H. D. TAYLOR.

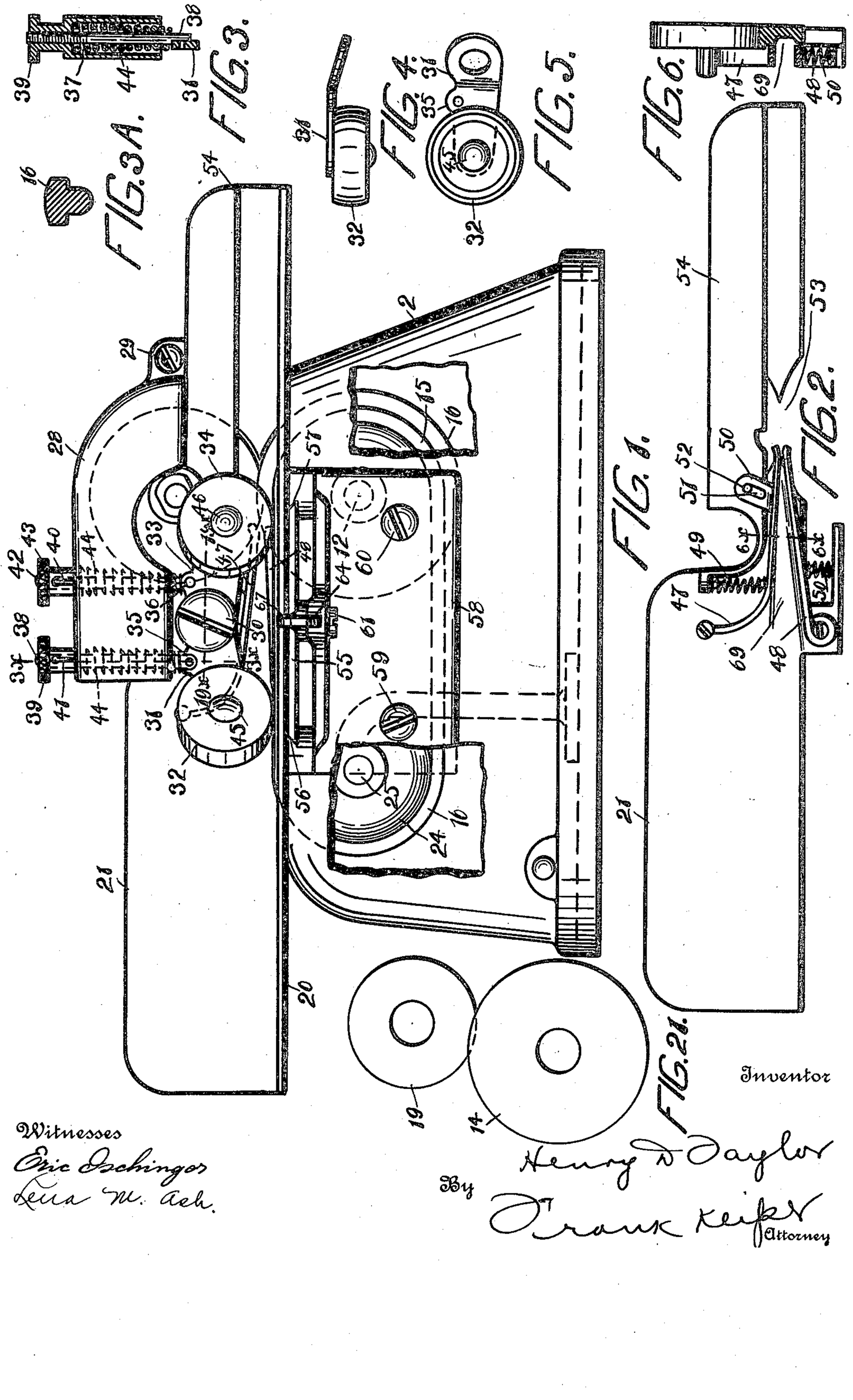
ENVELOP OPENER.

APPLICATION FILED DEC. 5, 1912.

1,137,726.

Patented Apr. 27, 1915.

4 SHEETS—SHEET 1.



Witnesses
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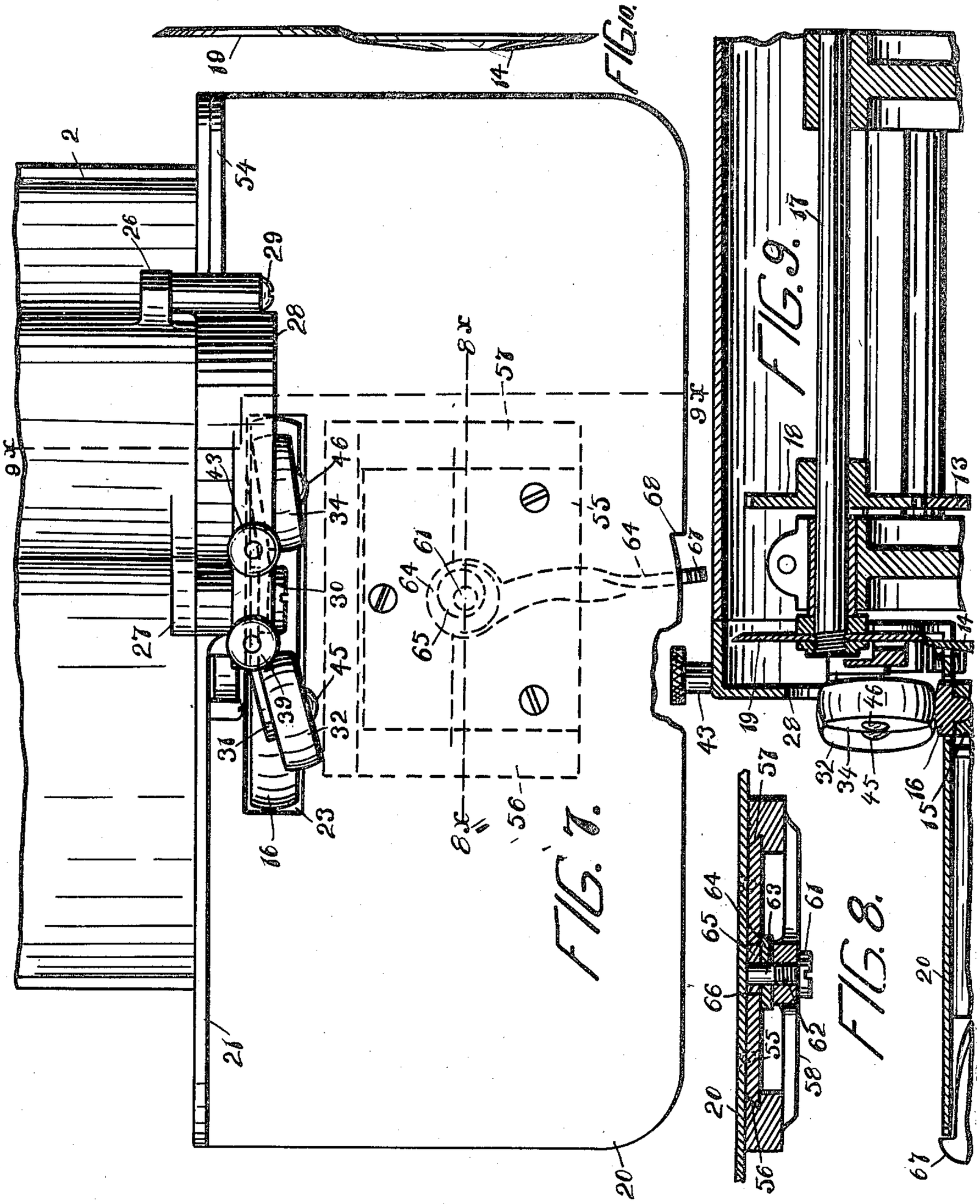
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4 SHEETS—SHEET 2.



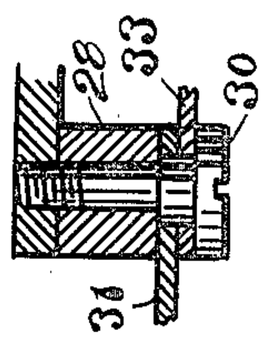


FIG. 10.

Witnesses

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4 SHEETS—SHEET 3.

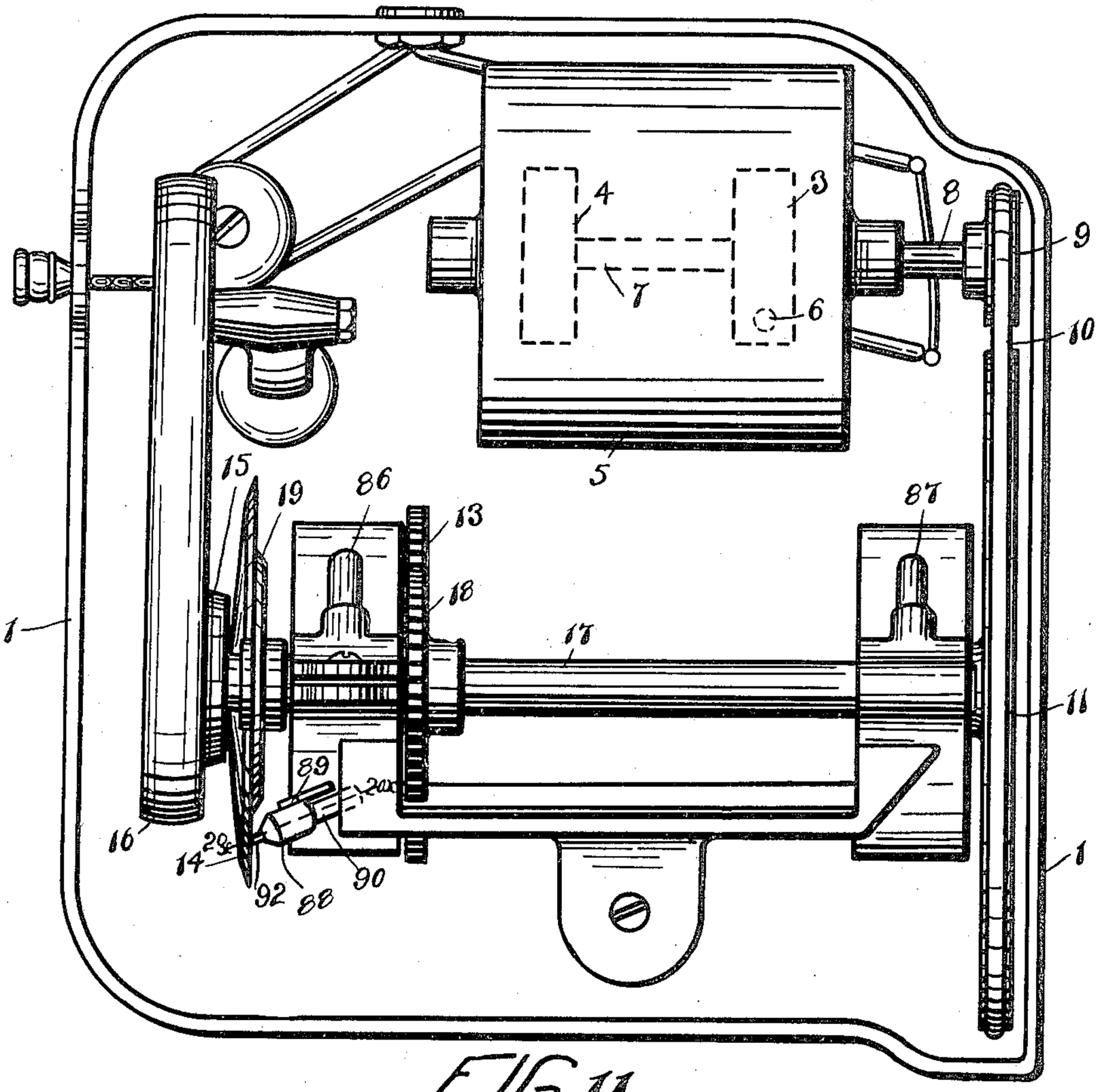


FIG. 11.



FIG. 20.

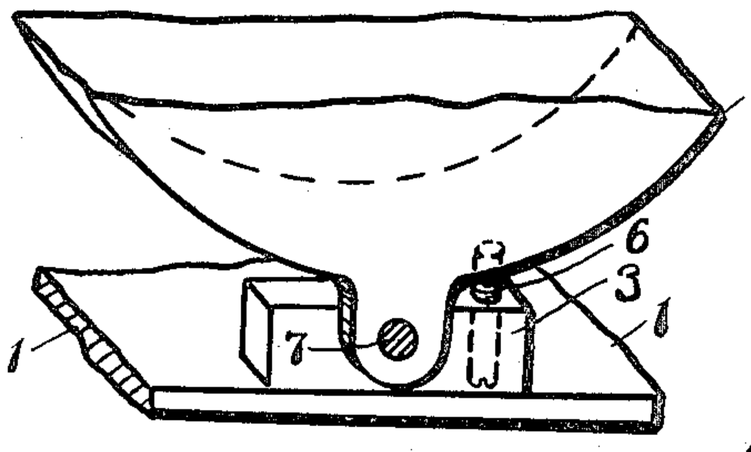


FIG. 12.

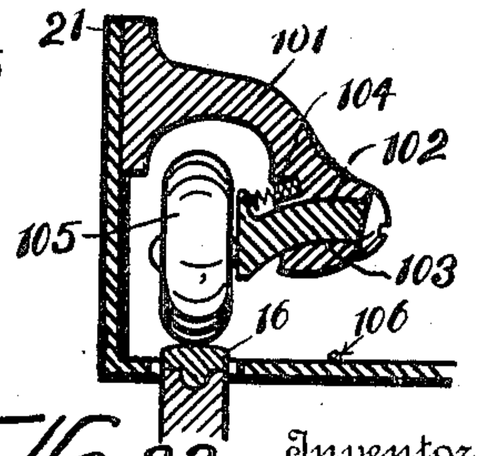


FIG. 22.

Witnesses

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ENVELOP OPENER.

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1,137,726.

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4 SHEETS—SHEET 4.

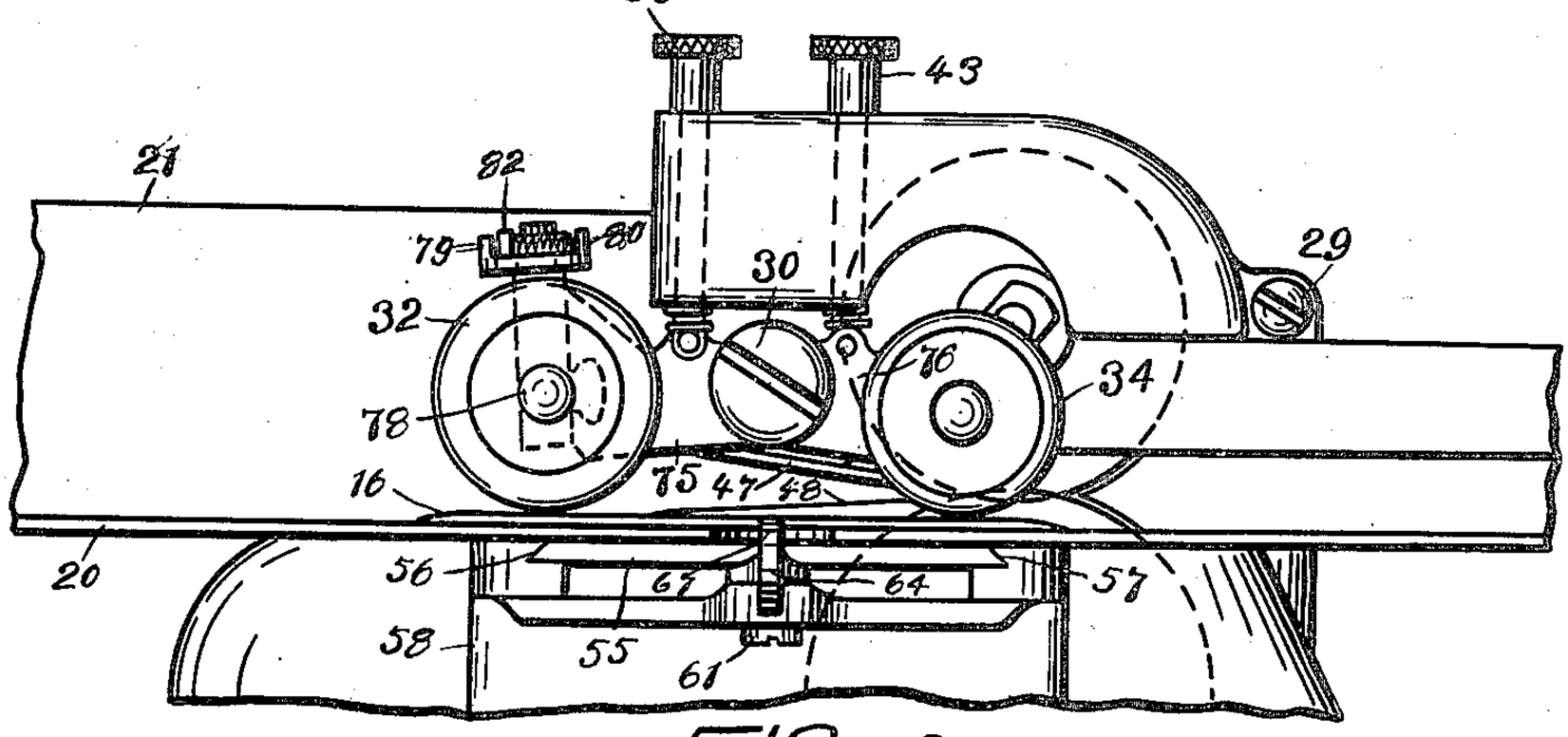


FIG. 13.

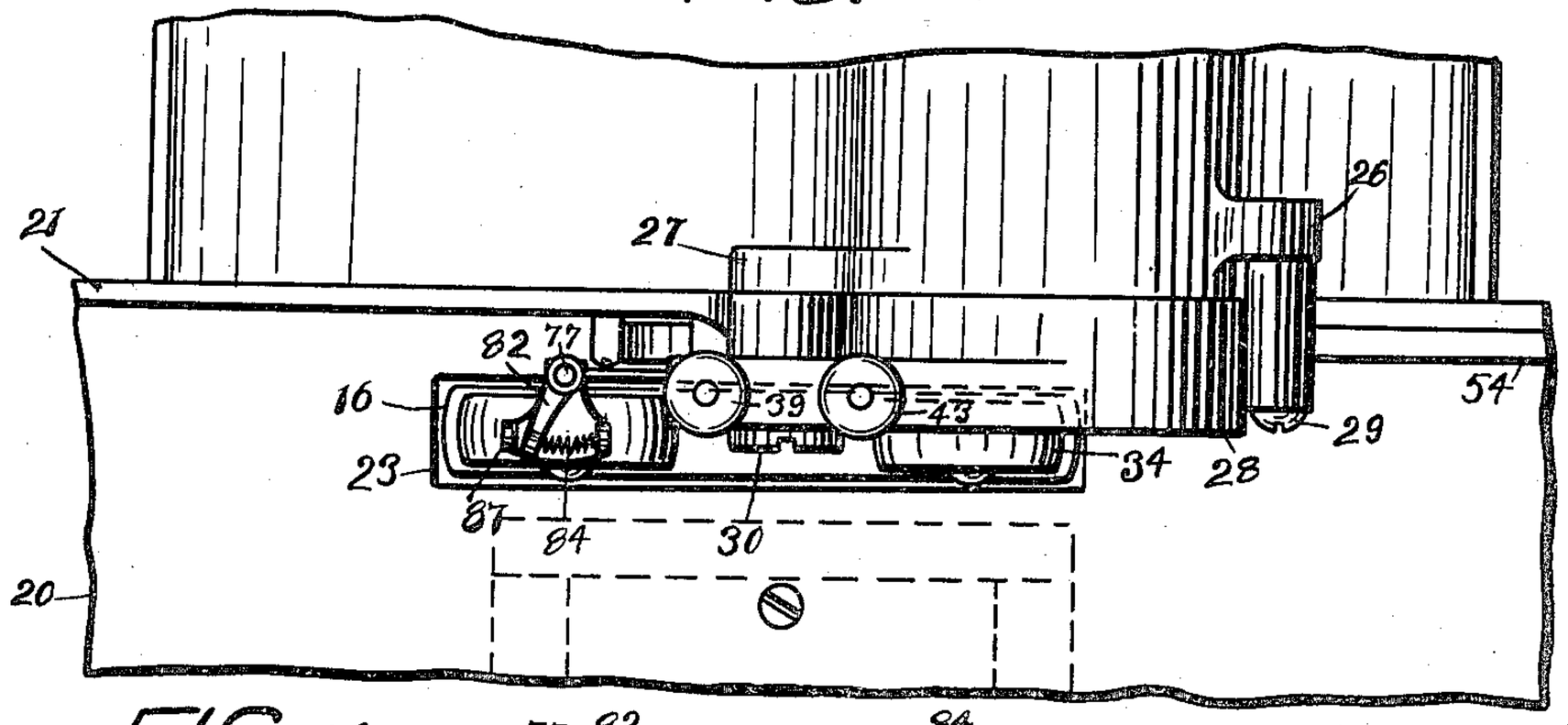


FIG. 14.

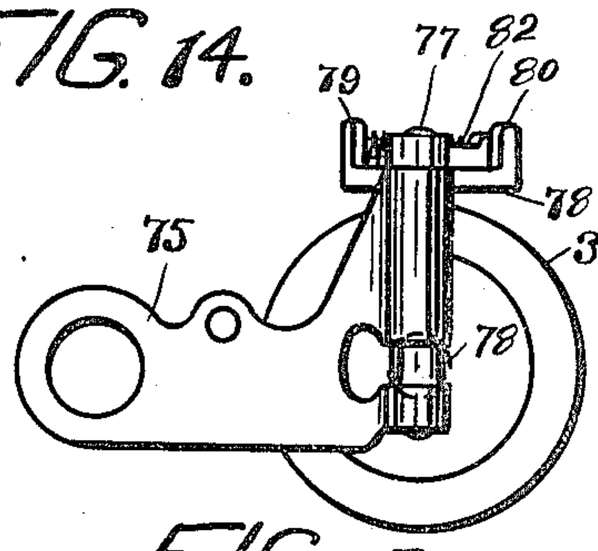


FIG. 15.

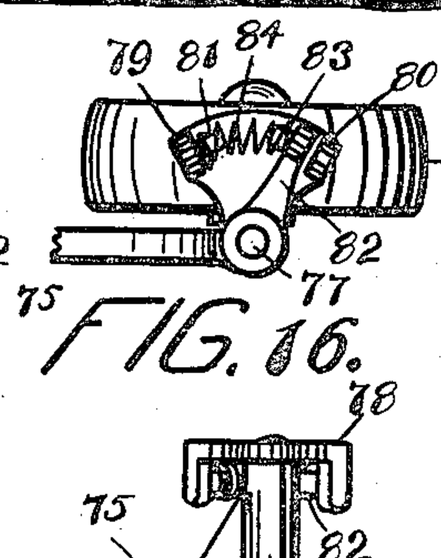


FIG. 16.

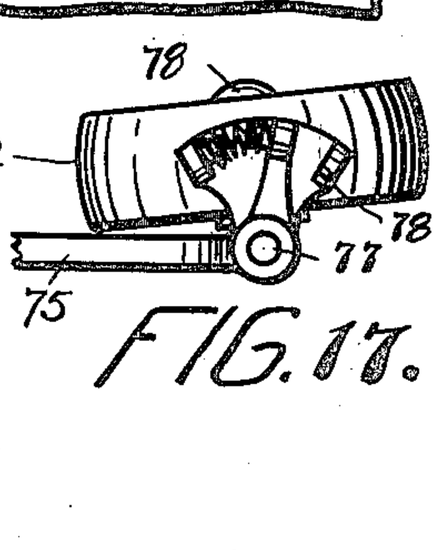


FIG. 17.

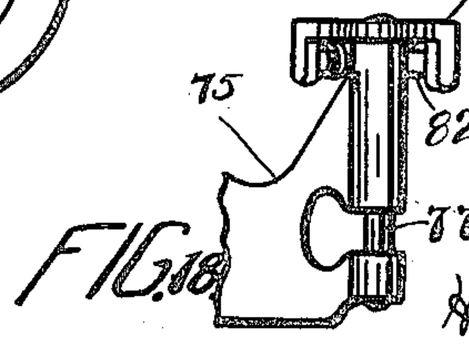


FIG. 18.

Witnesses

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UNITED STATES PATENT OFFICE.

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ENVELOP-OPENER.

1,137,726. Specification of Letters Patent. Patented Apr. 27, 1915.

Application filed December 5, 1912. Serial No. 735,170.

To all whom it may concern:

Be it known that I, HENRY D. TAYLOR, a citizen of the United States, residing at Rochester, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Envelop-Openers, of which the following is a specification.

The present invention relates to machines for opening envelops and more particularly to that type in which a feeding mechanism is employed for feeding envelops along a guide to a cutting mechanism, an object of this invention being to provide a construction in which the contents of the envelops are held away from a portion of the envelop while the cutting mechanism is acting thereon, to the end that the contents will not be cut by the cutting mechanism.

Another object of the invention is to provide a feeding mechanism which will hold the envelops firmly against any action of the cutting mechanism so that the cutting mechanism will not have any tendency to deflect the envelops away from the guide.

Another object of the invention is to provide for bulging the envelop upon its contents and then creating a thin, narrow edge on the envelop free from the contents and on which the cutting mechanism will act.

Still another object of the invention is to provide means for removing any wrinkles which may be present in the envelops in proximity to the edge on which the cutting mechanism is to act.

A still further object of the invention is to provide a roller which deflects or bulges the upper surface of an envelop in proportion to the thickness of the envelop and its contents, the normal position of the roller being such that, on thin envelops, the bulging action is practically nil while on heavy envelops, the bulging action is much greater, this preferably being accomplished by having the roller normally rotating in one plane parallel with the guide and assuming different acute angles to the guide for different thicknesses of envelops.

A still further object of the invention is to provide a feed mechanism which acts on the envelops from a point in advance of the cutting mechanism to a point beyond the cutting mechanism, this feeding mechanism preferably embodying an endless belt having its effective portion extending from a point in advance of the cutting mechanism to a point beyond the cutting mechanism.

A still further object is to provide an improved deflecting roller which will deflect the envelop laterally toward the guide before the latter reaches the cutting mechanism.

A still further object is to provide an improved guide which will form an edge on an envelop free from the contents of the envelop.

To these and other ends the invention consists in certain parts and combinations of parts all of which will be hereinafter described, the novel features being pointed out in the appended claims.

In the accompanying drawings, Figure 1 shows a side elevation of the machine. Fig. 2 is a side elevation of the guide flange forming part of the feeding table plate. Fig. 3 is a section on the line 3^{x}—3^{x} in Fig. 1. Fig. 3^{A} is a section taken through the feeding belt. Fig. 4 is a top plan view of one of the deflecting rollers. Fig. 5 is a side elevation of one of the deflecting rollers. Fig. 6 is a section on the line 6^{x}—6^{x} in Fig. 2. Fig. 7 is a top plan view of the feed table and a portion of the machine associated therewith. Fig. 8 is a sectional view on the line 8^{x}—8^{x} in Fig. 7. Fig. 9 is a vertical transverse section on the line 9^{x}—9^{x} in Fig. 7. Fig. 10 is an end elevation of the cutters. Fig. 11 is a top plan view of the machine with the feeding table and casing omitted. Fig. 12 is a detail view showing the mounting of the motor on the base of the machine. Fig. 13 is a detail view of a portion of the machine showing the feeding mechanism modified. Fig. 14 is a top plan view of the parts shown in Fig. 13. Fig. 15 is a rear view of the bracket supporting one of the deflecting rollers of Fig. 13. Fig. 16 is a top plan view of the bracket and roller shown in Fig. 14, with the bracket partly broken away. Fig. 17 is a view showing the same parts illustrated in Fig. 16 but in a different position. Fig. 18 is a detail view showing a modification of the swivel mounting of one of the deflecting rollers. Fig. 19 is a horizontal section on the line 19^{x}—19^{x} in Fig. 1. Fig. 20 is a cross section on the line 20^{x}—20^{x} of Fig. 11 showing the grease cup in cross section. Fig. 21

is a view of the cutters in which the upper cutter is shown with its axis slightly to the rear of the axis of the lower cutter. Fig. 22 shows a modification of the mounting of the deflecting roller in which the roller is mounted on a curved shaft with which the roller can rise sidewise through a curved path, causing the top of the roller to swing out away from the guide flange.

In the accompanying drawings like reference numerals refer to like parts.

In the drawings reference numeral 1 indicates the base and 2 indicates the casing of the machine. On this base is provided the lugs 3, 4 on which is pivotally mounted an electric motor 5 by which the machine is driven. In the lug 3 the set screw 6 is provided, which set screw has a slotted head at its lower end and is turned by a screw driver from underneath the plate 1. The upper end of the set screw 6 works against the casing of the motor and swings it around the pivot 7 for the purpose of tightening or loosening the driving belt. The motor is provided with a shaft 8 on which is provided a driving pulley 9 from which driving pulley extends a driving belt 10. This driving belt in turn engages with a pulley 11 mounted on the shaft 12. The shaft 12 carries thereon the gear 13, the cutter 14 and the pulley 15 for the feeding belt 16. Mounted parallel to the shaft 12 is the shaft 17, which shaft carries the gear 18 that meshes with the gear 13, and the cutter 19 that engages with the cutter 14. The rotation of the armature of the electric motor drives the shaft 8 and through the train of mechanism above described drives the shafts 12 and 17, the cutters 14 and 19 and the several parts enumerated as associated therewith.

Mounted on the casing 2 is the feed table 20, which feed table has the guide flange 21 thereon as shown in Figs. 1 and 2. This feed table is provided with a slot 23 through which extends the driving belt 16, which driving belt passes over the pulley 15 on the shaft 12 and the pulley 24 on the shaft 25. The shape of the belt is shown in cross section in Figs. 3[A] and 9.

On the casing 2 is provided the lugs or shoulders 26 and 27 on which in turn is mounted a cap 28, the screws 29 and 30 being provided for this purpose. The screw 30 is a shouldered screw on which are pivotally mounted the brackets 31 for supporting the deflecting roller 32 and the bracket 33 for supporting the deflecting roller 34. These brackets are free to swing around the screw 30, permitting the rollers 32 and 34 to rise and fall, as will be hereinafter explained.

Each of the brackets 31 and 33 is provided with the lugs 35 and 36, which lugs are perforated. The cap 28 is provided with two cylindrical recesses therein, one of which recesses 37 is shown in cross section in Fig. 3. Both of these recesses are partially closed at the upper end and are opened at the bottom. Through these recesses extend the stems 38 and 42. These stems are threaded at their upper ends where they are engaged by the thumb nuts 39 and 43, which thumb nuts are split at 40 and 41 for the purpose of yieldingly clamping the threaded stem and holding it against displacement that might otherwise be occasioned by the jar of the machine, due to the running of the motor or other causes. Each of these stems 38 and 42 is surrounded in the cylindrical casing by a compression spring 44, which spring bears against the partially closed end of the cylinder above and the brackets 31 and 33 at the bottom. The spring is coiled so that it slightly tapers from the top to the bottom, giving greater freedom of movement to the stem contained therein. By turning the thumb nuts 39 and 43 the brackets 31 and 33 with their rollers 32 and 34 may be raised or lowered with respect to the driving belt 16. The springs 37 are compression springs and normally press the brackets 31 and 33 down and hold the rollers 32 and 34 yieldingly against the driving belt. When envelops pass between the driving belt and the rollers 32 and 34, the rollers 32 and 34 are lifted in proportion to the thickness of the envelop. The rollers 32 and 34 are mounted to rotate upon studs 45 and 46 carried on the brackets 31 and 33 respectively, which studs are placed at an angle to and not parallel to the shafts 12 and 17 upon which the cutters are mounted, the position of these rollers 32 and 34 being such as to feed the envelop sidewise against the guide flange 21 as well as forward along the guide flange.

Pivotally mounted upon the guide flange 21 are the fingers 47 and 48. Compression springs 49 and 50 are provided for holding the fingers 47 and 48 yieldingly in position, the position being determined by the lug 50 on the finger 47 which is slotted at 51, which slot engages with the pin 52 on the guide flange, the spring 49 serving to hold the finger 47 normally in the lowest position permitted by the pin 52.

The guide flange 21 is cut away at 53 to provide for the cutters. The guide flange is also overhung at 54, which overhanging portion is in front of the upper cutting wheel 19. The feed table 20 with its guide flange 21 is mounted to have a slight independent movement toward and away from the cutters so as to provide thereby a ready adjustment for narrowing the depth of the cut. For this purpose the feed table is provided on its under side with a slide 55 which is mounted to travel in suitable guides 56 and 57 provided in the bracket 58 which is

attached to the casing of the machine by the screw 59 and 60.

Mounted in the bracket 58 is the screw 61 which has a threaded engagement 62 with the bracket 58 and has a smooth or pilot end 63 around which the lever 64 is adapted to turn. Fastened to this lever is the eccentric 65, which eccentric moves with the lever. The eccentric engages with the slide 55 at 66 so that as the lever 64 is turned the slide 55 is shifted forward and back, that is, toward or away from the cutters. The lever 64 has an upturned end 67 which engages with a recess 68 on the edge of the table, by which the swinging of the lever is limited to a comparatively small arc, the swinging of the lever being just sufficient to shift the feed table 20 in or out by about two or three hundredths of an inch.

As shown in Fig. 6, the guide flange 21 is provided with the tapered groove 69 adjacent to the fingers 47 and 48. This tapered groove is of substantially the same outline as the ends of the fingers 47 and 48 and converges toward the meeting point of the circular cutters, the object of the tapered guide and spring fingers being to straighten out wrinkled envelops so that they will pass between the cutters practically straight, presenting nearly a true edge to the cutters. The spring fingers 47 and 48 also serve to squeeze the sides of the envelop together, causing the edge to stand out firmly and away from the contents of the envelop, insuring a better cut on the edge of the envelop and protecting the contents of the envelop better from mutilation.

In Figs. 13 to 18 inclusive I have shown the mounting of the deflecting rollers 32 and 34. It has been found in actual trial that where these rollers run at an acute angle to the feeding belt that the surface of the rollers grinds itself away against the belt, so that after a time the contour of the rollers is changed to that extent that they no longer act to properly feed the envelops. To diminish or eliminate this wearing of the rollers I provide the construction which I will now describe.

The brackets 75 and 76 are pivotally mounted upon the screw 30, which brackets are free to rise and fall in the same way as are the brackets 31 and 33. Swiveled in the bracket 75 is the stem 77, on which is carried a stud 78 on which the roller 32 is mounted to rotate. The bracket 75 carries at the top thereof an arm 78 on which are provided the lugs 79 and 80. On the lug 79 is provided the pin 81. On top of the stem 77 is provided the swinging arm 82 having the pin 83 thereon. Between the swinging arm 82 and the lug 79 is provided the compression spring 84, which spring is held in place by the pins 81 and 83. The spring 84 expands and normally holds the swinging arm 82 in the position shown in Fig. 16, in which position the stud 78 will be substantially parallel to the shafts 12 and 17 that carry the cutters. By adjusting the thumb nut 39 the roller 32 may be placed into closer contact with the driving belt 16 and the contact may be made strong enough to cause the roller 13 with its supporting stud 78 to be swung forward and out of parallel alinement with the shafts of the cutters. It is preferred however that this adjustment be made just sufficient to leave the roller in parallel alinement with the cutters when it is running idly, but to cause it to swing forward and sidewise as envelops are passing between the roller 32 and the feed belt 16. This side swinging of the roller deflects the envelop and holds it firmly against the guide flange 21 while the envelop is passing, and as soon as it has passed the roller swings back to normal position and makes true rolling contact with the belt. As shown in this modification, the roller 34 has its axis rigidly fastened in position parallel to the axes of the cutters, but if desired this roller may be mounted in the same way as is the roller 32, permitting it to swing sidewise and assist in holding the envelop firmly against the guide flange while it is passing the cutters.

If desired the arm 78 may be mounted rigid with the stem 77 so as to swing with it, in which case the arm 82 would be rigid with the bracket 75, the relative position of the pins 81 and 83 and spring 84 remaining the same.

The various bearings of the machine are lubricated with cup grease fed to them from cups through wicking contained therein, the wick in each case being held against the rotating part by means of a coiled spring in engagement therewith. Such cups are shown at 86 and 87, and one of these cups is shown in modified form at 88. This cup is supported on a bracket 89 mounted on the frame of the machine. The lower end of the cup is of large diameter and is internally threaded to receive the cup 90 which screws therein. The spiral spring 91 is contained within, which spring engages with the wick 92 and holds it against the lower cutter, keeping the surfaces of the cutters lubricated where they make sliding contact with each other. The cross section of the cup 88 is shown in Fig. 20.

It is obvious that the feeding belt may be dispensed with and that the rollers which support and drive said belt may be used in connection with the deflecting rollers to feed the envelops. It is also obvious that both of the deflecting rollers may be mounted to rotate on swinging axes, all of these modifications being within the scope of my invention.

In Fig. 22, I have shown a modification of

the mounting of the deflecting roller. I have found that by inclining the deflecting roller out at the top, the same result of feeding forward and sidewise may be secured. To provide a flexible mount for the roller, I arrange as follows: On the guide flange 21, I provide the bracket 101 in which is provided the curved bearing 102 in which is mounted to slide the spindle 103 which spindle is curved to fit the opening and slide therein. On this spindle is mounted to rotate the roller 105. The spring 104 expands and holds the spindle in the position shown in Fig. 22 with the roller in line with the roller or pulley below or inclined out therefrom slightly at the top. If it stands straight up perpendicular to the feed table, it will feed the envelops straight forward but if it inclines out at the top away from the guide flange, it will deflect the envelops toward the guide flange and the force of the deflection will be increased by increasing the inclination of the roller and by increasing the pressure with which it bears on the envelop. The roller will be lifted by each envelop and will exert the greatest deflecting force on the thickest envelops because they raise it the most. The center around which the system swings is preferably at the point marked by the arrow 106 in Fig. 22, although it is obvious that this center can be raised or lowered as may be desired. It is not possible to mount the roller on a link pivoted to swing around this center as it would obstruct the feed of envelops along the table.

The envelop is preferably placed by hand against the vertical guide flange 21 and caused to be engaged at one end by the receiving end of the belt 16 and the adjacent upper roller 32. Should the forward end of the envelop be spaced from the guide flange 21, this upper roller 32 will tend to feed said end against the guide flange 21 owing to its assuming an inclined plane of operation relatively to the plane of the guide flange. The angular operation of this deflecting roller 32 with relation to the plane of the guide flange 21 also tends to bulge the envelop on its contents, this being due to the fact that the contents are stopped by the guide flange and the pinching or rubbing action on the upper surface of the envelop continues. After this bulging is produced, the bulged portion enters between the pressure devices which tend to press or flatten such bulged portion and cause the latter to spread into the tapering groove 69 in the guide flange. The tapering groove tends to exclude the contents of the envelop so that a thin edge is formed on the envelop free from the contents. As this edge issues from the narrow end of the tapering groove, it is engaged by the cutting mechanism and is removed in the form of a strip free of the contents. The roller, in proximity to the cutting mechanism, tends to hold the envelop firmly while the cutting mechanism is operating thereon to prevent such cutting mechanism from having any effect whatsoever, other than that of removing the formed edge.

Having thus described my invention, what I claim as new and patentable is as follows:

1. In a machine for opening envelops, the combination with a guide along which envelops are adapted to be moved, and a cutting mechanism arranged to remove an edge of each envelop moving along the guide of a deflecting roller for operating upon an envelop moving along the guide, said roller being mounted to rotate normally in one plane and shift to operate in another plane when an envelop engages the same, to move such envelop laterally against the guide.

2. In a machine for opening envelops, the combination with a guide along which envelops are adapted to be moved, and a cutting mechanism arranged to remove an edge of each envelop moving along the guide, a deflecting roller mounted to rotate normally in a plane parallel with the direction of movement of the envelops along the guide and to shift to operate at an oblique angle in the direction of the movement of the envelops when said envelops engage the same.

3. In a machine for opening envelops, the combination with a table and a guide arranged to one side of the same, of a cutting mechanism operating in proximity to the guide for severing an edge of each envelop moving along the guide, of a deflecting roller mounted above the table to rotate in a plane parallel with the direction of the movement of the envelops and to shift to operate in a plane at an oblique angle to the direction of movement of the envelops when the envelops engage such roller.

4. In a machine for opening envelops, the combination with a guide along which the envelops are moved and a cutting mechanism operating to sever the edges of the envelops moving on the guide, of a deflecting roller supported in such a manner that its axis of rotation shifts angularly to correspond with the thickness of the envelop in order to increase the deflecting action.

5. The combination with a guide along which the envelops are moved, and a cutting mechanism operating to sever the edges of the envelops moving along the guide, of a deflecting roller supported in such a manner that its axis of rotation shifts angularly to the guide and also raises and lowers to correspond to the thickness of each envelop.

6. In a machine for opening envelops, the combination with a guide along which envelops are adapted to be moved, and a cutting mechanism arranged to sever the edges of envelops moving along the guide, of a pair of rotary elements cooperating with

opposite sides of the envelops moving along the guide, one of said elements moving in a line parallel with the guide and the other of said elements operating, while engaging an envelop, in a plane at an oblique angle to the guide.

7. In a machine for opening envelops, the combination with a guide and a cutting mechanism arranged to operate to remove an edge of an envelop moving along the guide, of a pair of rotary elements coöperating with opposite faces, of an envelop movable along said guide, one of said elements being mounted to shift its plane of operation when an envelop passes between said elements.

8. In a machine for opening envelops, the combination with a guide and a cutting mechanism arranged to operate to remove an edge of an envelop moving along the guide, of a pair of rotary elements for operation upon opposite sides of an envelop to carry the same to the cutting mechanism, one of said elements being mounted to move at all times in a plane parallel with the guide and the other of said elements being mounted to move in a plane parallel with said guide when no envelop is arranged between the elements and to shift to operate in a plane at an oblique angle to the guide when an envelop passes between said element.

9. In a machine for opening envelops, the combination with a guide along which the envelops are moved, of a cutting mechanism arranged to operate upon envelops moving along the guide, a feed belt operating in a direction parallel with the guide and engaging the envelop on one side from a point in advance of the cutting mechanism to a point beyond the cutting point, and a deflecting member arranged to coöperate with the opposite side of the envelop to shift the latter laterally against the guide.

10. In a machine for opening envelops, the combination with the guide along which envelops are adapted to move, and a cutting mechanism for removing an edge of envelops moving along the guide, an endless belt for coöperating with one side of an envelop to carry the same to the cutting mechanism, and a deflecting member for coöperating with the opposite side of the envelop to shift the latter laterally against the guide.

11. In a machine for opening envelops, the combination with a guide along which the envelops are adapted to move, and a cutting mechanism including a rotary cutter having its effective cutting portion traveling in the direction of the feed of the envelop along the guide, of a pulley arranged to one side of and turning about a common axis with said cutter, a second pulley arranged in advance of the cutting mechanism, a belt connecting said pulleys and a deflecting device for shifting the envelops laterally, said device coöperating with the belt to hold an envelop between them.

12. In a machine for opening envelops, the combination with a guide along which the envelops are adapted to move, and a cutting mechanism for removing an edge of an envelop moving along the guide, of a feed belt operating in the direction parallel with the guide and engaging an envelop from a point in advance of the cutting mechanism to a point beyond the effective portion of the cutting mechanism, and a pair of rollers for coöperation with the feed belt, the first acting of the said rollers being a deflecting roller to shift the envelop laterally against the guide.

13. In a machine for opening envelops, the combination with a guide along which the envelops are adapted to be moved and a cutting mechanism for removing an edge from envelops moving along the guide, of feeding mechanism for the envelops having provision for shifting each envelop laterally against the guide, and provision for engaging each envelop on opposite sides beyond the cutting point of the cutting mechanism so that the envelop is held against deflection by the cutting mechanism after such envelop has been shifted laterally toward the guide.

14. In a machine for opening envelops, the combination with a guide along which envelops are adapted to be moved, and a cutting mechanism for removing an edge from each envelop moving along the guide, of feeding mechanism for the envelops embodying a deflecting roller coöperating with each envelop in advance of the cutting mechanism to shift the envelop laterally toward the guide, and a roller coöperating with each envelop beyond the cutting point of the cutting mechanism and in proximity to the latter in order to hold the envelop against movement under the action of the cutting mechanism.

15. In a machine for opening envelops, the combination with a table having a guide along which the envelops are adapted to be moved and a cutting mechanism adapted to operate upon envelops moving on the guide, of a deflecting roller yieldingly mounted above the table and adapted to shift each envelop laterally toward the guide, and a roller also yieldingly mounted above the table and coöperating with each envelop beyond the cutting point of the cutting mechanism but in proximity to said cutting point in order to hold the envelop against deflection by the cutting mechanism.

16. In a machine for opening envelops, the combination with a cutting mechanism, of a grooved guide tapering in the direction of the line of feed of the envelops toward the cutting mechanism, and means for feeding

the envelops along the guide toward the cutting mechanism and also laterally toward the guide.

17. In a machine for opening envelops, the combination with a cutting mechanism, of a grooved guide having a recess through which the cutting mechanism operates, feeding mechanism for feeding the envelops along the guide to the cutting mechanism and also laterally toward the guide, and pressure devices for coöperating with opposite sides of each envelop in proximity to the guide and after the envelop has been shifted toward the guide.

18. In a machine for opening envelops, the combination with a cutting mechanism, of a guide along which envelops are adapted to move to the cutting mechanism provided with a recess through which the cutting mechanism operates, a deflecting roller operating in advance of the cutting mechanism to shift each envelop toward the guide, and pressure devices coöperating with opposite sides of each envelop between the deflecting roller and the cutting mechanism.

19. In a machine for opening envelops, the combination with a table having a recessed guide flange along which envelops are adapted to be moved, of a cutting mechanism operating through said recess, an endless belt having a portion operating through the table in proximity to the guide flange from a point in advance of the cutting point to a point beyond the cutting point, in order to carry envelops to the cutting mechanism and yieldingly-mounted means supported above the table and coöperating with the upper surface of each envelop at a point beyond the cutting point of the cutting mechanism.

20. A machine for opening envelops comprising a cutting mechanism, mechanism for feeding the envelops to the cutting mechanism and for bulging the envelops along one of their edges on their contents, and means for forming a thin edge on the bulged portions of such envelops free from the contents for presentation to the cutting mechanism.

21. A machine for opening envelops comprising a cutting mechanism, a guide along which the envelops are fed to the cutting mechanism, mechanism for moving the envelops along the guide and laterally toward the same, said mechanism having provision for bulging the envelops on their contents, and means through which the bulged portion is caused to travel to form a thin edge on the bulged portion for presentation to the cutting mechanism free from the contents.

22. In a machine for opening envelops, the combination with a cutting mechanism of a feed table, a guide flange thereon for directing envelops to the cutting mechanism, and a feed belt extending through the bottom of said table and along said guide flange, a feed roller mounted above said belt, an axis for said roller extending substantially parallel to the feed table and perpendicular to the guide flange, said axis being mounted to swing at an acute angle with said guide flange.

23. In a machine for opening envelops, the combination with a cutting mechanism of a table having a guide flange thereon for directing envelops to the cutting mechanism, a feeding roller having an axis therefor standing normally perpendicular to said guide flange, said axis being mounted to swing out of perpendicular relation to said guide flange, means for driving said roller.

24. In a machine for opening envelops, the combination with a cutting mechanism of a table having a guide flange thereon for directing envelops to the cutting mechanism, a feeding roller mounted to rotate to feed envelops along said guide flange, said roller having an axis which can be moved to cause said roller to deflect envelops laterally against the guide flange.

25. In a machine for opening envelops, the combination with a cutting mechanism of a table having a guide flange thereon for directing envelops to the cutting mechanism, a feeding roller mounted to rotate to feed envelops along said guide flange, said roller having an axis which can be moved to cause said roller to deflect envelops laterally against the guide flange, and means for driving said roller.

26. In a machine for opening envelops, the combination with a cutting mechanism of a table having a guide flange thereon for directing envelops to the cutting mechanism, a feeding roller mounted to rotate to feed envelops along said guide flange, said roller having an axis which can be moved to cause said roller to deflect envelops laterally against the guide flange, said roller with its axis being yieldingly mounted to swing toward and away from said table.

27. In a machine for opening envelops, the combination with a cutting mechanism of a feed table having a guide flange thereon for directing envelops to the cutting mechanism, a feed belt extending through the bottom of said table and along said guide flange, a feed roller having an axis mounted above said belt, said roller being mounted to rotate normally parallel to said belt, means for causing said roller with its axis to swing so that it revolves at an angle to said belt.

28. In a machine for opening envelops, the combination with a cutting mechanism of a feed table having a guide flange thereon, for directing envelops to the cutting mechanism, a feed belt extending through the bottom of said table and along said guide flange, a feed roller having an axis mounted above said belt, said roller being

mounted to rotate normally parallel to said belt, means for causing said roller with its axis to swing so that it revolves at an angle to said belt, said roller being held yieldingly in contact with said belt and being capable of movement toward and away from said belt.

29. In a machine for opening envelops, the combination with a cutting mechanism of a table having a guide flange thereon, for directing envelops to the cutting mechanism, a belt extending through said table and moving along said guide flange, a roller operating in connection with said belt, said roller being movable toward and away from said belt and being mounted to swing across said belt.

30. In a machine for opening envelops, the combination with a cutting mechanism of a table, a guide flange thereon for directing envelops to the cutting mechanism, a bracket mounted to swing adjacent to said guide flange, an axis mounted to swing radially on said bracket, and a roller mounted to rotate upon said axis.

31. In a machine for opening envelops, the combination with a cutting mechanism of a table, a guide flange thereon for directing envelops to the cutting mechanism, a bracket mounted to swing adjacent to said guide flange, an axis mounted to swing radially on said bracket, a roller mounted to rotate upon said axis, and means for feeding envelops between said roller and said table.

32. In a machine for opening envelops, the combination with a cutting mechanism of a table, a guide flange thereon for directing envelops to the cutting mechanism, a bracket mounted to swing adjacent to said guide flange, an axis mounted to swing radially on said bracket, a roller mounted to rotate upon said axis, a belt moving through said table and along said guide flange, and means for yieldingly holding said roller in contact with said belt.

33. In a machine for opening envelops, the combination with a cutting mechanism of a table, a guide flange thereon for directing envelops to the cutting mechanism, a bracket mounted to swing adjacent to said guide flange, an axis mounted to swing radially on said bracket, a roller mounted to rotate upon said axis, a belt moving through said table and along said guide flange, and means for yieldingly holding said roller in contact with said belt, said means including a spring tension device on said bracket, permitting said bracket to swing up and down with its roller.

34. In a machine for opening envelops, the combination with a cutting mechanism of a table, a guide flange thereon for directing envelops to the cutting mechanism, a support adjacent thereto, a bracket pivotally mounted on said support, an axis mounted to swing on and with said bracket, a roller mounted to rotate on said axis, a spring tension for holding said bracket in a predetermined position, and a spring tension for holding said axis in a predetermined position, each of said tensions being yielding to permit movement of the bracket or the axis independently or together.

35. In a machine for opening envelops, the combination with a cutting mechanism of a feed table, a guide flange thereon for directing envelops to the cutting mechanism, a belt moving along said table, and a pair of rollers coöperating with said feed belt, said rollers being mounted to rotate at an angle to the line of motion of the belt.

36. In an envelop opening machine, the combination with a cutting mechanism of a feed table, a guide flange thereon for directing envelops to the cutting mechanism, a pair of cutters mounted to work through said feed table, a belt moving along said table toward said cutters, and a pair of feed rollers coöperating with said belt to feed envelops to said cutters.

37. In an envelop opening machine, the combination with a cutting mechanism of a feed table, a guide flange thereon for directing envelops to the cutting mechanism, a belt moving along said table toward said cutting mechanism, and a pair of feed rollers coöperating with said belt to feed envelops to said cutters, said rollers being mounted to rotate at an angle to the line of motion of said belt.

38. In an envelop opening machine, the combination with a cutting mechanism of a feed table, a guide flange thereon for directing envelops to the cutting mechanism, a belt moving along said table toward said cutting mechanism, and a pair of feed rollers coöperating with said belt to feed envelops to said cutters, said rollers being mounted to rotate at an angle to the line of motion of said belt, said rollers being mounted to turn to an angle with the line of movement of said belt when the envelop passes between said rollers and said belt.

39. In a machine for opening envelops, the combination with a cutting mechanism of a feed table, a guide flange thereon for directing envelops to the cutting mechanism, a belt mounted to travel in said table along said guide flange, and a feed roll cooperating with said belt and rotating normally substantially in line therewith, said roller being mounted to move to an angle with the line of movement of said belt when the envelop passes between the roller and the belt.

40. In a machine for opening envelops, the combination with a cutting mechanism of a feed table and a guide flange for directing envelops to the cutting mechanism, a feeding device mounted to move in said

table, and a roller adapted to cooperate with said feeding device mounted above the table, said feeding device and said roller being adapted to feed an envelop between them, said roller being mounted to normally move in one direction and being mounted to move in another direction during the passage of an envelop between said roller and said feeding device.

41. In a machine for opening envelops, the combination with a cutting mechanism of a feed table, a guide flange thereon for directing envelops to the cutting mechanism, a belt adapted to move through said table along said flange, a deflecting roller mounted to make contact with said belt, said roller being mounted on a swinging axis, a spring on said axis to prevent said axis from swinging, and means to cause said roller and its axis to swing upon the increased frictional engagement with said roller by either said belt or an envelop fed by said belt.

42. In a machine for opening envelops, the combination of a table, a guide flange thereon, a pair of cutters arranged parallel to and out of line with said guide flange, means for shifting said table to move the guide flange thereof toward or from said cutters, and guides in which said table is mounted to slide.

43. In a machine for opening envelops, the combination of a table, a guide flange thereon, a pair of cutters arranged parallel to and out of line with said guide flange, means for shifting said table to move the guide flange thereof toward or from said cutters, and guides in which said table is mounted to slide, said means comprising a lever having a limited throw, and an eccentric connection between said lever and said table.

44. In a machine for opening envelops, the combination with a cutting mechanism of a table having a guide flange thereon for directing envelops to the cutting mechanism, a tapered groove in said guide flange leading to said cutting mechanism, a pair of pivotally mounted spring pressed fingers, adjoining said groove, said fingers serving to hold a passing envelop in line with said groove and said cutters, and feeding mechanism for feeding envelops between said fingers to said cutters.

45. In a machine for opening envelops, the combination with a cutting mechanism of a table having a guide flange thereon for directing envelops to the cutting mechanism, and means for feeding envelops forward along said table toward said cutting mechanism and sidewise against the guide flange, said means including a roller that stands normally perpendicular or nearly so to said table, said roller being shifted from its normal position by the passing of an envelop, said roller in its shifted position having a tendency or an increased tendency to move the envelop sidewise toward the guide flange.

46. In a machine for opening envelops, the combination with a cutting mechanism of a feed table having a guide flange thereon for directing envelops to the cutting mechanism, a support above said feed table, a bracket pivotally mounted on said support, an upright shaft mounted to turn in said bracket, a stud on said shaft, a roller mounted to rotate on said stud, an arm on said shaft, a plate on said bracket concentric with said arm, lugs on said plate limiting the swing of said arm, a spring between one of said lugs and said arm for holding said arm normally against the other lug.

47. In a machine for opening envelops, the combination with a cutting mechanism of a feed table having a guide flange thereon for directing envelops to the cutting mechanism, a support above said feed table, a bracket pivotally mounted on said support, an upright shaft mounted to turn in said bracket, a stud on said shaft, a roller mounted to rotate on said stud, an arm on said shaft, a plate on said bracket concentric with said arm, lugs on said plate limiting the swing of said arm, a spring between one of said lugs and said arm for holding said arm normally against the other lug, a feeding device operating through said table, and means for holding said roller with variable pressure in contact with said feeding device, said pressure being capable of increasing until the frictional engagement between the feeding device and the roller will cause the roller and its stud to swing and compress the spring.

48. A machine for opening envelops comprising a table having a guide flange thereon provided with an opening, a cutting mechanism arranged to operate through said opening, an endless belt arranged below the table and having a portion operating through the table in proximity to the guide flange to coöperate with one face of an envelop and extending from a point in advance of the cutting point to a point beyond the cutting point, and a yieldingly mounted device arranged above the table to coöperate with the opposite face of the envelop.

49. A machine for opening envelops comprising a guide for the envelops, a pair of rotary cutters arranged to remove an edge of an envelop movable along the guide, an endless belt for coöperating with one face of an envelop movable along the guide and extending on opposite sides of the meeting point of the two cutters, and a yieldingly mounted device for coöperating with the opposite face of the envelop.

50. A machine for opening envelops comprising a guide, a cutting mechanism for removing an edge from an envelop movable along the guide, a feeding mechanism for

moving envelops along the guide, and a pair of relatively yielding faces arranged in close proximity to the guide between the latter and the feeding mechanism to operate on an envelop in proximity to the edge to be cut before the cutting mechanism is reached in order to smooth such edge.

51. A machine for opening envelops comprising a guide, cutting mechanism for removing an edge from an envelop movable along the guide, feeding mechanism for moving envelops along the guide, and a spring-pressed finger arranged in close proximity to the guide to bear on those portions of the envelops in order to flatten out the adjacent edges of the envelops so that such edges will be presented in proper condition to the cutting mechanism.

In testimony whereof I affix my signature in presence of two witnesses.

HENRY D. TAYLOR.

Witnesses:

LENA M. ASH,

ALICE M. JOHANNS.