Dec. 28, 1965 D. G. MYERS 3,225,441

ENVELOPE SHEAR

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Fig. 1

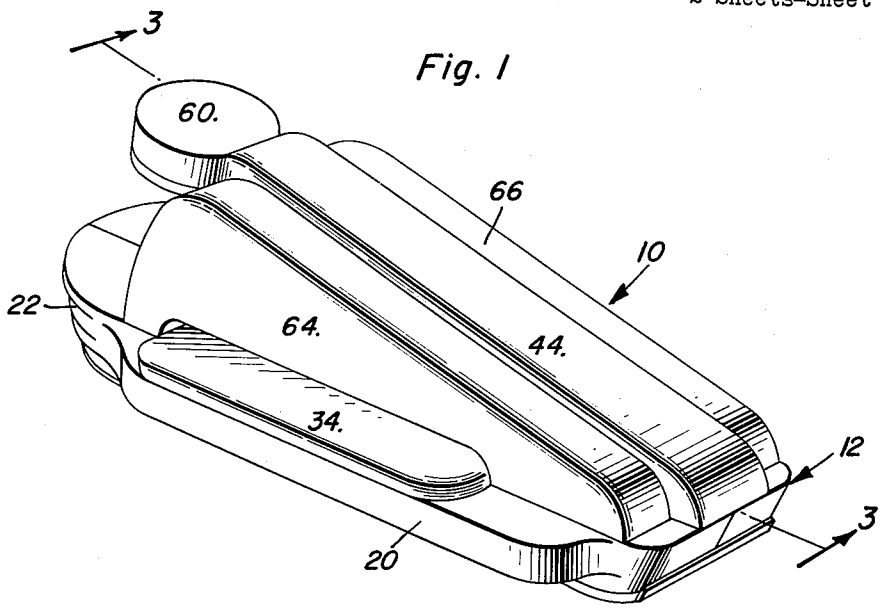


Fig. 2

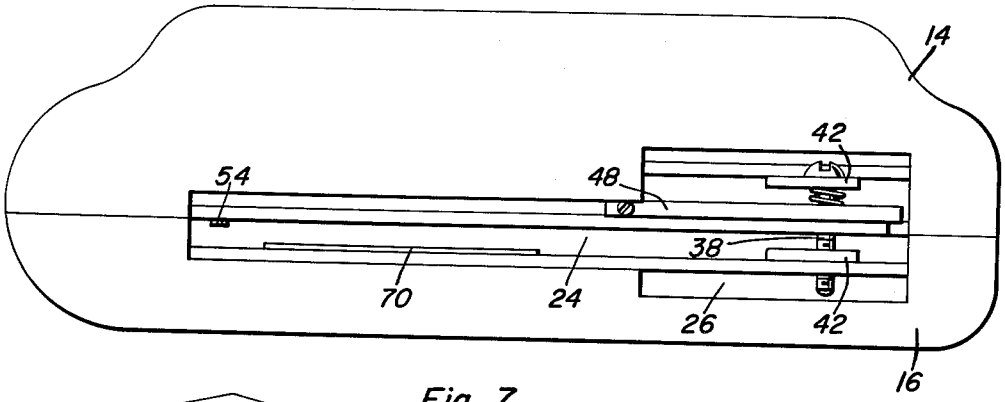
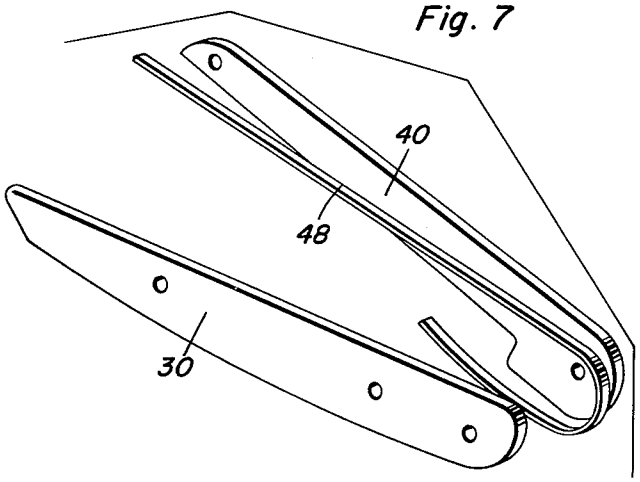


Fig. 7



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ENVELOPE SHEAR

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Fig. 3

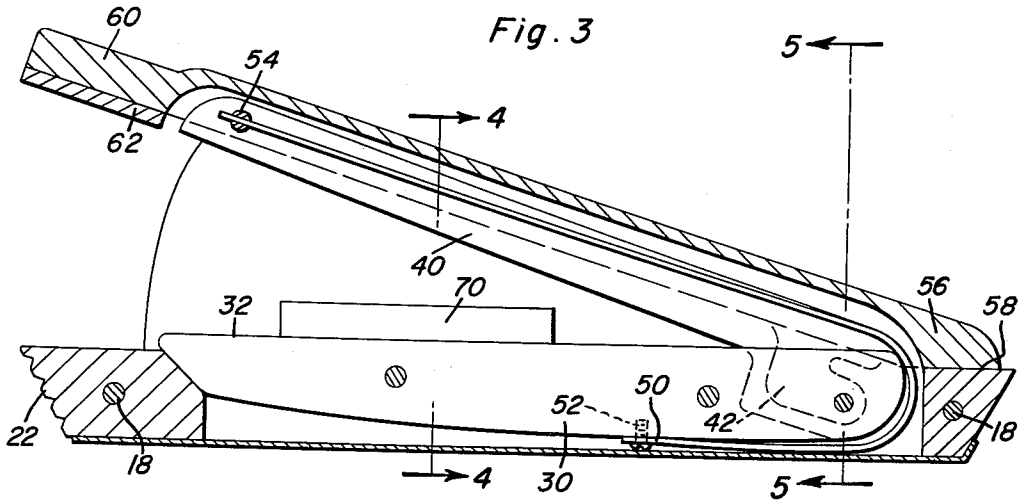


Fig. 5

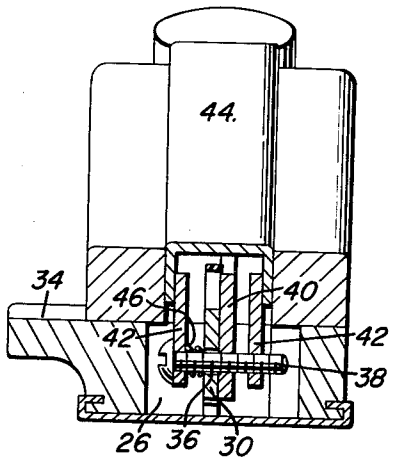


Fig. 4

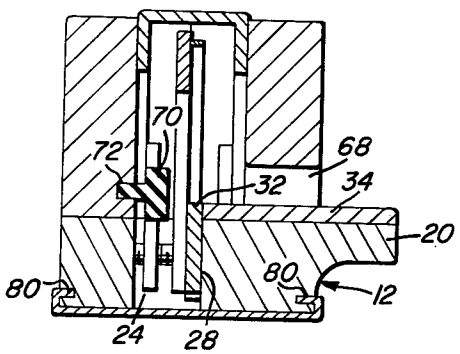
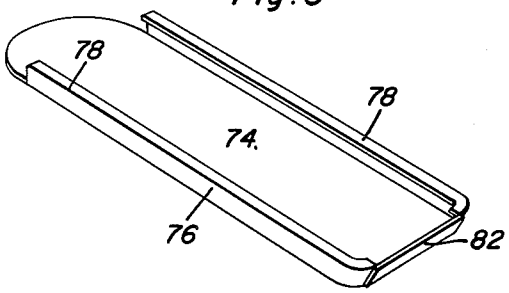


Fig. 6



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ENVELOPE SHEAR

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4 Claims. (Cl. 30—231)

The instant invention relates to new and useful improvements in paper cutting devices, and is more specifically concerned with a shearing device whereby envelopes can be quickly and neatly opened.

It is one of the primary objects of the instant invention to provide a device whereby an envelope can be quickly opened by being severed along one edge thereof, this being accomplished by the compression of a lever.

Further, it is an object of the instant invention to provide a device for severing an end portion of an envelope wherein the severed portion is, upon the severing thereof, directed toward a collection chamber from which it can be subsequently discharged at the convenience of the user of the device.

It is yet a further object of the instant invention to provide a device for opening envelopes which is relatively simple in construction, extremely easy to operate, and capable of continuous trouble-free operation with little or no servicing being required.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

FIGURE 1 is a perspective view of the envelope shear of the instant invention;

FIGURE 2 is an enlarged bottom plan view of the device with the closure plate removed;

FIGURE 3 is an enlarged longitudinal cross-sectional view taken substantially on a plane passing along line 3—3 in FIGURE 1;

FIGURE 4 is a transverse cross-sectional view taken substantially on a plane passing along line 4—4 in FIGURE 3;

FIGURE 5 is a cross-sectional view taken substantially on a plane passing along line 5—5 in FIGURE 3;

FIGURE 6 is a perspective view of the closure plate; and

FIGURE 7 is an exploded perspective view of the two shear blades and the biasing means.

Referring now more specifically to the drawings, the envelope shear is generally designated by reference numeral 10.

This device 10 includes an enlarged base 12 formed of two sections 14 and 16 releasably interconnected by screws 18. The base 12, while generally rectangular in form, includes a laterally projecting ledge 20 along one side thereof, the upper surface of this ledge 20 forming a continuation of the top of the base 12. In addition, the forward end 22 is rounded, tapered downwardly and rearwardly from the top edge, and provided with a plurality of gripping ridges for reasons which shall be explained subsequently.

Located centrally within the base 12 is an elongated vertical slot 24 extending completely through the base 12,

this slot 24 having the rear portion 26 thereof laterally enlarged.

Fixedly though releasably secured along one side 28 of the narrow portion of the slot 24 is the lower shear blade 30, the cutting edge 32 of this blade 30 being located horizontally slightly above the top of the base 12 and in the same plane as the shelf 34 provided on the top of the base 12 and adjoining portion of the ledge 20, this shelf 34 forming the receiving surface for the envelopes to be severed.

The rear end of the blade 30 extends into the enlarged portion 26 of the slot 24, this rearwardly extending portion being provided with an enlarged aperture 36 therethrough for the rotatable reception of a transversely extending threaded journal member 38. This journal member 38 threadedly receives, in a relatively fixed manner, the upper movable blade 40 and two depending ears 42 which in turn are welded to the depending legs of an inverted channel-shaped lever 44 which rests freely upon the upper edge of the upper blade 40. It will of course be appreciated that the upper blade 40 is so related to the fixed lower blade 30 as to ensure a complete severing of any paper, such as an envelope, received therebetween. Further, it is contemplated that a coil spring 46 be provided about the journal 38 between one ear 42 and the fixed blade 30 so as to continually bias the movable blade 40 laterally toward the fixed blade 30.

The movable blade 40 is maintained in its upper or open position by means of a leaf spring 48 which has one end 50 thereof secured, as by screw means 52, to the lower edge of the fixed blade 30 at an intermediate point there along, the spring 48 extending from this point rearwardly and around the rounded rear end of the blade 30 and forward therefrom in an upward diverging relationship to the upper edge of the blade 30, the spring 48 being flat and positioned, throughout its length, in substantially the same vertical plane as the blade 30. The end of the upwardly diverging upper leg of the spring 48 is secured to the forward end of the upper blade 40 by means of a stub shaft 54 secured to and projecting laterally from the upper blade 40, the spring 48 thus producing a biasing force pivoting the upper jaw 40 upwardly about the pivotally secured rear end thereof.

The channel-shaped lever 44, freely positioned upon the upper edge of the upper blade 40, has the lower rear end thereof enlarged as at 56, this enlarged lower end including a flat lower abutment face 58 which engages against the adjoining top portion of the base 12 upon a raising of the lever 44 resulting from the upward biasing of the spring 48 on the upper blade 40, this abutting engagement limiting the upward movement of the lever 44 and upper blade 40.

The forward end of the lever 44 is provided with an enlarged flat handle portion 60, the severing action of the upper blade 40 being effected by positioning the heel of one's hand upon the flat upper surface of the handle 60, curling the fingertips into gripping engagement with the notched end 22 and exerting a combination squeezing and pressing force. It will of course be appreciated that various other manners of effecting a downward movement of the lever 44 can be utilized, such as for example exerting a downward force on the handle 60 with the hand without curling the fingers about the end 22, the amount of force necessary being dependent upon the thickness of the mate-

rial to be severed. If so desired, a cushioning pad 62 can be provided on the lower face of the handle portion 60 so as to cushion the contact between this handle portion 60 and the top of the base 12 therebelow.

In order to ensure a complete contact between the blades 30 and 40 during the entire severing stroke, the lower blade 30 is curved inwardly slightly along the length thereof, the upper blade 40 progressively engaging the lower blade 30 as it pivots thereover, this progressive engagement causing a slight lateral flexing of the upper blade 40, this lateral flexing being resisted by the leaf spring 48 so as to assist in maintaining the severing contact between the cutting edges of the blades 30 and 40. It will be noted that the lever 44 in no way interferes with this slight lateral movement during the cutting movement inasmuch as the lever 44 merely rests upon the upper blade 40 and is not secured thereto.

In order to guide the lever 44 during its vertical movement, and also in order to conceal the cutting edges of the blades 30 and 40 as a safety measure, two upstanding walls 64 and 66 are provided, one secured to each section 14 and 16 and extending vertically therefrom adjacent each side of the lever 44, these walls 64 and 66 having the upper edge thereof tapered rearwardly and downwardly so as to conform to the slope of the upper surface of the lever 44 in its open position, this being best seen in FIGURE 1.

In order to introduce a piece of paper, for example an envelope, between the blades 30 and 40 for the severing thereof, the wall 64 is provided with an elongated notch 68 therethrough, this notch 68 being of a size so as to accommodate both the paper receiving shelf 34 and any conventional envelope. It will of course be realized that the blade 40 in its open position is spaced a sufficient distance above the blade 30 so as to not interfere with the insertion of the material to be severed.

In order to limit the distance to which an envelope is to be projected between the blades 30 and 40, thereby limiting the amount of material to be severed, a resilient stop 70 is provided, this stop 70 having a centrally located rearwardly extending narrow portion 72 suitably secured within a recess in the inner face of the wall 66 in a manner so as to position the forward face of the stop 70 in line with and the desired distance from the complementary cutting edges of the blades 30 and 40. As will be noted from FIGURE 4, the stop 70, positioned in this manner, will, upon a downward movement of the lever 44 so as to effect a severing of the envelope, be engaged by the lower edge of one of the lever legs thus resulting in a downward and rearward pivoting movement of the forward or abutting face of the stop 70 about the recess secured portion 72 in conjunction with the severing of the envelope, this downward and rearward movement allowing, and in fact assisting the movement of the severed portion into the bottom of the slot 24 where it is temporarily retained by means of the removable closure plate 74.

This closure plate 74 includes vertically extending side flanges 76 having the upper portions 78 thereof inwardly directed for sliding reception within grooves 80 provided along opposite sides of the base 12, the plate 74 also including a vertically directed end flange 82 acting as a stop provided so as to properly center the closure plate 74 on the bottom of the base 12. By the use of such a closure plate 74, it will be appreciated that a plurality of envelopes can be opened with the severed portions neatly retained until disposed at the user's convenience.

From the foregoing, it will be appreciated that a simple though highly novel envelope shear has been defined, this shear capable of quickly and neatly opening an envelope so as to obtain access to the contents thereof, this opening of the envelope being done without any danger to the contents. In use, the contents of an envelope are moved, as by tapping the envelope, away from one end thereof, this end then being inserted through the slot 68, the envelope resting on the shelf 34, until the inner end engages against the resilient stop 70 after which the lever 44 is pushed downwardly by means of the handle 60 so as to sever the envelope between the fixed lower blade 30 and the movable upper blade 40, the lever 44 simultaneously engaging the resilient stop 70 and causing a slight downward and rearward movement thereof so as to deposit the severed portion of the envelope in the lower portion of the chamber formed by the slot 24 and the removable closure plate 74.

The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly all suitable modifications and equivalents may be resorted to, falling within the scope of the invention as claimed.

What is claimed as new is as follows:

1. An envelope shear consisting of upper and lower shearing blades, an enlarged base, a vertical elongated slot through said base, said lower blade being located within said slot and fixedly secured to one side thereof with the severing edge of the lower blade being positioned in substantially the same plane as the top of the base, means pivotally mounting the upper blade for movement, from a generally raised position relative to the lower blade, past the lower blade in a plane parallel to the plane of the lower blade in a manner so as to sever a portion of an envelope positioned therebetween, means resiliently biasing the upper blade away from the lower blade, removable means closing the bottom of the slot so as to retain severed portions therein, a resilient stop projecting from the plane of the side of the slot opposite from the side to which the lower blade is secured so as to act as a limit to the insertion of an envelope between the blades, the envelope to be sheared being abutted against said stop, and means for flexing each portion of the stop downwardly and rearwardly away from the lower blade upon the severing of that part of the envelope engaged thereagainst so as to assist in the discharge of the severed portion of the envelope.

2. The device of claim 1 wherein said last-mentioned means is independent of said upper blade and movable in conjunction therewith.

3. A paper shearing device consisting of an enlarged base, an elongated vertical slot therethrough, a first shear blade secured along one side of the slot with its cutting edge orientated upwardly and substantially in the plane of the upper edge of the base, a second shear blade orientated adjacent and in a parallel plane to the first blade, aligned apertures laterally through each blade adjacent the rear end thereof, journal means extending through said apertures for pivotally mounting said second blade on said first blade, means biasing the second blade upwardly away from the first blade, a lever pivotally mounted by said journal means, said lever overlying and extending beyond the upper blade, said lever being biased upwardly along with said upper blade and including means for limiting the upward movement, a pair of vertical walls extending upwardly from the base, one on each side of the lever, one of said walls having a paper receiving opening therein communicating laterally with the upper edge of the lower blade, a resilient stop projecting inwardly from the second wall in alignment with the opening, the inner end of said stop being abutted by the paper to be sheared and being positioned from the cutting edges of the blades a distance equal to the amount of material which it is desired to sever, and means on the lever for effecting a downward and rearward movement of the inner end of the stop toward the second wall upon a downward pivoting of the lever and upper blade and upon a severing of that portion of the paper engaged thereagainst.

4. The device of claim 3 wherein the biasing means consists of an elongated leaf spring having a pair of

diverging upper and lower legs interconnected by an arcuate bight portion, said leaf spring being positioned with the lower blade received therein, the bight portion of the spring conforming generally to the rear of the lower blade, the lower leg of the spring extending parallel to the lower edge of the lower blade and having its outer end secured thereto, the upper leg of the spring diversing relative to the upper edge of the lower blade in the same plane as the lower blade, and means securing the outer end of the upper leg to the outer end of the upper blade.

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