Dec. 12, 1933. R. A. NELSON 1,939,360

ENVELOPE FOLDING MACHINE

Filed April 28, 1931 3 Sheets-Sheet 1

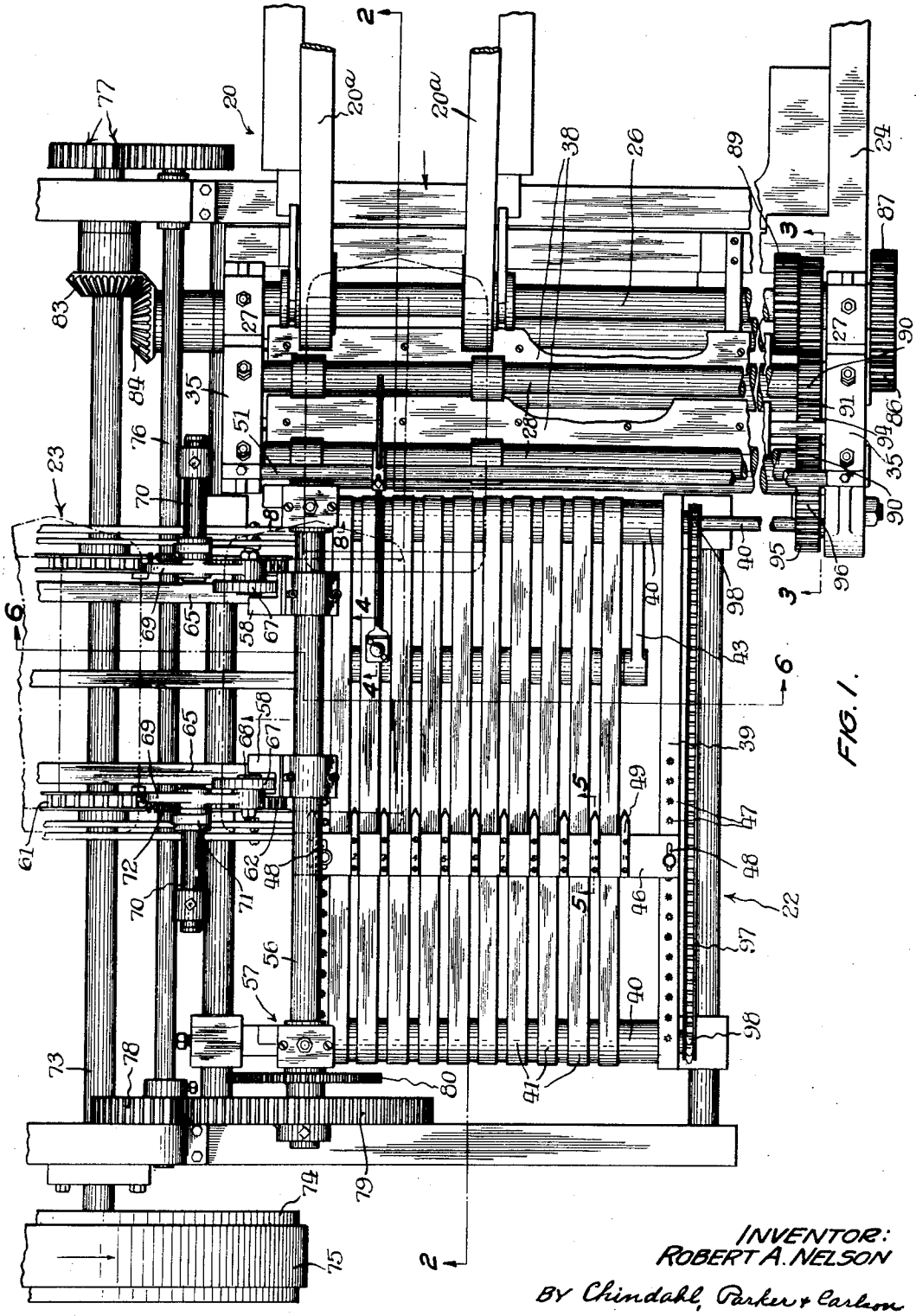


FIG. 1.

INVENTOR:
ROBERT A. NELSON
BY Chindahl, Parker & Carlson
ATTORNEYS.

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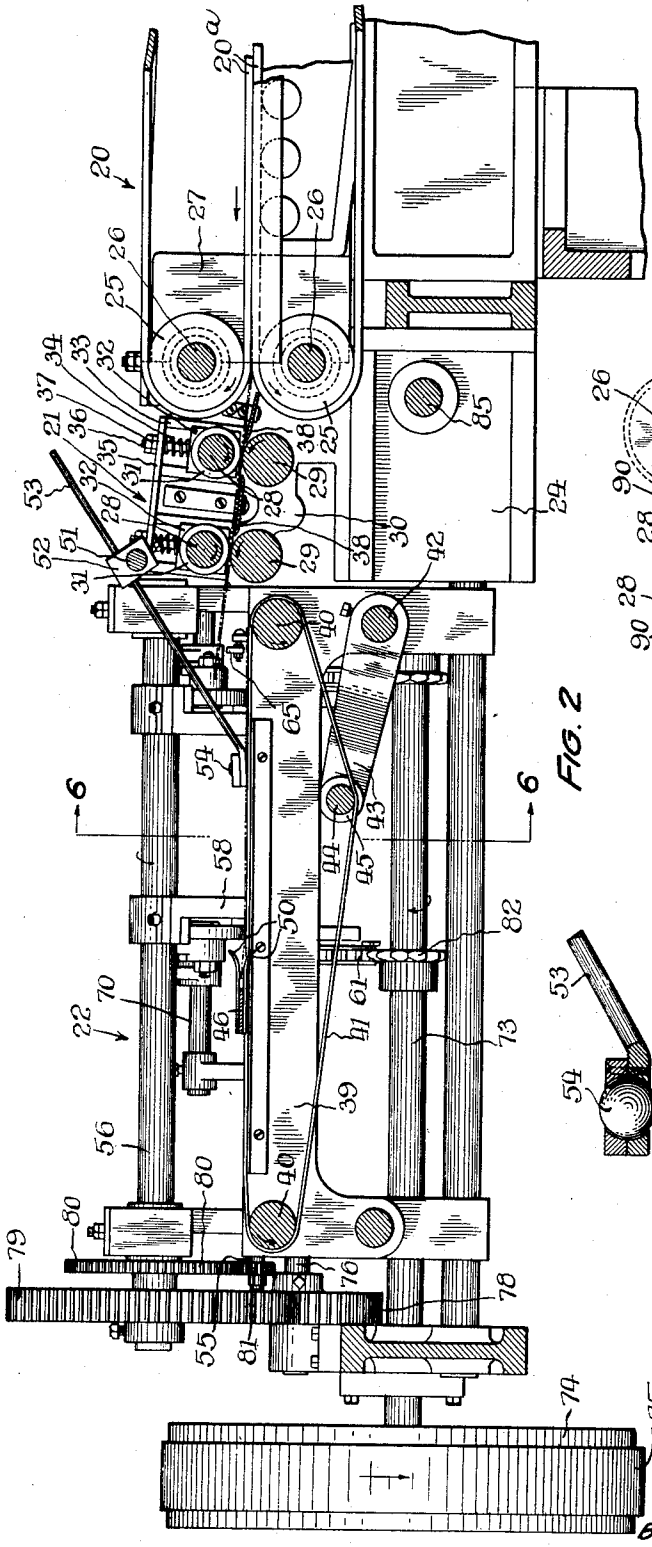


FIG. 2

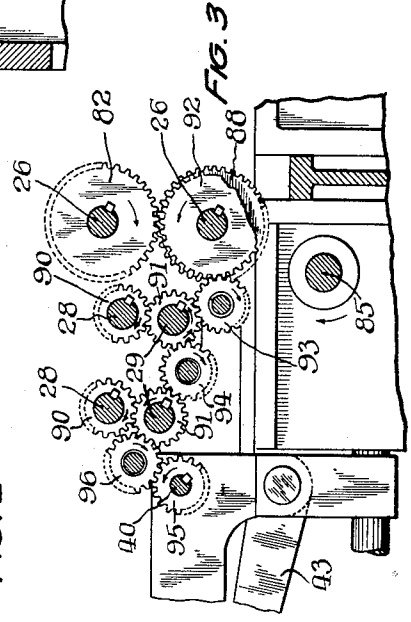


FIG. 3

FIG. 4

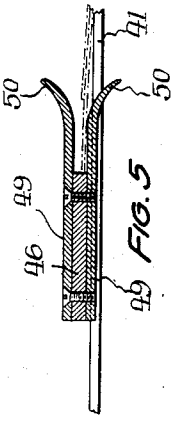


FIG. 5

INVENTOR:
ROBERT A. NELSON
BY Chindahl, Parker & Carlson
ATTORNEYS

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Filed April 28, 1931 3 Sheets-Sheet 3

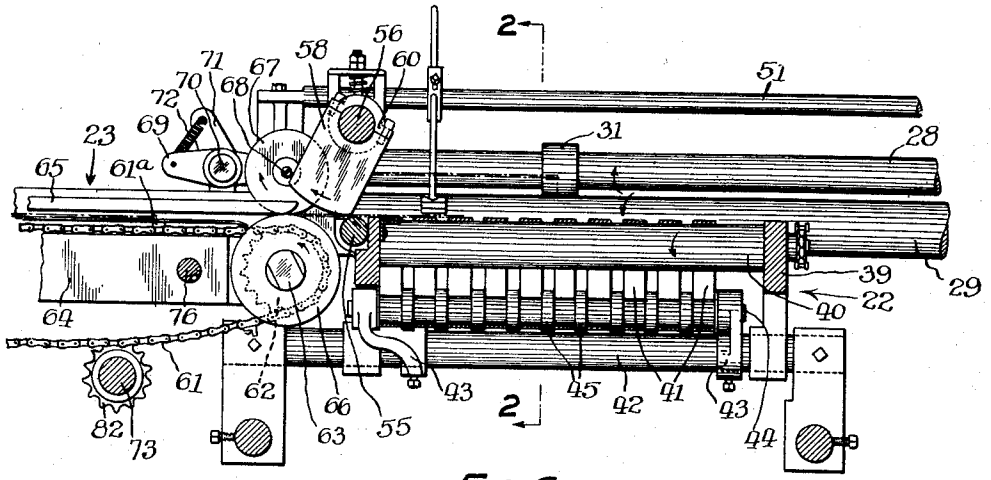


FIG. 6

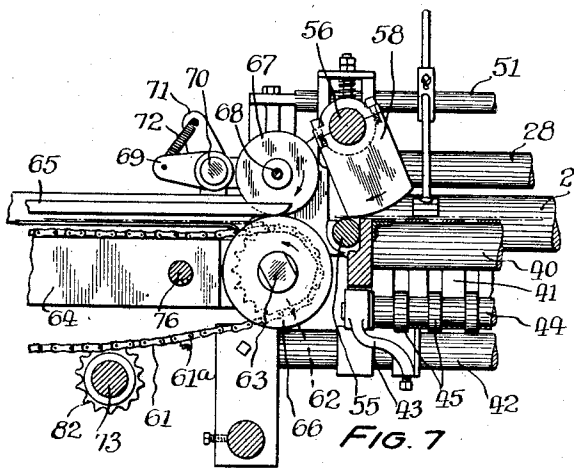


FIG. 7

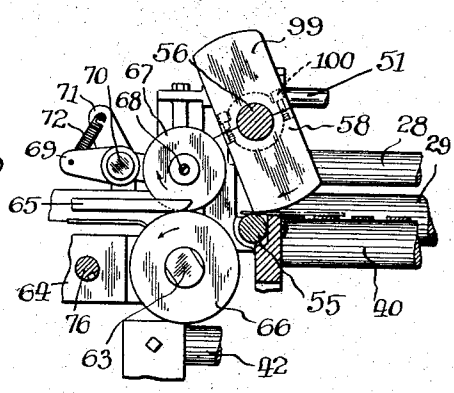


FIG. 9

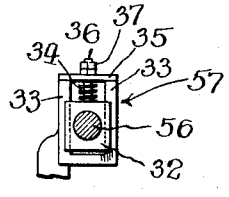


FIG. 8

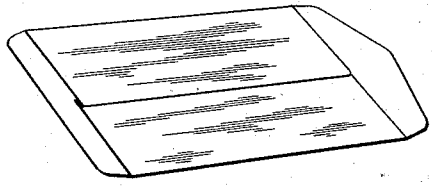


FIG. 10

INVENTOR:
ROBERT A. NELSON

BY Chindahl, Parker & Carlson

ATTORNEYS

Patented Dec. 12, 1933 1,939,360

UNITED STATES PATENT OFFICE

1,939,360

ENVELOPE FOLDING MACHINE

Robert A. Nelson, Cleveland, Ohio, assignor to The Standard Envelope Manufacturing Company, Cleveland, Ohio, a corporation of Ohio

Application April 28, 1931. Serial No. 533,482

6 Claims. (Cl. 271—45)

The invention relates generally to envelope folding machines and more particularly to a machine of this character in which an envelope blank, during its movement through the machine, travels in one direction while passing through one series of operative mechanisms, and then moves in a direction which is angular with respect to its first direction of travel, to pass through a second series of operative mechanisms.

An object of the invention is to provide a new and improved device for effecting the change of direction of travel of the envelope blank through a machine, which device is simple in construction, may be quickly and easily adjusted to accommodate blanks of different sizes, and which increases the efficiency and speed of operation of the machines. This device will hereinafter be termed the "transfer mechanism" since, in effect, it transfers the envelope blank from one series of operative mechanisms to the other.

Another object of the invention resides in the provision of a new and improved means for delivering the envelope blanks to the transfer mechanism.

Another object of the invention is to provide a new and improved delivery mechanism by which envelope blanks are fed to the transfer mechanism, said delivery mechanism embodying a series of positively driven shafts or rolls closely spaced to confine the length of the mechanism to a small space, said rolls being arranged to elevate the envelope blank above the receiving bed of the transfer mechanism for downward discharge thereonto.

A further object is to provide a transfer mechanism in which a plurality of traveling belts form the receiving bed of the mechanism, said belts being closely spaced to form positive conveying means for moving envelope blanks of any size against a guide or position indexing means.

In connection with the foregoing object, another object of the present invention resides in the provision of novel means for adjusting and maintaining the tension of the traveling belts.

Another object is to provide an adjustable guide means of novel character for properly locating or indexing an envelope blank on the transfer mechanism before movement thereof into the second series of operating mechanisms.

Still another object is to provide a new and improved means for moving an envelope blank from the transfer mechanism into the second and angularly disposed series of operating mechanisms, which means is simple in construction, is rapid and efficient in operation and includes easily accessible adjustments, for adapting the machine for blanks of different sizes.

A further object of the invention is to provide an improved arrangement for driving the associated parts, whereby all of said parts may be positively synchronized for most efficient and rapid operation.

Other objects and advantages will become apparent in the following description and from the accompanying drawings, in which:

Figure 1 is a fragmentary plan view of a machine embodying the features of the invention.

Fig. 2 is a vertical section taken substantially along the line 2—2 of Fig. 1.

Fig. 3 shows a detail of the driving connections partially in section as indicated by the line 3—3 of Fig. 1.

Fig. 4 is a sectional view on an enlarged scale taken on the line 4—4 of Fig. 1, of an envelope-blank-engaging device.

Fig. 5 is an enlarged view of the envelope-blank guide means, in transverse section, as indicated by the line 5—5 of Fig. 1.

Fig. 6 is a transverse section through the transfer mechanism taken substantially on the line 6—6 of Fig. 1.

Fig. 7 is a view similar, in part, to Fig. 6 showing a different position of the operative elements.

Fig. 8 is a sectional view of a detail taken on the line 8—8 of Fig. 1.

Fig. 9 is a view somewhat similar to Fig. 7 but showing a modification of the machine.

Fig. 10 shows in perspective one form of a partially completed envelope as it is delivered to the transfer mechanism.

While the invention is susceptible of various modifications and alternative constructions, I have shown in the drawings and will herein describe in detail the preferred embodiment, but it is to be understood that I do not thereby intend to limit the invention to the specific form disclosed, but intend to cover all modifications and alternative constructions falling within the spirit and scope of the invention as expressed in the appended claims.

Inasmuch as the present invention does not pertain to the operative mechanisms by which the successive steps of an envelope folding process are accomplished, such mechanisms are not herein illustrated. However, in order that the environment of the invention may be clearly understood, a brief resume of a complete machine, according to accepted practice in the art, is given. Envelope folding machines, of the character to which the invention relates, generally embody a

suitable type of feeding mechanism by which a succession of properly shaped envelope blanks are fed to a conveying means such as that illustrated generally at 20 (Figs. 1 and 2). The conveying means carries each blank through successive mechanisms where portions of the blank are gummed, folded and pressed together partially to form an envelope. Such a partially folded envelope blank may be seen in Fig. 10.

These blanks pass to what may be termed a delivery mechanism, indicated generally at 21 (Fig. 2) which delivers each blank to the transfer mechanism, generally designated 22 (Figs. 1, 2 and 6). The transfer mechanism is arranged to change the direction of travel of the envelope blank and to initiate movement thereof in a transverse direction generally at right angles for engagement by a second conveying means 23 (Figs. 1 and 6), which in turn carries the blank through a second series of successive mechanisms where other portions of the blank are gummed and folded to complete the envelope.

Referring more particularly to the drawings, the delivery mechanism 21 is shown as being mounted near one end of that portion of the machine bed, designated 24, upon which the first of the series of operating mechanisms are disposed. The delivery mechanism is positioned adjacent to and receives envelope blanks from the discharge end of the conveyer means 20. The conveyer means as herein illustrated comprises spaced pairs of endless belts 20^a arranged so that in each pair, the belts abut throughout the length of one run thereof whereby to carry a blank disposed therebetween. At the discharge end of the conveyer each pair of belts passes about a pair of oppositely rotating sheaves 25 rigidly secured on shafts 26 which are journalled, in substantially vertical alinement, in opposed upright brackets 27 on the machine bed.

The delivery mechanism comprises a plurality of pairs of upper and lower rolls 28 and 29 respectively, two of such pairs being shown in the present instance. In each pair the rolls 28 and 29 are arranged in substantially vertical alinement and the lower rolls 29 are rotatably journalled in opposed frame members 30 which preferably are, but need not be, formed integrally with the brackets 27. Each of the upper rolls 28 carries a pair of axially spaced and adjustable sleeves 31 arranged to run in contact with the lower rolls 29. Generally the sleeves are adjusted to engage opposite side edges of a passing blank, whereby the sleeves function to feed the blank through the device and also to crease the folds at the sides of the blank.

The upper rolls 28 may be rotatably supported by the frame member 30 but it is preferred that said rolls be adjustably mounted for movement toward and away from the lower rolls 29, and further that the upper rolls be yieldingly urged toward the lower rolls. To this end, each of the upper rolls 28 is journalled at each end in a block 32 arranged to slide between substantially vertically disposed guides 33 rigid with the frame member 30. A spring 34 interposed between the block and a stationary part 35 yieldingly urges the block and roll 28 toward the lower roll 29. Adjustment of the position of the upper roll is effected by a suitable means, such as a bolt 36, carried by the block 32 which extends through the spring 34 and is engaged by nuts 37 bearing against the stationary part 35 in opposition to the tension of the spring 34. This arrangement of parts may be clearly seen in Fig. 8 although a different shaft is shown as being supported thereby. For convenience and clarity similar reference numerals have been used.

The pairs of rolls 28 and 29 are adapted to be driven in opposite directions and as may be seen clearly in Fig. 2, are so arranged that an envelope blank coming from the conveyer means 20 passes successively between the pairs of rolls. Preferably, flat plates 38 are interposed between the lower rolls 29, as well as between the lower roll of the first pair and in the lower sheaves 25 of the conveying means 20, in order to provide a substantially continuous supporting surface and guiding means for the envelope blank as it passes from the conveyer means 20 through the delivery mechanism. It is preferred that the successive pairs of rolls be arranged, as shown, to elevate the envelope blank somewhat above the normal operative plane of the machine so that upon discharge of the blank from the delivery mechanism the blank will descend or fall onto the bed of the transfer mechanism.

The transfer mechanism embodies a combination of elements for receiving a blank from the delivery mechanism, guidingly adjusting said blank, and feeding said blank, in a direction which is transverse to the direction of its previous movement, to the second conveying means 23. To this end, a frame 39 (Figs. 1, 2 and 6), having an open and substantially rectangularly shaped top, is disposed adjacent the end of the machine bed 24 with the open top lying substantially in the plane of the first conveying means 20. Near opposite ends, the frame 39 has a pair of shafts 40 journalled therein, which shafts support a plurality of endless belts 41. The belts 41 are separated from each other only a relatively short distance in order to provide, in effect, a substantially continuous traveling bed for receiving envelope blanks as they are discharged from the delivery mechanism.

Means are provided for maintaining the spaced relationship of the belts, which means in the present instance also serves to maintain the belts under a proper operating tension. Thus, referring to Figs. 1, 2 and 6, a transverse rod 42 underlying and paralleling one of the shafts 40 supports a pair of rotatably adjustable arms 43. A rod 44 is supported by the outer ends of the arms 43 to extend transversely of the belts 41 between the upper and lower runs thereof. The rod 44 carries, at longitudinally spaced intervals, a plurality of relatively narrow sleeves 45 (Fig. 6) each arranged to separate one belt from an adjacent belt and thereby prevent travel of the belts axially of the shafts 40. The shafts 40 are so driven that an envelope blank discharged into the belts by the delivery mechanism will be carried away from said mechanism.

An adjustable guide means is positioned to be engaged by an envelope blank during the movement thereof with the belts 41. This means is for the purpose of indexing or locating the position of the blank relative to the second series of operating mechanisms prior to the movement of the blank into said mechanisms. A preferred form of such means is shown in Figs. 1, 2 and 5. The side members of the frame 39 carry a bar 46 extending transversely of and immediately above the upper runs of the belts 41. The bar 46 is secured to the side members through any one of a longitudinally extending series of apertues 47 (Fig. 1) in said members adjustably to secure the the bar in place, and a finer adjustment may be obtained in any suitable manner, as by means of

a bolt and elongated slot connection 48. At longitudinally spaced intervals along the guide bar 46 are a plurality of guide flanges 49 which are secured to the upper and lower faces of the bar in vertically alined pairs. These guide fingers extend laterally of the side of the guide bar toward the delivery mechanism, and the extending ends of each pair are turned outwardly from each other, as at 50 (Fig. 5).

The arrangement and disposition of parts is such that a pair of the guide fingers 49 is positioned on each side of each of the belts 41 with the end of the lower one of the guide fingers extending downwardly between the belts. As a result of this construction, an envelope blank moving on the belts 41, away from the delivery mechanism, will move between the upper and lower guide fingers 49 into engagement with the guide bar 46. The construction of the guide fingers positively prevents the envelope blank from moving to any other than its proper position in close abutment against the side of the guide bar 46. This desired result is further enhanced by the plurality of closely spaced belts 41 which, since they engage the envelope blank throughout a large portion of its surface area, eliminate any tendency of the blank to twist or turn.

Inasmuch as the blank travels at a considerable speed through the machine, the contact thereof with the guide bar 46 may have a tendency to cause the blanks to rebound. This is overcome in the present embodiment by providing what may be termed a "drag" member arranged to engage the upper surface of the envelope blank and hold it closely against the belts 41. One form of such means is shown in Figs. 1, 2 and 4 as comprising a transversely extending bar 51 secured to stationary parts of the machine, such as the frame members 30, which bar supports, by means of an intermediate and axially adjustable block 52, a transversely extending rod 53. The rod is mounted for adjustment along its length and one end thereof is arranged to overlie an intermediate portion of the transfer bed defined by the belts 41. This overlying end of the rod 53 (see Fig. 4) carries a pair of blocks recessed to provide a socket for a ball 54 which is arranged to project from the socket into substantially frictionless contact with an envelope blank. The weight of this assembly upon the upper surface of an envelope blank holds the blank firmly against the belts 41 and prevents rebounding thereof when the blank strikes the guide bar 46.

Obviously more than one assembly of this character may be provided if desired.

The second conveying means 23, as may be seen in Figs. 1 and 6, extends from one side of the frame 39 (herein shown as the left-hand side in Fig. 6) of the transfer mechanism in a direction which is substantially at right angles to the direction of travel of an envelope as it moves onto the transfer mechanism. In the present embodiment, means are provided for engaging an envelope blank which is held by the guide bar 45 and for withdrawing said blank from such position and feeding it to the second conveyer means. In its preferred form, this means comprises a shaft 55 journalled for rotation in a stationary part of the machine and extending adjacent one side of and substantially parallel to the upper run of the belts 41. The axis of the shaft lies below the horizontal plane of the upper run of the belts, which plane extends substantially tangentially of the shaft. Immediately above the shaft 55 and in spaced relation thereto is a second shaft 56 which is journalled in resiliently pressed block assemblies 57 (Fig. 8) similar to those in which the shafts 28 of the delivery mechanism 21 are mounted.

Intermediate its ends the shaft 56 carries a pair of axially spaced and adjustable arms 58 which extend radially from the shaft. The outer ends of the arms 58 are arcuate with the axis of the shaft as a center and with the radius thereof substantially equal to the distance between the axis of the shaft 56 and the surface of the underlying shaft 55. Preferably the arms 58 are mounted on the shaft 56 by means, such as the split-hub arrangement 60, which permits of quick adjustment or removal of the arms. The arrangement of the shafts 55 and 56, relative to the delivery mechanism, is such that one side of an envelope blank fed to the transfer mechanism and subsequently indexed thereby will be positioned between the shafts 55 and 56 and in overlying relationship to the lower shaft 55. Consequently, when the shaft 56 is rotated, the arm 58 engages and binds this overlying edge of the envelope blank between the arcuate surface of the arm and the underlying surface of the shaft 55 to initiate a feeding movement of the envelope blank laterally from the bed of the transfer mechanism. By mounting the upper shaft 56 in resiliently pressed bearings, it will be evident that the upper shaft may yield slightly to accommodate this feeding mechanism for variations in the thickness of envelope blanks.

The second conveying means 23 may be of any suitable character, one preferred form being shown as comprising a pair of transversely spaced endless chains 61 each having a series of spaced blank-engaging fingers 61a thereon. Fingers on one chain are alined with fingers on the other chain to provide transverse pairs for engagement with spaced portions of a blank. Generally the chains 61 (only one end of which may be seen) are supported by sprockets 62 journaled on stub-shafts 63 which, in turn, are carried by frame members 64. The frame members are capable of relative adjustment to vary the distance therebetween according to the dimensions of the blank to be conveyed. Guides 65, above and parallel to the chains 61, retain the blanks on the chains.

In order to insure delivery of the blanks to the second conveying means 23, means is interposed therebetween which is arranged to receive a blank from between the shaft 55 and arms 58 and feed said blank into a position where it may be engaged by the fingers 61a on the chains. With particular reference to Fig. 6, the preferred structure comprises spaced lower feed rolls 66 and spaced upper feed rolls 67 disposed on opposite sides of the plane of movement of the blanks and arranged to run in contact with each other. The lower rolls are coaxial with the feed chain sprockets 62 and are fixed for rotation therewith on the stub-shafts 63. The upper feed rolls 67 are preferably supported in such manner that they are yieldingly urged into running contact with the lower feed rolls 66. Thus (see Figs. 1 and 6), the upper feed rolls are journaled on stub-shafts 68 each of which is carried at one end of an arm 69. The arms 69 are pivotally supported intermediate their ends, as at 70, by an upstanding bracket 71 which is secured to the frame members 64. Resilient means, such as springs 72 interposed between the free ends of the arms 69 and the brackets 71, exert a ten-

sion which yieldingly holds the upper rolls 67 against the lower rolls 66.

In adjusting this particular part of the machine for operation upon a blank of any size, the rotatable blank-engaging arms 58 are adjusted axially of the shaft 56 properly to engage a blank presented thereto upon the bed of the transfer mechanism. The frame members 64 are adjusted to such position that the feed chains 61 and the upper and lower feed rolls 66, 67 are disposed substantially adjacent to the path of rotation of the arms 58. In this embodiment, the arrangement of parts locates each pair of upper and lower feed rolls on the outer sides of the paths of rotation of the arms 58. It will be apparent, therefore, that when the arms 58 engage a blank between the arcuate face on said arms and the underlying shaft 55 to move the blank laterally, such movement carries the blank between the upper and lower feed rolls which, in turn, deliver the blank onto the feed chains 61 for engagement by the fingers 61a.

Means for driving the various mechanisms is provided, which means is adapted to facilitate the synchronizing of the various mechanisms so that each part may perform its function in timed relation with the operations of each of the other mechanisms. With particular reference to Fig. 1, 73 designates a main driving shaft which is preferably journaled for rotation on an axis extending transversely of the frame on which the second series of operating mechanisms is mounted. The shaft 73 carries a pulley 74 or the like at one end thereof, about which a belt 75 passes. The belt, in turn, is driven by a suitable prime mover (not shown). Paralleling the shaft 73 is a counter-shaft 76 which is driven from the shaft 73 by a pair of gears 77. The counter-shaft 76 carries a gear 78 (Fig. 1) arranged to mesh with a gear 79 secured to the shaft 56. The shaft 56 (which, it will be remembered, is the shaft on which the rotating arms 58 are mounted) carries a second gear 80 which meshes with the gear 81 carried by the shaft 55. The main driving shaft 73 carries a pair of relatively rotatable idling sprockets 82 (Fig. 6) arranged to underlie and support the lower runs of the feed chains 61, whereby to prevent said chains from dragging on the shaft. The drive for the chains 61 is, in this embodiment, not shown but it will be understood that any well-known type of drive may be employed.

The first conveyer means 20 and the delivery mechanism are driven from the main drive shaft 73, these driving connections being best seen in Figs. 1, 2 and 3. The main drive shaft 73 carries a beveled gear 83 arranged to mesh with a beveled gear 84 mounted on a counter-shaft 85 (Fig. 3) which is journaled for rotation on an axis substantially underlying and paralleling the shafts 26 of the first conveyer means 20. The counter-shaft 85 has a gear 86 (Fig. 1) which engages a gear 87 carried by the lower one of the shafts 26. This lower shaft 26 also carries a gear 88 arranged to engage a gear 89 on the upper one of the shafts 26. Each pair of rolls 28, 29 of the delivery mechanism carries meshed gears 90, 91 respectively (Fig. 3), whereby the pairs of rolls are driven together in opposite directions. The rolls 28, 29 for the delivery mechanism are driven from one of the conveyer shafts 26 and. in this instance, shaft 26 carries a gear 92 meshing with an intermediate gear 93 which, in turn, engages one of the gears 91. An intermediate gear 94 drivingly connects the two gears 91. By this arrangement, it will be seen that each roll 28 or 29 moves in the same direction as the corresponding sheaves 25 of the conveyer means.

The transfer mechanism is driven from the delivery mechanism and, for this purpose, the transfer mechanism shaft 40, which is adjacent to the delivery mechanism, has a gear 95 thereon arranged to be driven from the adjacent one of the gears 91 through an intermediate gear 96. Preferably, the shafts 40 are drivingly connected together by such means as an endless chain 97 which passes about sprockets 98 on the shafts 40. It will be evident from the foregoing that the driving means, which has been provided, is in the nature of an interlock unit in that all of the mechanisms thereof are drivingly related to the other mechanisms. Consequently, when the driving connections have once been established, it will not be necessary to change them when the machine is being adjusted to operate upon blanks of a different size.

The operation of the machine is as follows, it being presumed that all adjustments have been made to adapt the machine for operation upon a blank of a particular size. The blanks, after passing in succession through the first series of folding and gumming mechanisms, are carried to the delivery mechanism on the first conveyer means 20. Immediately after the blank passes between the conveyer sheaves 25, it is engaged by a guide plate 38 for directing the blank between the first pair of delivery rolls 28, 29 which, in turn, feed the blank between the succeeding delivery rolls. During the passage through the delivery mechanism, the blank is elevated and upon discharge therefrom, the blank falls upon the traveling belts 41 of the transfer mechanism. This movement of the blank is guided to some extent by the rod 53.

The moving belts 41 carry the blank away from the delivery mechanism until further movement thereof is prevented by abutment of the blank against the guide 46. Inasmuch as substantially the entire area of the blank is engaged by the traveling belts, the blank will obviously be almost instantly adjusted into proper alinement with the second conveyer means. The rotative movement of the arms 58 is so synchronized that, after a blank engages the guide 46, the arms rotate into engagement with the edge of the blank to move the blank transversely of its former direction of travel into engagement with the feed rolls 66, 67 which, in turn, deliver the blank to the feed chains 61. In view of the fact that the plurality of traveling belts 41 instantly and accurately adjust the position of the blank upon engagement thereof with the bar 46, the arms 58 may be so synchronized as to move into engagement with a blank so positioned immediately after the blank comes to rest against the bar. Hence, the space of time during which the blank is idle (which moment is, of course, wasted), is almost eliminated, which permits the blanks to be delivered to the transfer mechanism in substantially abutting end to end relation. Obviously, when blanks are delivered thus rapidly, one blank will move into overlying relation to the bed of the transfer table before the previously delivered blank has been completely withdrawn therefrom. It is necessary, therefore, to arrange and synchronize the parts so that an incoming blank does not strike the adjacent one of the rotating arms 58.

In some instances, the leading portion of an incoming blank may come into contact with

the trailing portion of the preceding blank as it moves laterally from the transfer mechanism, but this engagement will not, of course, produce a lateral displacement of the incoming blank inasmuch as the two mechanisms are so close together that the last pair of rolls in the delivery mechanism will not release the incoming blank until the major portion of the preceding blank has been moved from the transfer bed. The positive nature of the engagement of the blank by the last pair of delivery rolls insures this result. Even after the delivery mechanism releases the incoming blank, the major portion thereof will be engaged by the moving belts 41, which exert a much greater force on the blank than does any engagement thereof with the preceding blank. It will be evident, therefore, that the present mechanism is adapted to handle a succession of blanks delivered thereto in substantially end to end relation without waste or loss of time, whereby the capacity of the machine is materially increased.

Another advantage which accrues from the fact that the mechanisms are capable of handling blanks at a high rate of speed, is that the capacity of the machine may be substantially doubled when envelopes of small size are to be produced. Thus, referring to Fig. 9, a second rotating arm 99 may be mounted on the shaft 56 preferably in diametrically opposed relation to the arm 58. This addition may be easily made by forming the second arm 99 substantially as the counterpart of the arm 58. The arms 99 and 58 may then be secured together as a unit by such means as bolts 100. In this manner, the capacity of the means, by which envelope blanks are withdrawn from the bed of the transfer mechanism, is doubled, since two blanks are withdrawn upon each revolution of the shaft 56. This simple adjustment, coupled with an adjustment of the feeding means for increasing the rapidity with which envelope blanks are delivered to the first conveyer means 20, permits the capacity of the machine to be materially increased without requiring any further alteration of the rest of the machine other than the usual incidental adjustments required when the character of any blank is changed.

It will be apparent from the foregoing that a machine, embodying novel improvements and numerous advantages, has been produced. The numerous closely spaced belts, forming the bed of the transfer mechanism, produce a positive, rapid and accurate feed of an envelope blank into an adjusted position relative to the second conveyer means. After these belts have once been arranged to operate properly, no further adjustment thereof is necessary regardless of the character of the blank being folded. This advantage, as far as is known, has not heretofore been obtained. The relationship of the guide fingers to the belts further amplifies the efficiency with which the position of the blanks is adjusted. The delivery mechanism occupies a small space with respect to the rest of the machine and is adapted to deliver blanks efficiently and positively to the transfer mechanism. The blanks are withdrawn from the transfer bed as soon as they have moved into adjusted position and this without loss of time. Moreover, the blanks are positively delivered to the second conveying means. Further, all of the mechanisms have interrelated driving connections which permit the operation of one part to be permanently synchronized with respect to the operation of any other part.

I claim as my invention:

1. In a machine of the character described, the combination of a conveyer means, a transfer mechanism, and means interposed therebetween for delivering an envelope blank from said conveyer means to said transfer mechanism comprising a pair of rolls arranged to receive therebetween a blank coming from said conveyer means, a second pair of rolls arranged to receive a blank coming from said first pair of rolls and for delivering said blank to the transfer mechanism, blank-engaging collars on one of the rolls of each pair, and means for yieldingly urging each pair of rolls together.

2. In a machine of the character described, the combination of a conveyer means, a transfer mechanism, and means interposed therebetween, for delivering an envelope blank from said conveyer means to said transfer mechanism comprising a pair of rolls arranged to receive therebetween a blank coming from said conveyer means, a second pair of rolls aranged to receive a blank coming from said first pair of rolls and for delivering said blank to the transfer mechanism, and guide plates interposed between said first pair of rolls and said conveyer means and between said two pairs of rolls.

3. In an envelope forming machine, the combination of a first conveyer and drivingly connected shafts therefor, a transfer mechanism having a plurality of endless belts and shafts for supporting said belts, driving connections between said shafts, a series of pairs of opposed delivery rolls interposed between said conveyer and said transfer mechanism, driving connections between the rolls in each pair and between corresponding rolls of adjacent pairs, driving connections between one roll of one of said pairs and one of the shafts of said transfer mechanism, a second conveyer extending from one side of said transfer mechanism at an angle with respect to said first mentioned conveyer, a pair of spaced and vertically alined shafts extending along one side of said transfer mechanism intermediate said mechanism and said second conveyer, driving connections between said shafts, arms on the upper one of said shafts rotatable into engagement with the underlying shaft to engage a blank disposed therebetween, a main driving shaft, and means for drivingly connecting said mechanisms to said main driving shaft including a countershaft drivingly connected to said main shaft, driving connections between said counter-shaft and one of said vertically alined shafts, a second countershaft drivingly connected to said main driving shaft, and driving connections interposed between said second counter-shaft and one of said first conveyer shafts.

4. In a transfer mechanism for an envelope folding machine or the like having a frame, spaced shafts journaled in said frame, a series of closely spaced endless belts extending between said shafts, and means for limiting the movement of a blank with said belts comprising a flat plate traversing the upper run of the belts and mounted on said frame for adjustment longitudinally of said belts, and pairs of guide fingers secured to said plate, each pair being in registry with a gap between adjacent belts, one finger of each pair being secured to the upper surface and the other finger to the lower surface of the plate.

5. In combination, an envelope machine having a horizontally disposed conveyer, a horizontally

disposed bed located substantially in the plane of said conveyer and to which blanks are delivered from said conveyer, and a delivery mechanism interposed between said conveyer and said bed comprising a series of pairs of vertically alined rolls arranged to receive a blank coming from the conveyer between the rolls of each pair and to deliver said rolls onto said bed, each successive pair of rolls being disposed at increased distances above the plane of the conveyer and bed whereby a blank ejected from the delivery mechanism falls downwardly upon said bed.

6. In combination, an envelope machine having a first conveyer, a second conveyer, and a transfer mechanism for delivering a blank from said first conveyer to said second conveyer, means for withdrawing a blank from said transfer mechanism and feeding said blank to said second conveyer, and a delivery mechanism interposed between the first conveyer and the transfer mechanism comprising a series of pairs of rolls, and a driving means synchronously connecting said means for withdrawing a blank from the transfer mechanism, the first conveyer, and the last pair of delivery rolls in said series so that a blank is not released by the last pair of delivery rolls until the major portion of a preceding blank has been withdrawn from the transfer mechanism.

ROBERT A. NELSON.