J. V. WASHBURNE.

MACHINE FOR OPENING ENVELOPS.

APPLICATION FILED APR. 21, 1914. RENEWED MAY 11, 1916.

1,265,844.

Patented May 14, 1918.

2 SHEETS—SHEET 1.

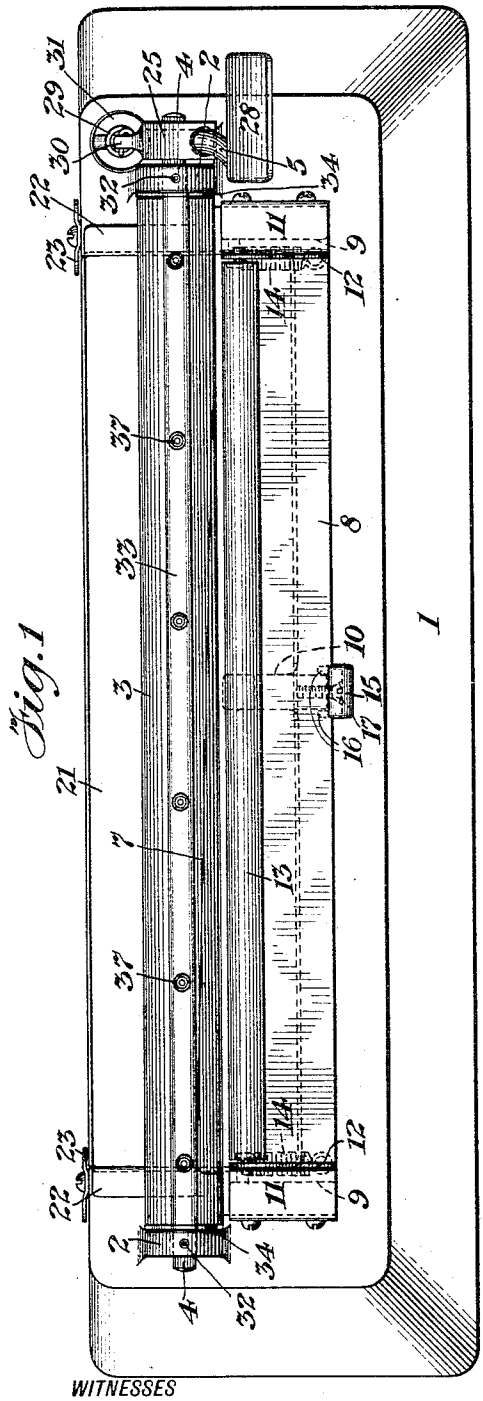


Fig. 1

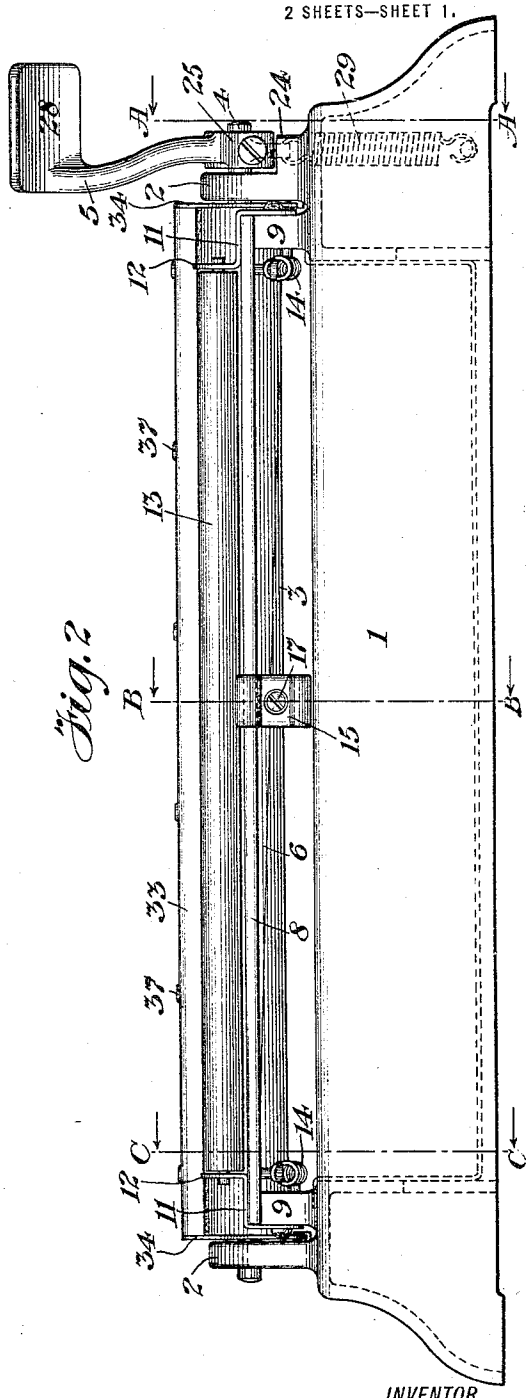


Fig. 2

WITNESSES

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Fig. 5

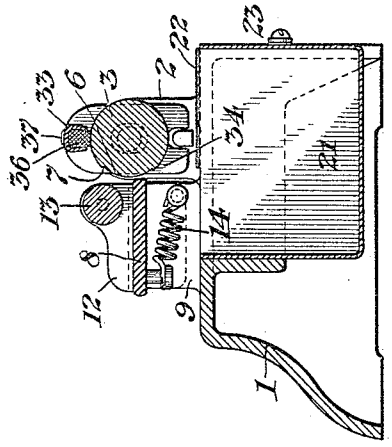


Fig. 4

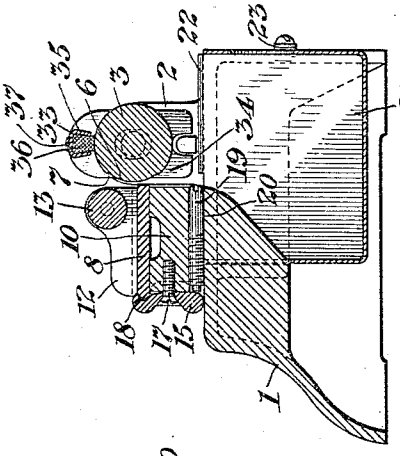


Fig. 6

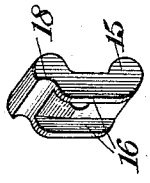
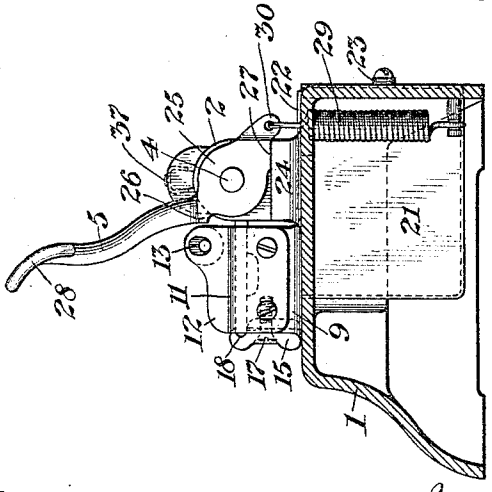


Fig. 3



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UNITED STATES PATENT OFFICE.

JAMES V. WASHBURNE, OF FULTON, NEW YORK.

MACHINE FOR OPENING ENVELOPS.

1,265,844. Specification of Letters Patent. Patented May 14, 1918.

Application filed April 21, 1914, Serial No. 833,421. Renewed May 11, 1916. Serial No. 96,940.

To all whom it may concern:

Be it known that I, JAMES V. WASHBURNE, a citizen of the United States, residing at Fulton, in the county of Oswego and State of New York, have invented an Improvement in Machines for Opening Envelops, of which the following is a specification.

My invention relates to machines for opening envelops, and particularly to that class of these machines employing a rotary cutting cylinder and a loosely mounted shear plate having a cutting edge opposed to the rotary cylinder.

It has been found in practice with machines of this construction, that when envelops made of linen paper, Manila or other thick paper, are presented to the cutting edges, the shear plate is forced backward, thus separating the cutting edges, and resulting in failure to cut the envelop.

An object of my present invention is to overcome this difficulty by providing an adjustable stop for preventing undue separation of the cutting edges when heavy envelops are presented to the cutters, or in consequence of wear, and I also provide improved means for limiting the rotary movement of the cutting cylinder in both directions. The base of the machine is also of improved form to receive a tray for catching the cuttings, and allowing free access to the adjustable stop for manipulating the same. The details of the invention are hereinafter more specifically described.

In the accompanying drawings,

Figure 1 is a plan view of a machine containing my improvements.

Fig. 2 is a front elevation of the same.

Fig. 3 is an end elevation showing the base in section on the line A—A of Fig. 2.

Fig. 4 is a cross section on the line B B of Fig. 2.

Fig. 5 is a cross section on the line C C of Fig. 2, and

Fig. 6 is a perspective view of the adjustable stop member detached.

Similar reference characters indicate like parts throughout the several views.

1 indicates the base of the machine. 2, 2, are uprights preferably cast integral with the base 1, and located respectively at or adjacent each end of the base at its top.

3 is a steel cutting cylinder mounted on a shaft 4, the ends of which are journaled in the uprights 2, 2, by which the cutting cylinder is supported; the end of the shaft 4 at one side of the machine projects but slightly beyond the upright 2 at that end of the base, while the end of the shaft on the opposite side of the machine projects beyond the upright 2 at that end of the base a suitable distance to receive the operating lever 5 which is removably secured thereon, and by means of which the cutting cylinder 3 is rotated.

In the periphery of the cutting cylinder 3 there is a longitudinal and inclined groove or recess 6 of a predetermined depth forming a substantially spiral knife or cutting edge 7. This groove is preferably shallow in order that only a very thin strip may be cut from the envelop.

8 indicates a horizontal steel shear plate formed of greater length than the groove or recess 6, and having a cutting edge which preferably comes below the axis of the cutting cylinder 3 whereby the rotation of the cylinder will sever the edge of the envelop laid upon the shear plate 8 in alinement with its cutting edge. The ends of the shear plate are opposed to portions of the periphery of the cylinder 3 at opposite ends of the groove or recess 6, and rest upon supports 9, 9, one on each end of the base 1 forward of the uprights 2, 2, which supports 9 are preferably made integral with the base. The shear plate 8 is also further supported at its center by an upright 10 which is also preferably an integral part of the base 1. The shear plate is adapted to slide upon the supports 9 and 10.

Secured to each support 9 is a guide plate 11 which prevents lateral or end displacement of the shear plate and upward movement of its ends from the supports 9. These guide plates 11 are each provided with an upturned portion 12 having openings in their ends adjacent the cutting cylinder in which the trunnions of the guide roller 13 are received.

The envelop to be cut, is placed upon the shear plate 8 and pushed under the roller 13 until it contacts with the cutting cylinder 3. Spiral springs 14 may be employed one at each side of the machine, one end of each of said springs being secured to one of the supports 9, and its other end fixed to the shear plate 8. These springs 14 tend to draw the cutting edge of the shear plate toward the cutting cylinder 3, but as has heretofore been remarked, when an effort is made to open an envelop made of linen or heavy paper, the shear plate is liable to be forced away from the cutting cylinder, resulting in failure to cut. To overcome this difficulty, I provide an adjustable stop member 15 having inwardly turned side flanges 16 which fit over the forward end of the central upright 10 to which the stop member is secured by a screw 17 passing through a hole in the intermediate portion of the stop and screwing into a screw threaded hole in the front end of the upright 10. This stop member projects slightly above the top surface of the shear plate 8 and has a transverse groove 18 into which the forward edge of the shear plate 8 is received. The opening in the stop 15 for the screw 17 is of slightly larger diameter than the screw 17 and the inner surface of the stop 15 is somewhat tapered or inclined from the opening therein to the under part of the transverse groove 18. This allows the upper part of the stop to be tilted toward the shear plate 8 when the screw 17 is slightly loosened or unscrewed in the hole in the upright 10. The tilting of the stop 15 is accomplished (after loosening the screw 17), by means of the screw 19 which is movable relatively to the member 15, is arranged crosswise of the cylinder 3, and is located in a screw threaded hole 20 in the upright 10 extending entirely through said upright in line with the screw 17 but on a lower plane. In the normal adjustment of these parts, the screw 17 is screwed in tight, thus holding the stop rigidly against the forward end of the upright 10 in a vertical position with the edge of the shear plate 8 resting within the transverse groove 18 in the stop, while the end of the screw 19 is out of contact with the inner surface of the stop 15. It will be seen that the backward movement of the shear plate 8, when envelops of a heavy character are to be cut, is effectually prevented by this stop member 15 against which the outer edge of the shear plate in such cases will immediately bear, and prevent the separation of the cutting edges of the shear plate and cutting cylinder. Also that in case of wear upon the cutting edges of the shear plate 8 or cylinder 3 by continued use, the proper adjustment and alinement of the cutting edges of these members may be maintained by means of this adjustable stop, as when there has been any appreciable wear on these parts, the cutting edges may be sharpened and the shear plate moved forward the desired degree and held in proper position by adjusting the stop accordingly; it is only necessary to slightly loosen the screw 17, and then turn the screw 19 forward until its end projects beyond the forward end of the upright 10 and against the inner lower surface of the stop 15, when if necessary the screw 17 may be again tightened.

The base 1 is preferably made with a hollow front and ends and with a substantially central depression in its rear side forming an opening of less length than the base beneath the cutter, and extending through the rear and top surfaces of the base, and said base is formed with a substantially U-shaped top plate having its branches disposed at the ends of said opening in the base and provided with supporting means for the cutter. Said opening in the base allows for the insertion of a tray 21 supported upon the top ends of the base by turned over flanges 22 resting thereon. This tray receives the cuttings and is held in place by turn buttons 23 or other suitable means. By removing the tray 21, free access may be had to the screw 19 for its manipulation.

The upright 2 at the right hand end of the machine is L shaped in cross section, thus providing a projection 24 on the base, located directly under that end of the shaft 4 to which the operating lever 5 is secured. This projection 24 is preferably flat on its top with a straight vertical side and ends. It may if desired be made separate from the upright 2 and secured to the top of the base in any desired manner, but I prefer to cast it integral with the base and upright as the easiest and most economical manner.

The hub 25 of the operating lever 5 secured to the shaft 4, is preferably eccentric or cam shaped providing front and rear contacts 26 and 27 respectively, which strike the top of the projection 24 when the lever is manipulated, thus limiting the rotation of the cutting cylinder 3 in either direction in a positive manner without the least danger of injury. In machines of this character it has heretofore been usual to employ a pin in an end of the cylinder working in a groove in the support for the shaft of the cylinder, but such pins are liable to be bent or broken off in use.

The lever 5 is provided on its free end with a hand piece 28 and in operating the machine this end of the lever is depressed until the contact 26 strikes the projection 24 which arrests its further downward movement.

With this movement of the lever, the cutting cylinder 3 is rotated toward the shear plate 8 a sufficient distance to cause its inclined cutting edge 7 to pass the entire length of the cutting edge of the shear plate. When

pressure is released upon the hand piece 28 the lever is drawn back by a spiral spring 29 until the contact 27 on the hub of the lever striking the projection 24 arrests its movement in this direction. One end of this spring 29 is secured to the lug 30 projecting from the hub of the lever, while the other end of the spring is secured to the base within its contiguous hollow end, the spring passing through a hole 31 in the top of the base at this end of the machine. With the upward movement of the lever 5 the cutting cylinder 3 is rotated backward to its normal position.

I provide an oil hole 32 in the top of each of the uprights 2, to allow for lubricating the ends of the shaft 4 journaled therein.

I also preferably provide means for lubricating the cutting cylinder 3, which means consists of a horizontal housing 33 extending parallel with the cutting cylinder its entire length, and provided with ears 34 at its ends, by which it is connected to the shaft 4.

A channel 35 extends longitudinally through the housing 33, which channel is filled with a fibrous or porous substance 36. Spaced oil cups 37 are provided in the top of the housing 33.

This lubricating attachment forms the subject of a separate copending application Serial No. 833,422, filed of like date herewith, and is particularly described and claimed therein.

I claim as my invention:

1. In a machine of the character described, the combination of a cutter movable about an axis, a base, and supporting means fixed to the base, a shear plate loosely mounted on the supporting means and forming a bed for the article to be cut, said shear plate being movable on the supporting means toward and from the cutter, and a normally fixed member coacting with the shear plate between the ends thereof for limiting the movement of the shear plate from the cutter, said shear plate when released from the normally fixed member being movable on the supporting means from the cutter, substantially as and for the purpose described.

2. In a machine of the character described, the combination of a cutter movable about an axis and formed with a groove in its periphery having a substantially spiral cutting edge, a base, supporting means fixed to the base, and having spaced apart guiding means, a shear plate loosely mounted on the supporting means and forming a bed for the article to be cut, the shear plate being of greater length than the groove and movable on the supporting means toward and from the cutter, the ends of the shear plate being opposed to portions of the periphery of the cutter at opposite ends of the groove and engaged with said guiding means for preventing endwise movement of the shear plate and upward movement of its ends, and said ends of the shear plate being movable along the guiding means as the shear plate moves toward and from the cutter, and normally fixed means coacting with the shear plate between the spaced apart guiding means for limiting the movement of the shear plate from the cutter, substantially as and for the purpose specified.

3. In a machine of the character described, the combination of a cutter movable about an axis and formed with a recess in its periphery having a substantially spiral cutting edge, a shear plate of greater length than the recess and having its ends opposed to portions of the periphery of the cutter at opposite ends of the recess, a base, supporting means fixed to the base, the shear plate being loosely mounted on the supporting means and being movable toward and from the cutter, means tending to move the shear plate toward the cutter, and normally fixed movable means for limiting the movement of the shear plate from the cutter, substantially as and for the purpose described.

4. In a machine of the character described, the combination of a cutter movable about an axis, a base, a pair of supports fixed to the base, a shear plate having its ends slidable on the supports toward and from the cutter, and a stop coacting with the cutter between the supports for limiting the movement of the shear plate from the cutter, substantially as and for the purpose set forth.

5. In a machine of the character described, the combination of a cutter movable about an axis, a base, a pair of supports fixedly secured to the base, an additional support fixed to the base and interposed between the first mentioned supports, a shear plate having its ends and its intermediate portion slidable on the supports toward and from the cutter, and a stop carried by the intermediate support and co-acting with the intermediate portion of the shear plate for limiting the movement of the shear plate from the cutter, substantially as and for the purpose described.

6. In a machine of the character described, the combination of a cutter, a shear plate arranged in position to coact with the cutter and movable toward and from the cutter, springs at opposite ends of the shear plate, and tending to move the same toward the cutter, and a stop co-acting with the shear plate between the ends thereof and tending to limit the movement of the shear plate from the cutter, substantially as and for the purpose described.

7. In a machine of the character described, the combination of a cutter movable about an axis, a support in front of the cutter, a shear plate supported by the support in position to coact with the cut-

ter and movable relatively to the support toward and from the cutter, and a stop carried by the front portion of the support and limiting the movement of the shear plate from the cutter, substantially as and for the purpose set forth.

8. In a machine of the character described, the combination of a cutter movable about an axis, a support in front of the cutter, a shear plate supported by the support in position to coact with the cutter and movable relatively to the support toward and from the cutter, a stop for limiting the movement of the shear plate from the cutter, and means for movably connecting the stop to the support, said means being exposed at the front portion of the support, substantially as and for the purpose described.

9. In a machine of the character described, the combination of a cutter movable about an axis, a support, a shear plate supported by the support in position to coact with the cutter and movable relatively to the support toward and from the cutter, a stop extending at an angle to the shear plate and having one end coacting therewith for limiting the movement of the shear plate from the cutter, and means for movably connecting the intermediate portion of the stop to the support, substantially as and for the purpose described.

10. In a machine of the character described, the combination of a cutter, a shear plate arranged in position to coact with the cutter and movable toward and from the cutter, a movable stop coacting with the shear plate for determining its position with respect to the cutter, and means coacting with the stop and movable relatively thereto for adjusting the position of said stop, substantially as and for the purpose specified.

11. In a machine of the character described, the combination of a cutter, a shear plate arranged in position to coact with the cutter and movable toward and from the cutter, a movable stop coacting with the shear plate for determining its position with respect to the cutter, and an adjusting member extending crosswise of the cutter and having a part thereof coacting with the stop and movable relatively thereto to determine the position of said stop and another part thereof exposed beneath the cutter, substantially as and for the purpose set forth.

12. In a machine of the character described, the combination of a cutter, a support, a shear plate supported by the support in position to coact with the cutter and movable toward and from the cutter, a movable stop for determining the position of the shear plate, with respect to the cutter, and an adjusting member extending at an angle to the cutting edge of the shear plate and coacting with the stop to determine the position thereof, said member threading into the support and bearing against the stop, substantially as and for the purpose described.

13. In a machine of the character described, the combination of a cutter, a support extending beneath the cutter, a shear plate supported by the support in position to coact with the cutter and movable toward and from the cutter, an adjusting member adjustably mounted in the support beneath the shear plate and having a part thereof exposed beneath the cutter, and movable means carried by the support and coacting with the shear plate and the adjusting member for determining the position of the shear plate, substantially as and for the purpose set forth.

14. In a machine of the character described, the combination of a shear-plate, a cutting-cylinder, a support for the shear-plate, a stop member, means for adjustably connecting the stop member to the forward end of said support, and a screw for tilting said stop member.

15. In a machine of the character described, the combination of a shear-plate, a cutting-cylinder, a support for the shear-plate, a stop member, a screw for adjustably connecting said stop member to the forward end of said support, and another screw by means of which said stop member may be tilted.

16. In a machine of the character described, the combination of a shear-plate, a cutting cylinder, a support for the shear-plate, a stop member having inwardly turned side flanges fitting over the forward end of said support, means for adjustably connecting the stop member to the forward end of said support, and a screw passing through said support by which said stop member may be tilted.

17. In a machine of the character described, the combination of a shear-plate, a cutting-cylinder, a support for the shear-plate, a stop member in contact with the forward end of said support, and provided with a hole, a screw of smaller diameter than said hole passing therethrough and screwed into a hole in said support, and another screw passing through the said support by means of which said stop member may be tilted.

18. In a machine of the character described, the combination of a shear-plate, a cutting cylinder, a central support for said shear-plate, a stop member in contact with the forward end of said support and provided with a hole, a screw of smaller diameter than said hole passing therethrough and screwed into a hole in said support, and another screw passing through said support

by means of which said stop member may be tilted toward said shear-plate.

19. In a machine of the character described, the combination of a shear-plate, a cutting-cylinder, a support for the shear-plate, a stop member having inwardly turned flanges fitting over the forward end of said support which stop member is provided with a hole and its inner surface slightly inclined adjacent said hole, a screw of smaller diameter than said hole passing therethrough and screwed into a hole in said support, and another screw passing through said support by means of which said stop member may be tilted.

20. In a machine of the character described, the combination of a shear-plate, a cutting-cylinder, a central support for the shear-plate, a stop member having inwardly turned side flanges fitting over the forward end of said support which stop member is provided with a hole and its inner surface slightly inclined adjacent said hole, a screw of smaller diameter than said hole passing therethrough and screwed into a hole in said support, and another screw passing through said support by means of which said stop member may be tilted toward said shear-plate.

21. In a machine for opening envelops, the combination of a shear plate, a central support for the same, a cutting cylinder, a stop member provided with a transverse groove and an opening below the same, a screw of smaller diameter than said opening passing therethrough and securing said stop member to said central support, the outer edge of said shear plate fitting within said transverse groove in the stop member, and a screw extending through a screw threaded hole in said central support in line with said attaching screw, but on a lower plane, by means of which the stop member may be adjusted for maintaining the relation of the cutting edges of said shear plate and cutting cylinder.

22. In a machine of the character described, the combination of a base having a substantially flat surface, a cutter mounted on the base and movable about an axis, and an operating member connected to the cutter and having a hub provided with substantially flat, spaced apart, peripheral surfaces disposed at an angle to each other and movable alternately into parallelism with said surface of the base and coacting therewith to limit the movement of said member when rocked in opposite directions, substantially as and for the purpose specified.

23. In a machine for opening envelops, the combination of a shear plate, a cutting cylinder, a lever for operating the same, contacts upon the hub of said lever for limiting its movement in both directions, a spring attached to said lever for returning it to its normal position, and a stop for maintaining the relation of the cutting edges of said shear plate and cutting cylinder.

24. In a machine for opening envelops, the combination of a base having a projection on its top surface, a shear plate, a cutting cylinder, a shaft upon which the same is mounted, a lever secured to one end of said shaft and by which the cutting cylinder is rotated, said lever being provided with contact points which limit its movement in either direction by coming in contact with said projection on the base.

25. In a machine for opening envelops, the combination of a base having a projection on its top surface at one end, a shear plate, a cutting cylinder, a shaft upon which the same is mounted, a lever secured to one end of said shaft and by which the cutting cylinder is rotated, and a coil spring attached at one end to said lever and at its other end to said base by means of which the cutting cylinder is returned to a normal position after a forward rotation by said lever, said lever being provided with contact points which limit its movement in either direction by coming in contact with said projection on the base.

26. In a machine of the character described, a base, a cutter mounted on the base, the base having a substantially central depression in its rear side forming an opening of less length than the base beneath the cutter and extending through the rear and top surfaces of the base, and the base having a substantially U-shaped top plate, the branches of which are disposed at the ends of the opening and are provided with supporting means for the cutter, and a receptacle for clippings movable from the rear of the base into said opening beneath the cutter, said receptacle being removably engaged with the base, substantially as and for the purpose set forth.

27. In a machine for opening envelops, the combination with a base having end sections at its rear side and an opening at the rear between said end sections, a tray for entering said opening and having top end flanges resting upon the end sections, and means for removably securing the tray within the opening between the end sections; of a cutter and a shear plate supported by the base above the opening for receiving the tray, substantially as and for the purpose described.

28. In a machine for opening envelops having a base with hollow end sections and open at the rear between said sections, the combination of a shear-plate, a cutting-cylinder, a support for the shear-plate, a stop member, means for adjustably connecting the stop member to the forward end of said

support, and a screw for tilting said stop member.

29. In a machine for opening envelops having a base with hollow end sections and open at the rear between said sections, the combination of a tray removably secured within said opening, a shear-plate, a cutting-cylinder, a support for the shear-plate, a stop member, means for adjustably connecting the stop member to the forward end of said support, and a screw for tilting said stop member.

Signed by me this 11th day of Apl. 1914.

JAMES V. WASHBURNE.

Witnesses:
P. M. HENSEL,
BASIL B. AYLESWORTH.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."