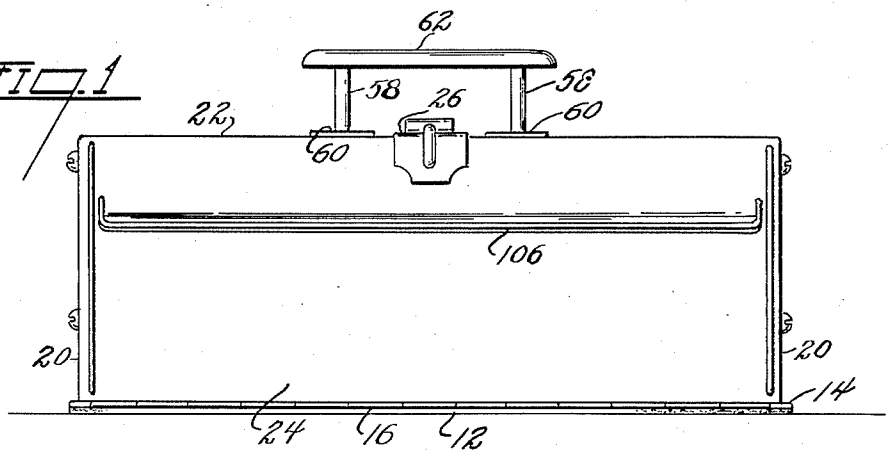
April 15, 1952 F. C. IFFLAND 2,592,699

ENVELOPE OPENER

Filed Oct. 4, 1946 2 SHEETS—SHEET 1

FIG. 1



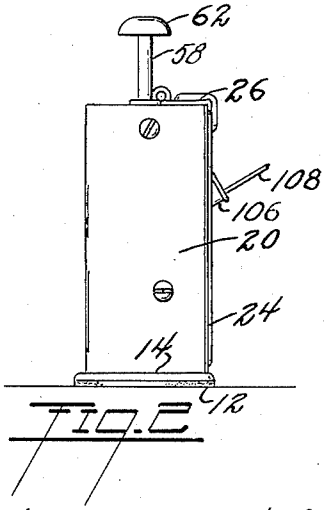


FIG. 2

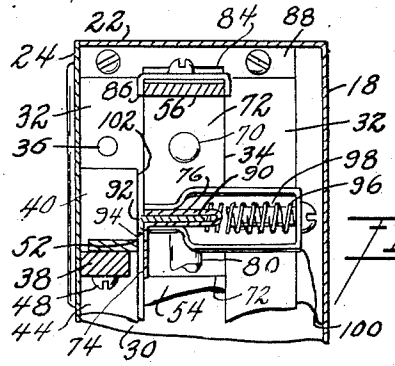


FIG. 3

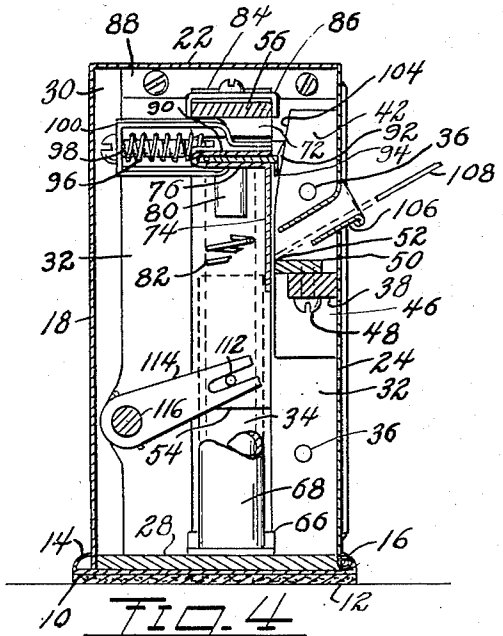


FIG. 4

Frederick C. Iffland
INVENTOR.

BY Wm. O. Ballard
his attorney

April 15, 1952 F. C. IFFLAND 2,592,699

ENVELOPE OPENER

Filed Oct. 4, 1946 2 SHEETS—SHEET 2

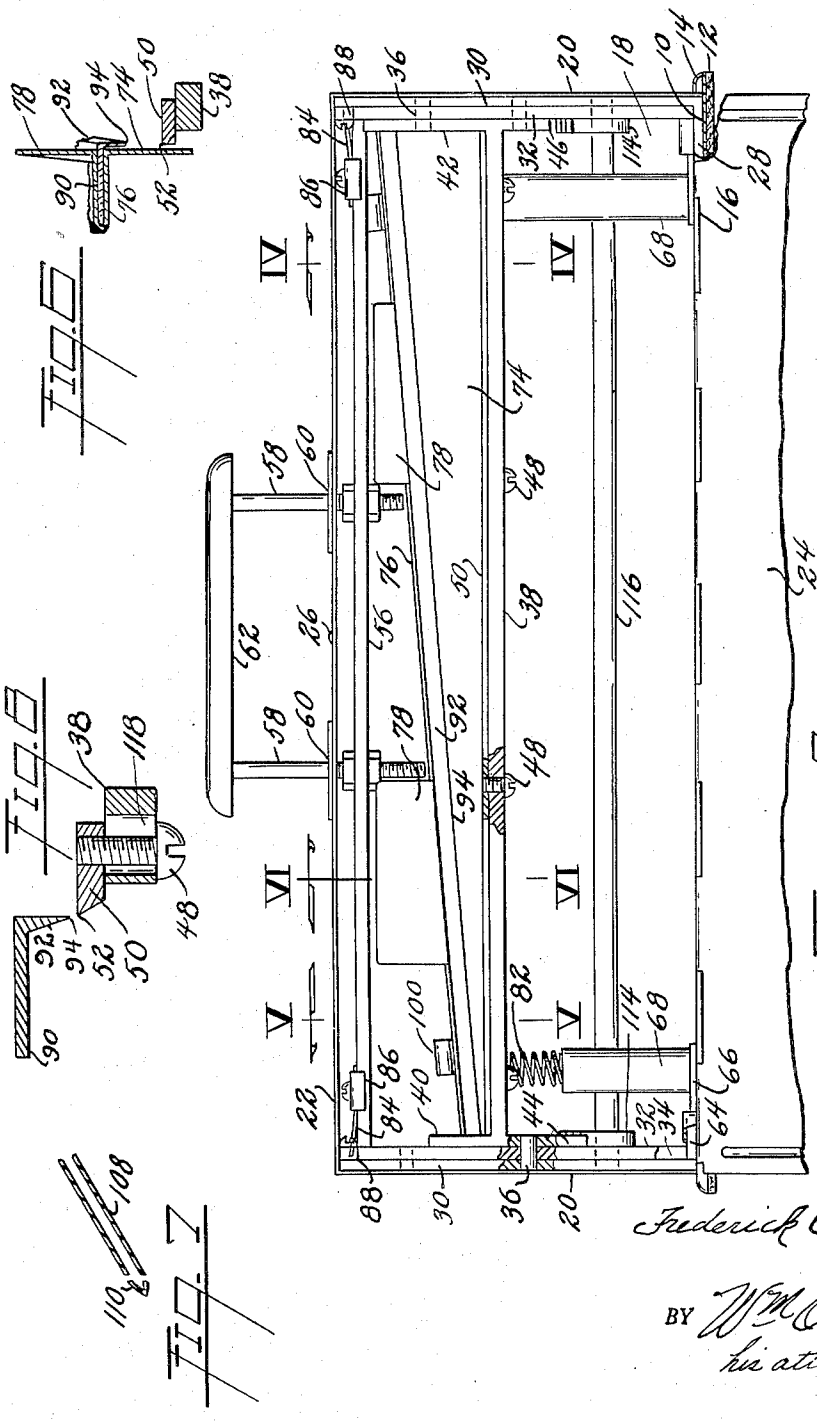


FIG. 1

FIG. 2

FIG. 3

FIG. 4

Frederick C. Iffland
INVENTOR.

BY Wm. O. Ballard
his attorney

Patented Apr. 15, 1952

2,592,699

UNITED STATES PATENT OFFICE

2,592,699

ENVELOPE OPENER

Frederick C. Iffland, Blissfield, Mich.

Application October 4, 1946, Serial No. 701,379

4 Claims. (Cl. 164—47)

1

This invention relates to envelope openers.

This invention has utility when incorporated in an attractive, compact stationery accessory, for expeditiously trimming an edge from an envelope in such a manner that the envelope sides are easily spread apart for access to the contents and at the same time insuring against any severing or other damage to such contents.

A primary object of the invention is to provide means for imparting a true shearing action to an envelope for removing just a sufficient width thereof to fully open one edge.

Another object of the invention is to impart a shearing which removes slightly more stock from one side of the envelope than the other so the edges are offset thereby facilitating opening of the envelope.

Still another object of the invention is to provide an envelope opener wherein a blade and a cooperating cutting edge of a knife are maintained in constant predetermined relationship including compensation for any wear of either.

An additional object of the invention is to provide means insuring a smooth and even operation of the parts throughout the cutting operation together with an effective absorption of any shocks against the parts upon completion of the shear or upon resetting of the parts.

Other objects and advantages of this invention relating to the arrangement, operation and function of the related elements of the structure, to various details of construction, to combination of parts and to economies of manufacture will be apparent to those skilled in the art upon consideration of the following description and appended claims, reference being had to the accompanying drawings forming a part of the specification wherein like reference characters designate corresponding parts in the several views.

Referring to the drawings:

Fig. 1 is a front elevation of an envelope opener embodying features of the invention herein;

Fig. 2 is an end view of the device from the left of Fig. 1;

Fig. 3 is a front elevation of the device, with the door in open position;

Fig. 4 is a view on the line IV—IV, Fig. 3;

Fig. 5 is a view on the line V—V, Fig. 3;

Fig. 6 is a view on the line VI—VI, Fig. 3;

Fig. 7 is a diagrammatical showing of the cut or shear performed by the mechanism herein; and

Fig. 8 is a section through a preferred type of knife and blade construction.

2

Base plate 10 is provided with a cushion bottom surface covering 12 such as a felt pad, sponge rubber or the like and has its edges configured to form a trim 14 along one side and the ends, the remaining side forming one part of a hinge structure 16. A housing is mounted on the plate 10 and comprises a back 18, sides 20 and top 22, while completing the housing is a cover plate or door 24 swingable on the hinge 16, which cover or door may be shifted to expose the housing interior and in closed position so held by a suitable snap fastener 26. This housing may be of very light sheet metal strengthened by pressed ribs distributed in any suitable and attractive design.

Within the housing and affixed to the base plate 10, is a main frame member 28 of U-shape having its opposing arms 30 against the sides 20. Flat against each arm 30 is a pair of parallel spaced bars 32 defining a slide way 34 therebetween, the bars being positioned by means of pins 36 extending therethrough into the arms 30 and held thereagainst by some suitable fastening technique.

Mounted on the pair of opposing bars 32 adjacent the door 24, and also positioned by the pins 36, is an H-shaped support having its upwardly extending portions 40, 42, together with its downwardly extending portions 44, 46, against the bars 32. Screws 48 mount blade 50 on the cross portion of the support 38 to have its cutting edge 52 disposed along a predetermined line. The arms 40, 42, 44 and 46 extending along the bars 32 adjacent the ways 34 have the cross-piece extend therebetween.

Disposed in each slide way 34 is a slide 54 which is reciprocal therein. The upper termini of said slides 54 are connected by cross-head 56 which has a pair of rods 58 affixed thereto intermediate its length, the rods extending through bushings 60 to the housing exterior on which is mounted the operating handle 62. Depressing this handle 62 moves the slides 54 downwardly in their respective ways. The terminal force or shock of the slides striking the bottom of the ways is absorbed by stops in the form of pads 64 held in place by clips 66 which in turn are mounted in position on the frame by tubular cup members 68 spaced inwardly from the arms 30 and whose additional function is hereinafter more fully described.

Carried by and between the slides 54 and attached thereto by rivets 70 is the knife carrier. This may be a sheet metal stamping having slide engaging ears 72, and a skirt 74 parallel to and slightly spaced from the cutting edge 52.

The plane of this skirt is spaced the distance from the cutting edge equal to the width of the stock to be trimmed from the envelope. This skirt depends from a pocket 76 diagonally extending from the slide on one side upwardly or downwardly as the case may be, to the opposing slide. This stamping is further provided with a pair of plate portions 78 extending from the pocket in the opposite direction from the skirt 74 and in the same plane.

A pair of stems 80 depend from this stamping coaxial with the cups 68 and springs 82 about these stems and seated in the cups serve as means to return the slides and carrier to their normal position following depression by the handle 62. Depression of the handle 62 works against the resistance of these springs which in turn have sufficient expansion force to reset the released handle.

The cross-head 56 carries a spring leaf 84 at each end thereof and held in place by clips 86, which spring leaves abut bridge elements 88 across the upper ends of the slide ways 34 for absorbing the shock of the return stroke of the parts. Also when this portable device is picked up by the handle 62, there is a cushioning effect as the lift of the crosshead is transferred to the frame and housing.

Mounted in the pocket 76 is one leg 90 of an L-shaped member, the other leg 92 providing a knife edge 94 which in device operation coacts with the cutting edge 52 of the blade 50 to perform a true shearing operation. This knife member is continuously urged toward the blade by springs 96 bearing against the leg 90, which springs are mounted on pins 98 (herein shown as a pair of bolts) carried in stirrups 100 mounted on the exterior of the pocket providing slide portion 76. The termini of the knife edge carrying leg 92 slide along the inner cam faces 102, 104, of the pair of bars 32 adjacent the door or cover plate 24. The face 102 is parallel to its adjacent way 34 while the face 104 slants upwardly and away from its adjacent way 34. The knife bearing against these cams throughout its stroke, due to the springs 96, cooperates with the blade for a true shear. That is, as the knife edge progressively travels along the blade, due to the diagonal disposition of the knife, there is a slight progressive warping of the knife as it wipes or rather shears along to cut the object placed in position for trimming.

The door or cover plate 24 is provided with a shelf or chute 106 approximately on a 30° angle upwardly and outwardly from the plane of the blade. An envelope 108 placed in said chute has the edge to be severed directed against the skirt 74 and in the path of the knife. As the knife descends an edge 110 is progressively sheared from the envelope, the amount of the stock cut away being determined by the adjustment of the blade as to the skirt. As a rule it is preferable to have the distance set so that just slightly more stock is cut from the envelope than the thickness of the stock making up such container. This insures complete envelope opening and avoidance of damage to the envelope contents.

By the angular disposition of the directing and holding chute, the stock is severed so that the edges of the flat sides of the envelope are offset and this facilitates spreading the sides apart for access to the interior. The envelope is held in position throughout the cut for as portions of the knife pass beyond the cut line, the plate portions 78 prevent the envelope from twisting.

While the device is primarily for opening envelopes and may be constructed to accommodate any size envelope and set for any type of stock or width of cut, it is obvious stacks of sheet material may also be trimmed where it is desired to have the successive sheets offset.

The door gives access to the interior for reset or cut adjustment and also removal of the cuttings 110 which accumulate in the lower region of the housing.

While the construction heretofore described has an inherently smooth and easy operation, additional slide stabilizing means may be provided. To this end each slide 54 is provided with a pin 112, each being engaged by a slotted arm 114 which arms are in turn fixedly mounted on a common shaft 116 carried by and between a pair of opposing bars 32. This insures against any binding through any cant of the movable parts.

It is to be noted the lower termini of the operating rods 58 just clear the roof of the pocket 76 (Fig. 3) so that if the cut is through heavy stock, the resistance causes sufficient warping or spring in the cross-head (which serves as a bridge between the slide ends) to bring these termini in contact with the knife carrier so there is direct thrust thereof from the handle 62.

The leg 92 of the knife may be tapered in cross section toward the edge 94 (Fig. 8) and the blade 50 undercut away from its cutting edge 52. The openings 118 for the blade mounting screws 48 through the support 38 are of slot form so there may be any desired adjustment between the cutters.

There is thus provided a simple yet efficient device of the class described, employing a true shearing action on an angularly positioned envelope defeating any buckling of the stock along the line of cut or rolling or bunching between the cutting elements to cause the operating parts to become clogged or wedged against free and full operation. The operating parts below the cut line are fully protected from accumulating trimmings.

It is to be understood that the above detailed description of the present invention is intended to disclose an embodiment thereof to those skilled in the art, but that the invention is not to be construed as limited in its application to the details or construction and arrangement of parts illustrated in the accompanying drawings, since the invention is capable of being practiced and carried out in various ways without departing from the spirit of the invention. The language used in the specification relating to the operation and function of the elements of the invention is employed for purposes of description and not limitation, and it is not intended to limit the scope of the following claims beyond the requirements of the prior art.

What is claimed and it is desired to secure by United States Letters Patent is:

1. In a device of the class described, a frame providing a pair of opposing ways, a slide in said ways, an H-shaped member mounted on said frame having arms adjacent said ways with a connecting cross-piece therebetween, a knife carried by said slide, means urging said knife against said arms which arms provide cam faces along which said knife is directed, and a blade mounted on said cross-piece in position to cooperate with said knife in performing a cutting operation.

2. The construction set forth in claim 1 wherein one of said cam faces extend upwardly from

the cross-piece and outwardly from its adjacent way.

3. In an envelope opener, a blade providing a cutting edge, a cooperating knife diagonally disposed to the blade cutting edge and reciprocal thereto, a pair of cams extending away from said blade against which said knife slides in its reciprocation, one of said cams extending outwardly from said blade cutting edge and also away from the plane thereof, and spring means maintaining said knife in cam engaging relationship, whereby the knife progressively passes along the blade cutting edge in the shearing operation with a wiping movement.

4. In an envelope opener, a frame providing a pair of opposing ways, a slide reciprocal in said ways, a knife carried by said slide, a blade mounted by said frame positioned to cooperate with said knife, a cross-head engaging the slide ends and extending as a bridge therebetween, an operating handle mounted on said crosshead, and means between said cross-head and slide intermediate the slide ends to transfer force from the handle direct to said slide when resistance to the cutting operation causes warping of the cross-head.

FREDERICK C. IFFLAND.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
605,093	Fox	June 7, 1898
606,261	Yates	June 28, 1898
737,230	Hatton	Aug. 25, 1903
766,388	Robertson	Aug. 2, 1904
784,136	Blomgren	Mar. 7, 1905
890,300	Reinhold	June 9, 1908
998,289	Hall	July 18, 1911
1,389,881	Kraut	Sept. 6, 1921
1,416,800	Detjen	May 23, 1922
1,731,413	Glasser	Oct. 15, 1929
2,022,198	Hartley	Nov. 26, 1935
2,240,975	Barbour	May 6, 1941
2,312,971	Norrid	Mar. 2, 1943
2,430,588	Simmons	Nov. 11, 1947

FOREIGN PATENTS

Number	Country	Date
358,864	Great Britain	Oct. 15, 1931
746,545	France	Mar. 14, 1933