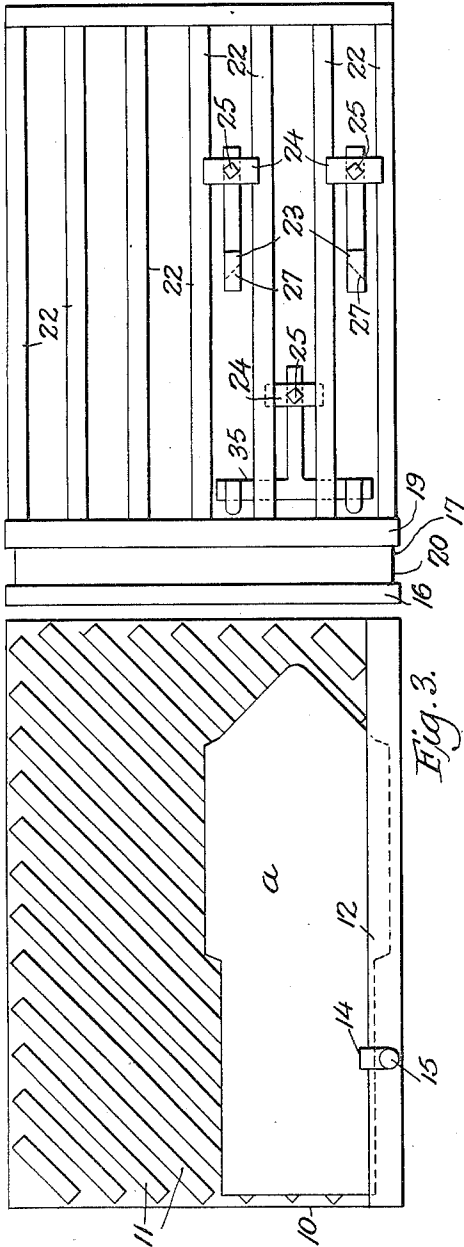
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4 SHEETS—SHEET 3.



Inventor,
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by his Attorney *[Signature]*

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4 SHEETS—SHEET 4.

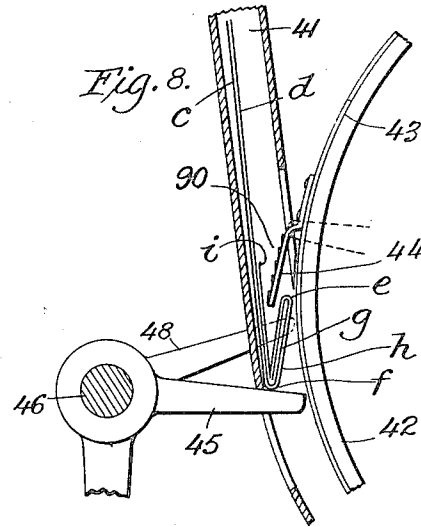
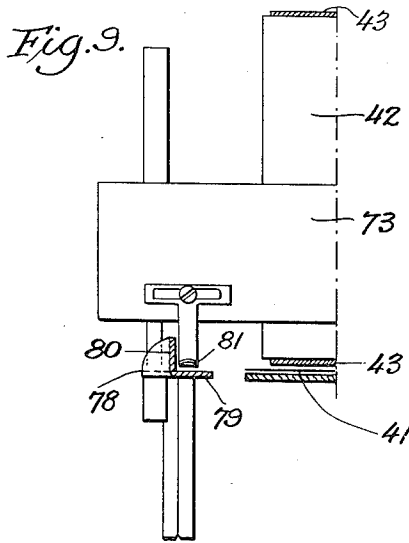


Fig. 10.

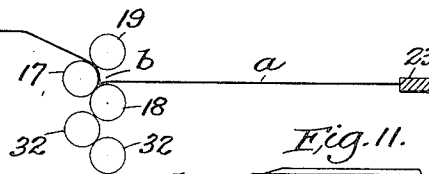


Fig. 11.

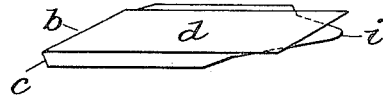


Fig. 12.

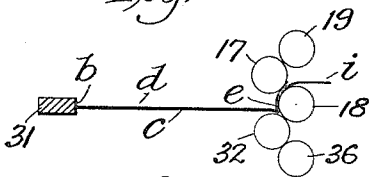


Fig. 13.

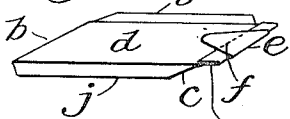


Fig. 16.

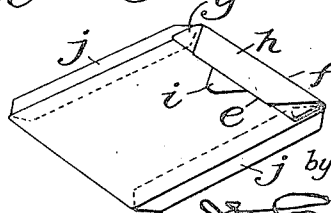


Fig. 14.

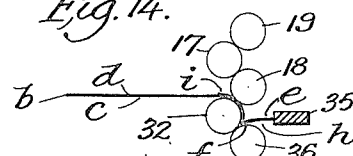
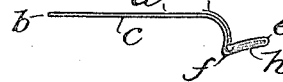


Fig. 15.



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[Signature]

UNITED STATES PATENT OFFICE.

FREDERICK J. PARKS, OF NEW YORK, N. Y.

MANUFACTURE OF ENVELOPS.

1.316.737.

Specification of Letters Patent. Patented Sept. 23, 1919.

Application filed April 11, 1917. Serial No. 161,166.

To all whom it may concern:

Be it known that I, FREDERICK J. PARKS, a citizen of the United States, and a resident of the city and State of New York, have invented certain Improvements in the Manufacture of Envelops, of which the following is a specification.

This invention relates to certain improvements in the manufacture of envelops, and more particularly what are known as "pocket clasp envelops" wherein a pocket is provided upon the envelop body for the reception of a closing flap in such a manner that the same may readily be withdrawn and reinserted to afford access for examination of the inclosure as is requisite in envelops for certain classes of mail matter. The object of the invention is, in part, to provide a novel and improved method or process of producing such envelops, capable of employment for their production in such a way as to afford important advantages and economies such as are necessary for their practical or commercial manufacture, and in part, to provide a machine for carrying out the improved method or process, by means of which the envelops may be produced rapidly in completed merchantable form without the necessity of separately operating thereon by hand for the production of the clasp receiving pocket as has been customary heretofore in the production of such envelops.

The invention consists, in part, in a method or process of producing envelops which consists first in producing a series of transversely directed folds in the blank whereby transversely arranged closures are produced primarily for the opposite ends or edges of the envelop, and afterward folding or sealing the lateral or side flaps of the blank to produce the lateral closure for the envelop.

Another part of the invention consists in a machine for producing envelops, having means for forming a transverse fold in the blank, and other means for producing longitudinal folds therein, in conjunction with mechanism for so actuating said folding means that the transverse folding means is operated first to produce a transverse fold in the blank, affording a flap receiving pocket, after which the longitudinal folding means is operated to fold down the side flaps of the envelop over the ends of said pocket

in such a manner as to permit said ends of the pocket to be securely held in relation when said side flaps are sealed.

The invention also consists in certain novel features of the construction, and combinations and arrangements of the several parts of the improved envelop machine, whereby certain important advantages are attained, and the machine is rendered simpler, less expensive, and otherwise better adapted and more convenient and effective for use, all as will be hereinafter fully set forth.

The novel features of the invention will be carefully defined in the claims.

In order that my improvements may be the better understood, I will now proceed to describe the invention with reference to the accompanying drawings, wherein

Figure 1 is a side view, largely diagrammatic and partly in section, of the portions of an envelop machine embodying my improvements which perform the initial folding and pocket forming operations;

Fig. 2 is a view somewhat similar to Fig. 1, but showing more or less diagrammatically those portions of the machine which perform the subsequent or final operations in the production of the envelop, this view being drawn upon a smaller scale than Fig. 1;

Fig. 3 is a plan view of the portions of the machine shown in Fig. 1;

Fig. 4 is a view illustrating the mechanism shown in Fig. 2, but with parts of the same seen in horizontal section;

Fig. 5 is a detail view of the gaging means for assuring proper positioning of the blank at the feed board or table;

Fig. 6 is an enlarged sectional detail view of one of the gages;

Fig. 7 is a view showing the means of attachment for the gages;

Fig. 8 is an enlarged detail view illustrating the manner in which the envelop is engaged by the endless carrier to be advanced to the secondary or side flap gumming and folding means;

Fig. 9 is a view showing details of the side flap folding means to be hereinafter referred to;

Fig. 10 is a diagrammatic view illustrating the initial stage or step in the folding of the blank from which the envelop is to be formed;

Fig. 11 is a view illustrating the state of the blank after the completion of the initial folding thereof;

Fig. 12 is another view illustrating the first step in the formation of the flap receiving pocket in the blank;

Fig. 13 is a view illustrating the form of the blank after the completion of such step;

Fig. 14 is another diagrammatic view illustrating the completion of the flap receiving pocket in the blank;

Fig. 15 is a view illustrating in more detail the various parts of the blank during the operation illustrated in Fig. 14;

Fig. 16 is a view similar to the preceding but showing the blank after the completion of the flap receiving pocket therein, ready to be advanced to the secondary folding means, which operates to fold the same longitudinally for the folding and sealing of the side flaps over the ends of the flap receiving pocket previously formed by the primary or transverse folding means, and

Fig. 17 is a perspective view showing the formation of the completed envelop.

In these views, illustrating one embodiment of the envelop machine comprised in my present invention, I have not attempted to illustrate the minor details and features of construction which it may be desirable to incorporate in such machine, since the same are well known in the art and are in no way concerned with my invention. In its more generic aspect, my invention relates more particularly to the means whereby the blank is folded first transversely, for the production of the flap receiving pocket and also, in the embodiment of the invention herein shown, for the production of a folded integral closure opposite to the mouth of the envelop and for the scoring and folding of the withdrawable closure flap or member and its insertion in said pocket during the formation thereof, after which said blank is folded lengthwise to facilitate the turning of the side flaps and their securement upon the ends of the pocket to retain the same in position and at the same time close the lateral sides or edges of the envelop. Since it will be apparent that various well known equivalent folding devices and related mechanisms may be substituted for those herein shown without departure from the invention, I do not desire to be understood as restricting myself to the employment of the specific devices herein shown for performing the different folding and other operations in the desired sequence upon the blank.

In the drawings, the blank from which the envelop is to be produced is represented as a whole at *a*, being of a length adapted to be folded first transversely at or near the middle of its length, as indicated at *b*, whereby the front and back plies *c* and *d*

of the envelop are produced, together with the closure at the end or edge of the envelop opposite to its mouth, after which said blank is adapted to receive plural transverse and closely related folds at *e* and *f*, whereby the blank is folded transversely at and adjacent to the mouth of the envelop to produce a two ply pocket *g* extending along the envelop mouth and integrally joined with the rear ply *d*, and a two ply closure flap or member *h*, interlocked with or inserted in said pocket and affording a separable closure at the mouth of the envelop, whereby after the envelop is completed, having said flap inserted in its pocket, the latter may be withdrawn from the pocket to permit the introduction of the inclosure, and after having been reinserted to prevent loss of such inclosures in the mails, may again be withdrawn readily, so that the required examination of the contents may be made during transit. The duplex or two ply formation of the closure flap or member *h* facilitates its insertion in the pocket, and also assures its retention therein by reason of the increased stiffness and thickness imparted to the flap, and the formation of the blank is such that one of its extremities *i* in the completed envelop, forming the terminal reduced part of the flap *h*, protrudes from the pocket so as to afford a finger hold which may easily be seized by the fingers when the flap is to be withdrawn from the pocket.

As shown, also, the blank is provided with integral side flaps or extensions *j*, *j*, parallel with each other along its opposite lateral edges or sides, adapted, after the formation of the flap receiving pocket by the operation of the transverse folding means as above set forth, to be operated upon by the secondary or longitudinal folding means in such a manner as to be folded over longitudinally of the blank and to be sealed down along the opposite lateral sides of the envelop to close the same and also extended and sealed down upon the ends of the pocket to hold the same firmly in position.

In the embodiment herein shown of that part of my invention which relates to the envelop machine, the latter is provided with a feed table 10 having a series of parallel driven rollers 11, 11 extended diagonally across it in such a manner that when the envelop blanks *a* are laid successively thereon they will be impelled by said driven diagonal rollers not only in the direction of the length of the blank, so as to be presented endwise to the folding means, but also laterally or sidewise of said blank in such a manner as to present their lateral edges to an elongated side gage or registering device 12 extended lengthwise along one side of the feed table and operating by such engagement with the blank, to straighten

the same and position said blank accurately for presentation to the folding means in order that the successive folding operations may be performed properly to produce the completed envelop. The side gage or registering device 12 as herein shown is provided with an offset portion 14 to accommodate the lateral offset of the edge of the blank afforded by the side flap *j* of the latter.

As shown the offset portion 14 of said gage is in the nature of an auxiliary gage member or finger adjustable lengthwise along said gage 12 and adapted to be set fast in adjusted position by means of a screw 15, but it will be apparent that if desired the offset may be rigidly or fixedly connected with the gage 12 and the latter capable of adjustment lengthwise along the feed table in order to accommodate blanks of different sizes.

The driven rollers 11, 11 serve to convey the forward end of the blank to the bight of a pair of driven feed rollers 16, 16, horizontally extended one above the other at the forward end of the feed table and adapted to receive and grip between them said end of the blank so as to draw the same into the machine and deliver it to the folding devices. The feed rollers 16, 16 are longitudinally corrugated or otherwise roughened on their peripheral surfaces to enable them the better to seize and grip the blank, and these rollers may obviously be replaced by other equivalent means, as rotary or endless carriers, while the rollers 11, 11 may be omitted or replaced by an automatic feeder or other equivalent means and if desired the machine may be so modified as to permit of feeding a continuous web thereto from which blanks are cut and afterward folded to produce envelops according to my invention.

As herein shown, the primary folding means, which are employed to operate primarily or initially upon the blanks for the production of the transverse pocket forming folds, are in the nature of folding rolls arranged in pairs and operating in connection with stops which serve to limit the travel of the blanks past said rolls and cause said blanks to buckle or flex into the bights of the folding rolls in order that the latter may operate to fold said blanks transversely at the desired points but, while this structure and arrangement of folding means is extremely simple and effective and well suited for employment in the envelop machine embodying my invention, it will be apparent that other well known types of folding means may be substituted therefor without departure from the principles and spirit of the invention such, for example, as folders of the blade and cylinder types commonly employed in folding machines.

17 and 18 represent the first pair of folding rolls employed in the embodiment of

my invention shown herein for producing the first transverse fold *b*, adjacent to the middle of the blank. These rolls are longitudinally grooved or roughened on their perimeters also to enable them the better to seize and grip the blank when the same is buckled or flexed into their bight, and are employed in conjunction with a similarly surfaced feed roll 19, which coacts with the roll 17 to feed the blank supplied from the feed rolls 16, 16 past the bight of the folding rolls 17 and 18. The blank after emerging from said feed rolls 16, 16 is deflected downward at an inclination by means of an inclined throat 20 or equivalent guiding means which directs said blank into the bight of the rolls 17 and 19. The rolls 17 and 18 are both positioned at the same side of the path or the blank as the same emerges from between said rolls 17 and 19, while a throat or passage comprising lower and upper guide members 21 and 22 is positioned to receive the emerging end of the blank, the forward end of the lower member 21 being closely adjacent to the lower folding roll 18 and being inclined to the path of the emerging end of the blank so as to induce initial flexure thereof in order that, when the end of the blank engages the limiting stops 23, assurance may be afforded, by reason of such initial flexure, that said blank will be buckled or flexed into the bight of the rolls 17 and 18.

As herein shown, the lower and upper guide members 21 and 22 are in pairs horizontally alined and spaced apart from each other transversely of the machine, and a plurality of the limiting stops 23 are provided in the spaces between said members, and are adjustable lengthwise of the throat or passage and provided with shanks having T-shaped extremities 24 which bridge the spaces between said members 21 and 22 and are provided with clamping plates 26 engageable below the guide members and connected with said T-shaped parts 24 by means of screws 25 by which the stops may be clamped fast upon the members 21 and 22 when in adjusted position. The free ends of the shanks of the stops 23, 23 have notches alined with the path of the blank when fed into the passage between the guide members 21 and 22 and said notches are provided with reversely inclined or beveled surfaces 27, 27 conforming and adapted for engagement with the reversely beveled or inclined edges of the tapered end of the blank which in the completed envelop forms the closure flap *h*, in such a manner as to center and position said blank so that the same may, by the feeding action of the rolls 17 and 19, be flexed or buckled properly into the bight of the folding rolls 17 and 18. These stops 23 are engageable with the blank at opposite sides of its center.

By adjustment of the stops lengthwise along the guide members 21 and 22, nearer to or farther from the folding rolls, the mechanism is made to accommodate envelopes of different lengths, the position of the transverse fold *b* produced by buckling the central part of the blank into the bight of the rolls 17 and 18 upon engagement of the end of the blank with said stops 23 being obviously dependent upon the distance of said stops from said folding rolls.

At the side of the folding rolls 17 and 18 opposite to that at which the guide members 21 and 22 are arranged are mounted other similar but reversely directed guide members 28 and 29 also in horizontally alined spaced pairs and forming between them a passage extended at an angle to the path of the folded blank emerging from said folding rolls and adapted to receive the same, a stop or stops 30 being provided in said passage adjustably secured to said guide members and having a notched forward edge portion 31 wherein the end of the folded blank is adapted for engagement when the same shall have traversed said passage sufficiently under the feeding action of the rolls 17 and 18, whereby said folded blank is flexed or buckled adjacent to its end opposite to the central fold *b*, so as to be presented in the bight of a second pair of folding rolls, including the lowermost roll 18 and co-acting roll 32, which by their engagement with said blank operate to produce the second transverse or pocket forming fold *e* therein, said fold being produced in the end portions of both plies *c* and *d* of the blank so that the terminal portion of each is folded over upon the back of the envelop, the terminal portion of the ply *d* thus folded over forming the inner ply of the two ply pocket, while the terminal part of the ply *c* simultaneously folded over forms part of the closure member or flap *h*.

In order to facilitate the production of these folds properly in the embodiment of the invention herein shown it is desirable that the distance from the bight of the rolls 17 and 18, measured around the perimeter of the roll 18 to the bight of the second pair of folding rolls 18 and 32 should not exceed substantially the length of the terminal portion of the blank which is to be folded over by the second pair of folding rolls 18 and 32, since otherwise the rolls 18 and 17 might lose their hold upon the blank before buckling the same sufficiently to permit the second pair of folding rolls 18 and 32 to grip the same securely. The provision of the terminal extension *i* of the closing flap, adapted to protrude beyond the folded terminal portion of the pocket carrying ply *d* is of advantage in assuring engagement of the rolls 17 and 18 with the blank for a longer interval. Where a striker or folding

blade is provided, however, for striking the blank into the bight of the rolls 18 and 32, as is obviously possible according to my invention, the proportioning of the parts in this manner is not essential but it is apparent that the structure shown is of advantage since the blank is held in position during transfer from one set of folding rolls to another and is thereby prevented from shifting its position which might tend to throw it out of registry with the succeeding instrumentalities of the machine.

Beneath the guide members 21 and 22 are arranged other similar guide members 33 and 34 at an angle to the path of the folded blank emerging from between the folding rolls 18 and 32 and also arranged in horizontally alined spaced pairs affording a passage in which the blank is received upon emerging from said second pair of folding rolls 18 and 32, and 35 represents a stop or stops adjustably lengthwise along said passage, upon which the extremity of the folded blank emerging from said rolls 18 and 32 is engageable, so as to cause the same to be buckled or flexed into the bight of the third pair of folding rolls, comprising the roll 32 and a similar roll 36 positioned beneath the same, which operate by engagement with the blank, to produce the third initial transverse or pocket forming fold *f* in the blank by means of which the terminal folded portion of the blank previously folded over upon the ply *d* by the rolls 18 and 32 is folded again to complete the pocket *g* and the closure flap or member *h* engaged therewith and having its extremity *i* protruding from said pocket to afford a finger hold as heretofore set forth.

The structure and arrangement of the primary transverse folding devices is such that the second and third transverse or pocket forming folds *e* and *f* are both produced from the rear surface of the blank, or that surface afforded by the ply *d* so that in the second transverse fold produced by the rolls 18 and 32, the projecting V-shaped extremity *i* is folded back upon the rear ply *d* outside of the folded terminal portion of the latter, while in the third transverse folding operation produced by the rolls 32 and 36, the blank is again folded from the same side transversely across the overturned or doubled part of the front ply, so as to complete the formation of the pocket *g* and of the closure flap *h* engaged therein. In each of these operations the presence of the protruding V-shaped end portion *i* of the closure flap is of advantage by reason of affording a greater length of the blank with which the first or second pairs of folding rolls retain their engagement while the blank is being flexed or buckled into the bight of the next pair of folding rolls in succession.

The angularity of the guide members adjacent to the second and third pairs of folding rolls, with respect to the path of the blank emerging from the preceding rolls is calculated as in the case of the angular guide members 21 and 22, to induce an initial flexure of the blank which is adapted to determine the buckling of the blank into the succeeding pair of rolls upon engagement of said blank with the stops appropriate to such guide members.

To assure effective engagement of the folding rolls with the blank, said rolls will be corrugated or roughened on their perimeters, and it will ordinarily be desirable to provide resilient means for pressing the rolls of the several pairs toward each other so that they may properly seize the blanks. The adjustability of the stops appropriate to the second and third pairs of folding rolls is of importance, since such adjustment permits of varying the positions in which the second and third transverse folds are produced so that the width of the pocket *g* may thereby be varied.

Beneath the roll 36 is a coacting feed roll 38, and the blank, after having been operated upon by the primary transverse folding means is delivered between said rolls 36 and 38 by means of a guide 37 and after emerging therefrom is delivered between other guides 39, 39 to a pair of delivery rolls 40, 40, which serve to deliver said folded blank downwardly into a chute or passageway 41 arranged for its reception, whose lower delivery end is adjacent to a drum 42 supporting an endless carrier 43 having one or more grippers 44, so arranged as to be adapted in the travel of said carrier, to be engaged within or upon the folded and thickened flap receiving pocket portion of the blank as the same is presented to the carrier at the lower part of the chute or passageway 41, in such a manner that the blank having the three transverse folds is delivered to the carrier and by it conveyed to the longitudinal folding means whereby the side flaps *j*, *j* of the blank are folded over and sealed down upon the opposite lateral parts of the rear ply *d* and the ends of its pocket *g*, to close the lateral sides of the envelop and retain its pocket securely in place.

At the lower end of the chute or passageway 41 is a stop or stops 45 adjustably mounted upon a shaft 46 and normally held raised by a spring 47 in the path of the folded blank delivered into said chute or passageway by the rolls 40, 40, so as to support said blank in position such that as the carrier travels around the drum 42, its gripper 44 will be accurately inserted within the pocket of the blank to withdraw the latter from said chute or passageway and convey the same to the longitudinal folding means.

An arm 48 on the shaft 46 is normally in

the path of an arm 49 on the shaft 50 of the drum 42, these parts being so arranged and timed that when the gripper 44 shall have been engaged in the pocket of the folded blank, the stop 45 will be withdrawn from the path of the blank in order that the carrier may withdraw the folded blank without resistance. If desired a cam may be substituted for the arm 49, so formed as to retain the stop 45 out of the chute or passageway 41 throughout the time requisite for the withdrawal of the folded blank.

To assure positioning of the folded blank when presented to the gripper or grippers 44, in order that said blank may be properly presented to the longitudinal folding means, side guides or registering devices 51, 51 are provided at the opposite lateral parts of the chute or passageway 41, capable of lateral adjustment to accommodate blanks of different widths. Other side registering means may be obviously provided in lieu of that herein shown, or if desired, the proportion and arrangement of the parts may be such as will permit engagement of the gripper or grippers with the blanks prior to their release from the delivery rolls 40, 40, in which event, it may be desirable to drive the carrier in time with said delivery rolls. In the embodiment of the invention herein shown, the proportion and arrangement of the parts is such that in the case of long envelops the grippers will engage the blanks in the manner set forth above before their release from the rolls 40, whereby in such cases the side registering devices are not essential, the side registering means at the feed table serving properly to position the blanks relatively to the grippers, since the primary transverse folding means and associated feeding devices have continuous engagement with the blanks until they are gripped to the carrier.

As shown herein the curvature of the carrier traversing the drum 42 serves to elevate the extremities of the gripper from said carrier sufficiently to enable the gripper to penetrate into the pocket of the folded blank, and the grippers are formed from resilient material so as to be adapted to stand closely adjacent to the carrier during their horizontal travel, and to press the folded blanks flush against said carrier, but it will be apparent that such grippers may be of the well known cam actuated type, and in such cases need not be engageable within the pocket but may merely grip the blank exteriorly at the end whereat the thickened pocket is produced.

As shown herein, the folded blank is carried forward by the carrier to the longitudinal folding and side flap sealing means with its pocket foremost, so as to avoid any likelihood of opening of said pocket during presentation of said blank to the secondary or

longitudinal folding means, and the width of the carrier is such that the lateral parts of the folded blank which are to be operated upon by said folding and sealing means protrude beyond the opposite sides of the carrier in such a manner as to permit of arranging the folding and sealing devices at opposite sides of said carrier although this is obviously not essential to my invention since, in cases where the carrier travels in the opposite direction to that shown herein and the folded blank is conveyed upon the top surface thereof, said carrier may be of greater width and the secondary folding and sealing means may be positioned above said carrier adjacent to its opposite sides.

The chute or passageway 41 is curved at its lower part to conform with the lateral and lower surface of the drum 42, one wall of said chute or passageway being discontinued at its lower part to afford an opening through which the blank is withdrawn when seized by the gripper.

70 and 71 represent scoring or creasing rolls adjustably secured upon shaft 69 and positioned at opposite sides of the carrier adjacent to its lower run so that as the blanks seized by the grippers of said carrier are conveyed away from the chute or passageway 41, they are caused to present their protruding lateral edge portions between said scoring or creasing rolls, which are thus permitted to score or crease the blank lengthwise along the junctures of the side flaps *j, j* with the front ply *c* in such a manner as to facilitate the folding over of said side flaps by the secondary or longitudinal folding means. Such creasing or scoring devices may obviously be omitted, or differently located. Where employed, their adjustability along the shafts 69 permits them to be set at different distances from each other to accommodate envelops of different widths.

Disposed in front of the scoring or creasing rolls and correspondingly positioned at opposite sides of the carrier are gumming rolls 72, fed from a fountain 73 by means of ductors 74 and 75. These are also mounted adjustably upon their shafts to permit them to be differently spaced to accommodate envelops of different widths and are adapted to apply gum to the upper surfaces of the side flaps or to the opposite lateral parts of the ply *d* as the blank is drawn along by the carrier beneath said rolls, so that when the side flaps are turned over by the secondary or longitudinal folding devices, upon said ply *d*, they will be securely held in place by such gum. The perimetral surfaces of the gum rollers may be circumferentially or transversely grooved or milled to assure a suitable application of gum to the blank. A plurality of idlers 76 beneath each gum roll, and similarly adjustably secured to their

shafts, serve by engagement beneath the side flaps of the blank, to press the latter up to said gum rolls.

Disposed in advance of the gum rolls is the secondary or longitudinal folding means herein shown as including side flap folders 78, 78 in spaced relation so as to be adapted to operate upon the protruding side flaps *j, j* of the blank, to fold the latter over upon the rear ply *d* of the blank to close the sides of the envelop and to hold the ends of the pocket *g* securely closed, said folders being capable of adjustment toward and away from each other also to accommodate envelops of different widths. As herein shown, the folders 78 are in the form of elongated strips or plates of metal having lower parts 79 upon which the protruding lateral parts of the folded blank are adapted to rest as the blank is conveyed by the carrier, and provided with volute upper parts 80 adapted by engagement with the side flaps *j* of the blank to turn them over and fold them down upon the opposite lateral parts of the upper ply of the blank and the ends of its pocket *g*. 81, 81 represent elongated guides alined with the folders 78, and adapted to press upon the lateral parts of the blank opposite to the lower supporting portions 79 of the folders inside of and closely adjacent to the junctures between the side flaps *j* and the body portion of the envelop, so as to define the lines of fold produced by the folders. These guides are also capable of adjustment toward and away from each other to accommodate envelops of different widths and by preference they will bear upon the blanks resiliently.

82, 82 represent pressure rolls, a pair of which are arranged in advance of each folder 78 to press the folded side flaps securely upon the rear ply of the envelop and its pocket *g* to seal the sides of the envelop and close the ends of its pocket, these pressure rollers being also capable of adjustment toward or away from each other to accommodate envelops of different widths. These rollers 82 will ordinarily be spring pressed and means will be provided for varying their spring tension and if desired they may be duplicated to assure effective sealing of the side flaps.

Located in advance of the pressure rolls 82 is a releasing or delivery means operable to release the completed envelops from the carrier so that they may be delivered from the machine. As herein shown this releasing or delivery means includes spring pressed rolls 84 adjustably secured upon their shafts at opposite sides of the carrier and adapted to receive between them the protruding portions of the completed envelop at opposite sides of the carrier, so as to assist in retaining the side flaps in place upon the rear ply *d* and upon the ends

of the pocket until the gum shall have sufficiently set. These rolls 84 are driven through appropriate gearing at a speed in excess of that of the carrier and pressure rolls 82, so that when the completed envelop shall have passed the rolls 82 and been seized by said rolls 84, 84, it will be drawn forward with regard to the carrier sufficiently to assure the withdrawal of the gripper 84 from its pocket so that the envelop is released and delivered from the machine.

Appropriate gearing will be provided which I have not deemed it necessary to illustrate, for driving the primary and secondary folding devices, the feeding devices, including the carrier, and the gumming, scoring, and pressure rolls in unison and it will usually be desirable to drive these several parts at similar surface velocities, although this is not absolutely essential. Where they are driven at similar velocities, it may be desirable to provide means whereby the grippers 44 may be differently positioned upon the carrier 43, since it will be evident that when the machine is employed for producing short envelops, the primary folding means will have increased capacity, and a correspondingly increased number of grippers ought to be provided upon the carrier to assure the withdrawal of each folded blank from the chute or passageway 41 before the delivery thereto of the next blank. To permit such adjustment and increase in the number of said grippers, I have shown the grippers held removably upon the carrier by means of bolts passed through apertures suitable formed in the carrier.

If desired, the grippers 44 may also be provided with serrated or roughened surfaces 90, adapted by engagement with the closure flap or member *h*, when the completed envelop is disengaged from the grippers by the operation of the releasing or delivery rolls 84, to withdraw said closure flap or member from the pocket *g* so that when the envelop is delivered it will be in opened condition ready for the reception of the inclosure. This is, however, non-essential to the invention, since the envelops may be packed in their boxes very conveniently when the flap is inserted in the pocket.

In the production of envelops according to my invention the blanks are first given a plurality of transverse folds, whereby absolute closures are produced for the opposite ends of the envelops, one of such closures being of a permanent character, afforded by the central fold *b*, which closes the bottom of the envelop, while the oppositely arranged closure which is located along the mouth of the envelop is not permanent, but is of a temporary or separable character, being formed by the plural folds *e* and *f* whereby the pocket *g* and closure

flap or member *h* interlocked therewith, are simultaneously produced by folding both plies of the blank conjointly. It will be apparent, in this connection, that both of the folds *e* and *f* need not be produced in both plies *c* and *d* of the envelop inasmuch as, when a two-ply pocket is not desired, the first of said folds, *e* may be produced only in the front ply *c* of the folded blank, parallel with and adjacent to the terminal edge of the ply *d*, after which, upon production of the fold *f*, both plies *c* and *d* will be folded, producing a single ply pocket and scored or creased closure flap interlocked therewith.

By operating upon the blanks in this manner very material and important advantages are attained, since the pocket affords a thickened means which may conveniently be engaged by a gripper operable to convey the transversely folded blank past the secondary or side flap folding and sealing means, the interlocking engagement of the closure flap therewith serving not only to prevent said flap from catching in the mechanism of the machine and clogging the operation thereof, but also assuring transverse scoring or creasing of the closure flap in exact conformity with the pocket without the necessity of subjecting the envelop to further operations, whereby a very important advantage is attained, since the independent scoring of said flap in conformity with the pocket would be very difficult to perform in any other manner.

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

1. An envelop machine having folding means adapted for operation upon a primarily folded blank to fold the same longitudinally, means engageable with the primarily folded blank to convey the same past said longitudinal folding means and operable to retain a transverse primarily folded part of said blank in folded condition during travel of the blank past said longitudinal folding means, means operable to retain said primarily folded part of the blank in folded condition during its presentation to said conveying means, and a side registering device in said retaining means and adapted to gage the position of the blank during its presentation to said conveying means.

2. In means for making envelops, a primary folding means including a plurality of folding devices, one of which is operable to fold a blank transversely adjacent to its central part and the other of which includes coacting rolls operable to fold said blank transversely adjacent to its edge portion to produce a flap receiving pocket therein, a secondary folding means including devices operable upon the blank to fold over the opposite side portions thereof lengthwise upon the body of the envelop and the ends

of said flap receiving pocket, sealing means co-acting with the secondary folding means to gum and seal the folded side portions of the blank upon the body of the envelop and said ends of the pocket, and devices for feeding the blank first to the primary folding means and afterward to the secondary folding and sealing means.

3. In means for making envelops, a primary folding means including a plurality of folding devices, one of which is operable to fold a blank transversely adjacent to its central part and the other of which includes coacting rolls operable to fold said blank transversely adjacent to its edge portion to produce a flap receiving pocket therein, a secondary folding means including devices operable upon the blank to fold over the opposite side portions thereof lengthwise upon the body of the envelop and the ends of said flap receiving pocket, sealing means co-acting with the secondary folding means to gum and seal the folded side portions of the blank upon the body of the envelop and said ends of the pocket and feeding means including a gripper adapted to seize the blank when folded transversely by the primary folding means and operable to present the folded blank to the secondary folding and sealing means.

4. In means for making envelops, a primary folding means including a plurality of folding devices, one of which is operable to fold a blank transversely adjacent to its central part and the other of which includes coacting rolls operable to fold said blank transversely adjacent to its edge portion to

produce a flap receiving pocket therein, a secondary folding means including devices operable upon the blank to fold over its opposite side portions lengthwise upon the body of the envelop and the ends of said flap receiving pocket, sealing means co-acting with the secondary folding means to gum and seal the folded side portions of the blank upon the body of the envelop and said ends of the pocket, feeding means including a gripper adapted to seize the blank when folded transversely by the primary folding means and operable to present the folded blank to the secondary folding and sealing means, and means operable to retain the folded edge portion of the blank in relation during the engagement of the gripper therewith.

5. An envelop machine comprising a primary folding means including devices one of which is operable to fold a blank transversely adjacent to its central part and the other of which is operable to fold said blank transversely adjacent to its edge portion to produce a flap receiving pocket therein, sealing means operable lengthwise along the lateral edges of the blank to seal the opposite sides thereof, and feeding means including a traveling carrier with a line of grippers thereon adapted to seize the blank when folded transversely by said folding means and operable to convey the folded blank past the sealing means.

In witness whereof I have hereunto signed my name this 27th day of February, 1917.

FREDERICK J. PARKS.