April 21, 1953 S. E. CALHOUN ET AL 2,635,694

ENVELOPE OPENER

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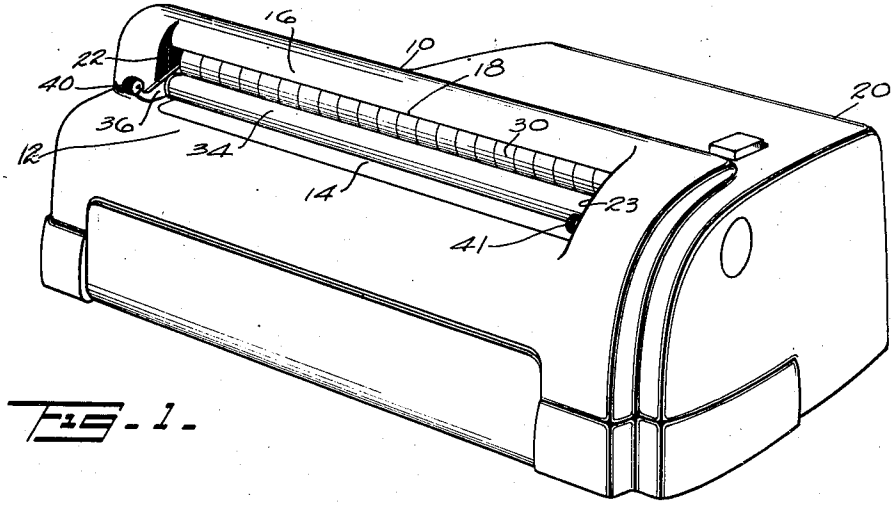


FIG. 1.

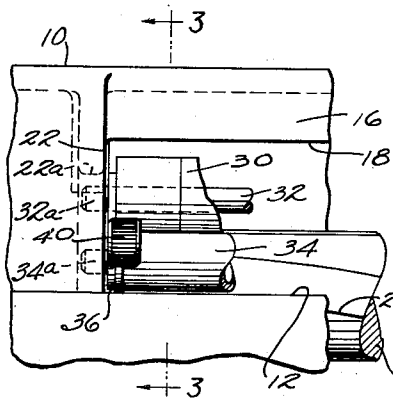


FIG. 2.

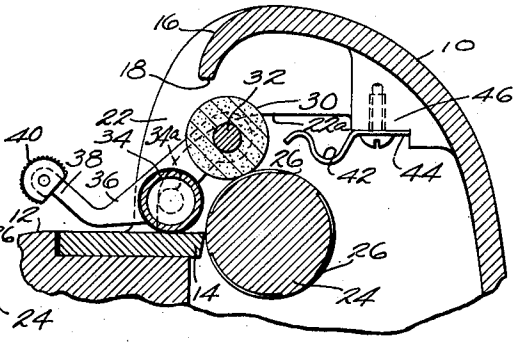


FIG. 3.

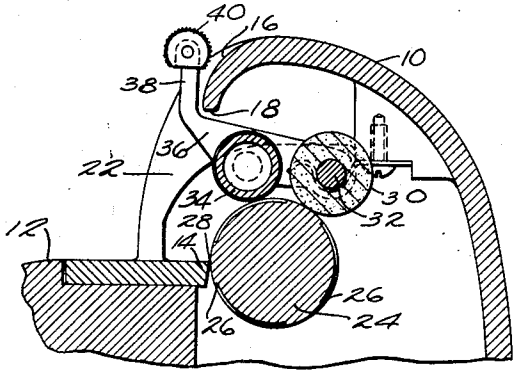


FIG. 4.

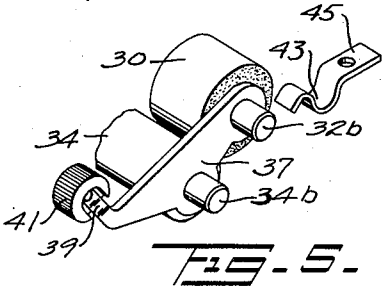


FIG. 5.

INVENTORS
Samuel E. Calhoun
Harry F. Miller
BY
Edwin H. Oliver
ATTORNEY

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ENVELOPE OPENER

Samuel E. Calhoun and Harry F. Miller, Springdale, Conn., assignors to Pitney-Bowes, Inc., Stamford, Conn., a corporation of Delaware

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5 Claims. (Cl. 164—66)

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This invention relates to a device for opening sealed envelopes by the shearing of one edge thereof, and more particularly to a retractable presser bar therefor.

The shearing device includes the known elements of a rotary cutter with spiral cutting edge and an associated shear plate having a ground straight edge bearing against the peripheral surface of the rotary cutter. Associated with said rotary cutter and shear plate is a presser bar which normally lies in the path of the edge of an envelope when the envelope is advanced to a shearing position, the presser bar being adapted to apply pressure to the forward portion of the envelope to maintain the edge thereof in a proper cutting relation with the rotary cutter. An oiler element is also normally employed which comprises a rod having cylindrical fibrous means mounted thereon, the rod being conveniently mounted so as to permit the oiled surface of the fibrous means to rest on the surface of the rotary cutter.

In the present invention it is the principal object to provide means whereby the presser bar may be quickly flipped to a retracted position away from the path of the envelope, to permit frail air mail envelopes or envelopes having bulky contents to be more easily manipulated in placing the edge of either in the best cutting position.

It is also an object of the invention to mount the presser bar on manipulative members in a manner which will permit the presser bar to move about the surface of the cutter and to eventually become locked in a retracted position.

It is another object to mount a cutter oiler element on the manipulative members with the presser bar and arrange same so that the surface of the oiler element will remain in contact with the rotary cutter when the presser bar is in a retracted position.

A preferred form of the invention is disclosed in the following drawings, wherein:

Fig. 1 is a perspective view of the envelope edge shearing device on a reduced scale;

Fig. 2 is a fragmentary view looking toward the upper left and front end of the shearing device as seen in Fig. 1;

Fig. 3 is a sectional view taken along the line 3—3 of Fig. 2 with the presser bar in its forward or work engaging position;

Fig. 4 is a sectional view showing the same parts as in Fig. 3 but with the presser bar in a retracted position; and

Fig. 5 is a perspective view of one of the end support members for the presser bar and oiler element, looking toward the right end of the device as seen from Fig. 1.

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Referring to the drawings in detail, a casing 10 has a forwardly positioned platform 12 with a shear plate 14 secured thereto, also an upwardly disposed hood portion 16 with an opening 18 therein. A rearward extension 20 of said casing is adapted to house suitable power driven mechanism (not shown). End walls 22—23 provide the end boundaries of the opening 18.

A rotary cutter 24 is rotatively supported within the end walls 22—23 of the casing and has a plurality of spiral cutting edges 26, which, when the cutter is rotated, will cooperate with the shear plate 14 in effecting the shearing of an extremely narrow strip from the edge of a sealed envelope when the envelope is moved into engagement with the cutter. The shear plate 14 has a hardened and ground straight edge 28 which bears against the peripheral surface of the cutter.

It is desirable to maintain a slight film of oil on the surface of the cutter to lubricate same. For this purpose an oiler element is provided which preferably comprises a number of cylindrical fibrous members 30 carried on a rod 32, which rod has protruding ends or pintles 32*a*, 32*b*.

When the device is used to shear the edge of envelopes of normal weight, within say three ounces, a presser bar 34 is provided in the path of the envelope and directly in front of the cutter so as to cause the leading edge of the envelope to be flattened or ironed out at the point of contact with the rotary cutter. The presser bar, as shown is tubular, with the ends thereof closed and includes pintles 34*a*, 34*b*.

The pintle portions 32*a*, 32*b* of the oiler element rod 32 and the pintle portions 34*a* and 34*b* of the presser bar 34 are carried by manipulative spacer members 36 and 37 respectively. Also, the oiler element and presser bar normally rest against the rotary cutter 24 and shear plate 14 respectively as in Fig. 3, the weight of the oiler element and supporting members 36, 37 providing additional weight for the presser bar when in its normal position. Arms 38, 39 project outwardly from the spacer members 36, 37 respectively and have finger grip knobs 40, 41 respectively thereon.

Each end wall 22, 23 has a guideway provided therein, one of which is shown at 22*a*, which guideways are preferably curved concentric with the surface of the rotary cutter 24 and are posi-

tioned so as to be engaged by the peripheries of the pintles **32***a*, **32***b* and **34***a*, **34***b* when the oiler element and presser bar are in the position of Fig. 3.

Said guideways continue from their curved direction to a preferably horizontal direction to guide the pintles **32***a*, **32***b* to a latching position relative to detent portions **42**, **43** of detent springs **44**, **45** respectively. Said detent springs are secured to lugs **46** forming an integral part of the inner portion of the hood **16**.

When an envelope is overweight or has contents therein which causes the leading edge to bulge to the extent that the presser bar would not be effective in flattening the envelope sufficiently to cause the leading edge to rest flat against the shear plate at the position of the surface of the rotary cutter, it is desirable to manipulate the envelope in such manner as to work the edge thereof into a suitable cutting relation with the cutter. This is best accomplished when the presser bar **34** is removed from the path of the envelope. Rocking of the members **36**, **37** from the position shown in Fig. 3 to that shown in Fig. 4 will effect removal of the presser bar **34** from the path of the envelope. When the latter is effected the presser bar **34** is latched in its retracted position by the spring detents **42** and **43**.

It is also desirable to retract the presser bar **34** when frail air mail envelopes are to be opened. Here the weight of the presser bar interferes with the entry of the envelope edge.

From the foregoing, it will be seen that by a quick flip of the knobs **40**, **41** rearward, the presser bar **34** will be removed from the path of the envelope, as in Fig. 2, and a downward or forward flip of the knobs **40**, **41** will cause the presser bar to return to the normal operating position of Fig. 3.

Having described the invention, what is claimed is:

1. In an envelope opening device, the combination with a rotary cutter, shear plate and a supporting frame; of a presser bar including a pintle at each end thereof and normally resting on the shear plate in the path of an envelope, guideways associated with the frame and overlying said pintles, means for moving the presser bar rearwardly through a path determined by the guideways and the surface of the rotary cutter, and means for retaining the presser bar in a predetermined rearward position.

2. In an envelope opening device, the combination with a rotary cutter, shear plate and a supporting frame; of a presser bar including a pintle at each end thereof and normally resting on the shear plate in the path of an envelope, an oiler element engaging the surface of the rotary cutter and having a pintle at each end thereof, manipulative means engaged by the pintles of both the presser bar and oiler element, said manipulative means being movable to effect retraction of the presser bar and oiler element over the surface of the rotary cutter, and latch means positioned in the path of and engageable by the pintles of the oiler element when the presser bar is in a retracted position.

3. In an envelope opening device, the combination with a rotary cutter, shear plate and a supporting frame; of a presser bar including a pintle at each end thereof and normally resting on the shear plate in the path of an envelope, an oiler element engaging the surface of the rotary cutter and having a pintle at each end thereof, manipulative means engaged by the pintles of both the presser bar and oiler element, guideways associated with the frame and overlying said pintles, said manipulative means being movable to effect retraction of the presser bar and oiler element through a path determined by the guideways and the surface of the rotary cutter, and means engaged by the pintles of the oiler element when the presser bar is in a retracted position.

4. In an envelope opening device, the combination with a rotary cutter, shear plate and a supporting frame; of a presser bar including a pintle at each end thereof and normally resting on the shear plate in the path of an envelope, an oiler element engaging the surface of the rotary cutter and having a pintle at each end thereof, spacer members engaged by the pintles of both the presser bar and oiler element to maintain same in a predetermined spaced relation, guideways associated with the frame and overlying said pintles, manipulative grip means on said spacer members operable to effect retraction of the presser bar and oiler element through a path determined by the guideways and the surface of the rotary cutter, and latch means engageable by the pintles of the oiler element for retaining the presser bar in a retracted position.

5. In an envelope opening device, the combination with a rotary cutter, shear plate and a supporting frame; of a presser bar including a pintle at each end thereof and normally resting on the shear plate in the path of an envelope, an oiler element engaging the surface of the rotary cutter and having a pintle at each end thereof, spacer members engaged by the pintles of both the presser bar and oiler element to maintain same in a predetermined spaced relation, guideways associated with the frame and overlying said pintles, manipulative grip means on said spacer members operable to effect retraction of the presser bar and oiler element through a path determined by the guideways and the surface of the rotary cutter, spring detent members supported in the path of the pintles extending from the oiler element, said detent members being adapted for locking engagement by the pintles of the oiler element.

SAMUEL E. CALHOUN.
HARRY F. MILLER.

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