July 29, 1941. B. K. WILLIAMS 2,250,848

SETTING TOOL FOR OPENING AND CLOSING ENVELOPE FLAP FASTENERS

Filed July 28, 1938 2 Sheets-Sheet 1

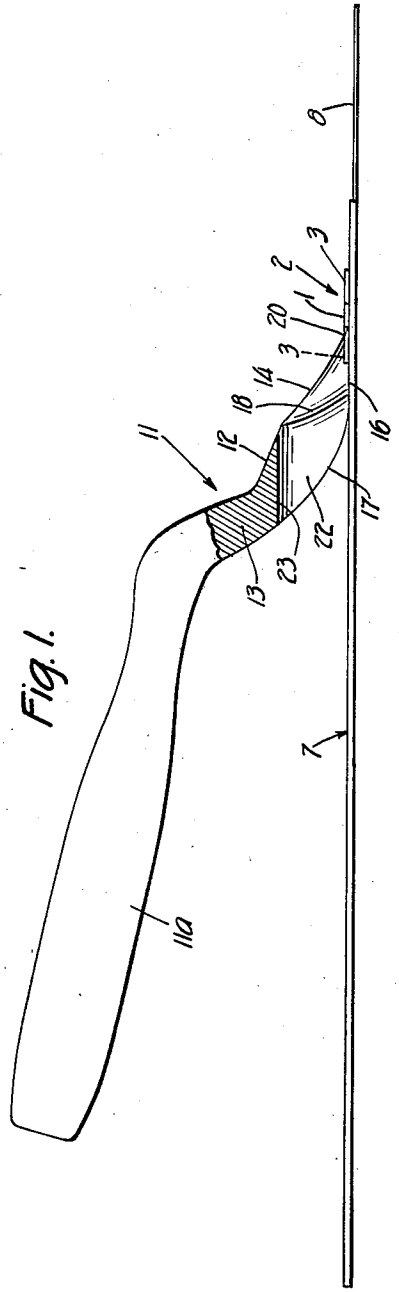


Fig. 1.

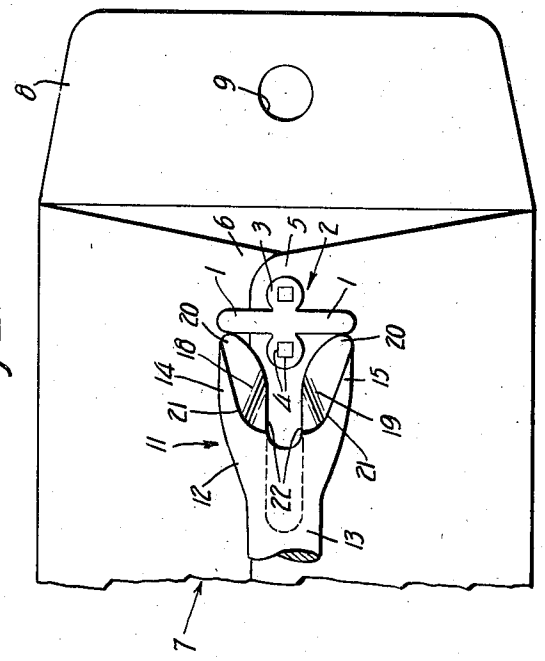


Fig. 2.

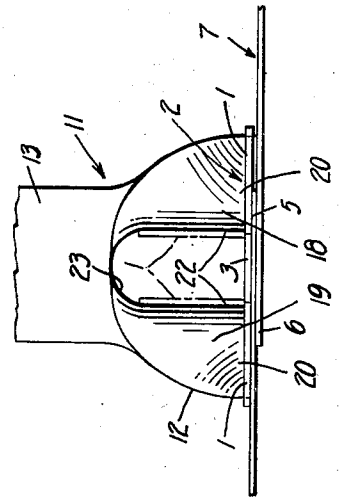


Fig. 3.

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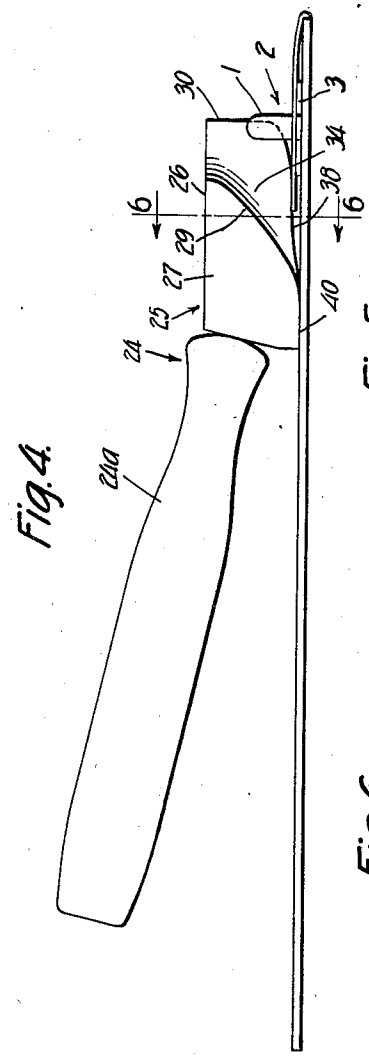


Fig. 4.

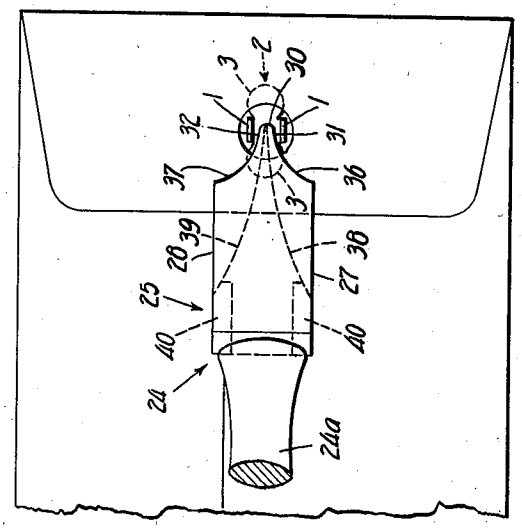


Fig. 5.

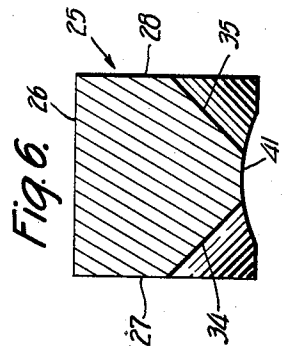


Fig. 6.

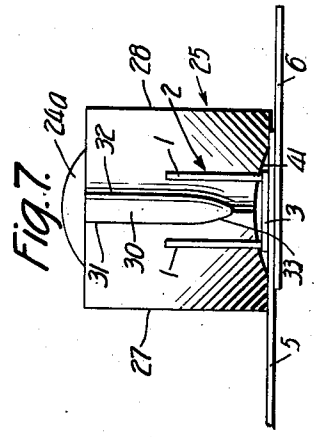


Fig. 7.

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SETTING TOOL FOR OPENING AND CLOSING ENVELOPE FLAP FASTENERS

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Application July 28, 1938, Serial No. 221,741

11 Claims. (Cl. 1—50)

This invention relates to tools for bending the tongues of metal fasteners secured to the backs of envelopes which tongues normally lie flat against the back of the envelope, but which may be bent upwardly into substantial parallelism, then passed through an opening in the closing flap of the envelope, and finally spread out flat again over the margins of the flap opening to secure the flap in closed position.

Envelopes having this type of fastener are usually supplied to the trade with the tongues spread out flat against the back wall of the envelope and with the flap folded against the envelope wall. In using envelopes so furnished by the manufacturer, it is necessary to raise the tongues from the envelope wall, and bend them up into substantial parallelism in order to close the flap of the envelope after inserting the article or articles which are to be enclosed or packed in it.

In cases where many envelopes are used, the operations of first bending up the tongues and later bending them down against the flaps to retain the flaps in closed position, take up considerable time as it has been the practice for the operator to effect this bending by grasping the tongues with his fingers. Also, in some cases, the tongues furnished have sharp edges, or small burrs formed on them, which wear off the skin of the operator's fingers.

It is an object of my invention to effect a saving in the operator's time by the provision of suitable tools which accomplish the upbending and flattening out of the tongues quickly and with little effort on the part of the operator. These tools have the further advantage that the operator need not touch the metal tongues with his fingers so that no cuts or other disfigurement of his hands results from their use over a long period of time.

By the use of the tools embodying the invention, the tongues are also brought uniformly to the proper positions required, the opening tool having opposed deflecting surfaces, which cause the gradual bending up of each tongue of a pair until they lie substantially parallel and with their ends close together, ready for easy insertion through the aperture in the flap. After such insertion and closure of the flap against the envelope body, a characteristic feature of the invention is the provision of a tool having a blade insertable between the tongues and whose advancement along the back of the envelope spreads the tongues apart and bends them down into uniform, flat engagement with the flap of the envelope to secure its closure.

Other objects and advantages of the invention will appear as the description of the particular physical embodiments of the invention selected for illustration herein progresses.

In the accompanying drawings, like characters of reference have been applied to corresponding parts throughout the several views which make up the drawings, in which:

Fig. 1 is a front view, partly in section, of a fastener opening tool embodying the invention, and also showing an envelope having a fastener in position to be opened;

Fig. 2 is a plan view of the tool, envelope and fastener of Fig. 1, with portions of the tool handle and envelope broken off;

Fig. 3 is an end view taken from the right of the tool portion, fastener and a portion of the envelope shown in Fig. 2 on an enlarged scale;

Fig. 4 is a front view of a fastener closing tool embodying the invention, and also showing an envelope with its flap closed and having a fastener with its tongues in position to be bent down;

Fig. 5 is a plan view of the tool, fastener and envelope of Fig. 4, with portions of the tool handle and envelope broken off;

Fig. 6 is a sectional view on an enlarged scale, through the head portion of the tool taken on line 6—6 of Fig. 4 in the direction indicated by the arrows; and, Fig. 7 is an end view taken from the right of the head of the tool and the envelope fastener shown in Fig. 5 on an enlarged scale.

Referring to Figs. 1, 2 and 3, the fastener opening tool is shown in position for opening the bendable tongues 1 of an envelope fastener 2 of a known type and which is provided with oppositely disposed lobes 3 having the downwardly turned prong portions 4 which are transfixed through the two overlapping edge portions 5 and 6 of the rear wall 7 of the envelope and clinched against the inside of wall 7 to secure the fastener firmly thereto. The flap 8 is shown provided with the usual aperture 9 in position to admit the tongues 1 after they have been opened or bent upwards by the tool 11 and upon closing of the flap about the fold line 10.

The tool is shown as comprising an inclined handle portion 11a, a foot portion 12 and a downwardly extending connecting portion 13, the parts being so arranged that the operator's hand is spaced above the surface of the envelope a con-

venient amount for operation of the tool. The foot 12 is widened out at the front and cut away at the center to provide spaced apart toe portions 14 and 15. Each toe portion is shown as having a flat portion 16 adapted to afford a substantial area of contact with the wall 7 of the envelope, and which is connected at the rear with the connecting portion 13 by an upwardly curved extension as indicated at 17. The toes 14 and 15 are shaped in front to provide oppositely disposed inclined bending surfaces 18 and 19, each of which starts at the forward tip 20 of the toe and extends rearwardly and upwardly along a curve 21, merging at the rear into a straight, vertical wall portion 22, the parallel wall portions 22 being spaced apart a suitable distance to bring the tongues 1 into substantial parallelism, as shown in Fig. 3. The parallel wall portions 22 extend clear through to the rear of the toe to provide clearance for the passage of the bent up tongues therethrough and are connected at the top by a curved roof portion 23, as shown in Figs. 1 and 3. As shown in Fig. 2, each of the bending surfaces 18 and 19 terminates at the level of the flat bottom portion 16 of the toe in a curve which progresses from the tip 20 inwardly and rearwardly and merges at the rear into the bottom of a vertical wall 22. It is also to be observed that each of the bending or deflecting surfaces 18 and 19 meets the flat portion 16 at the forward tip 20 of the toe at a sharp, acute angle in order to permit the tip portion of the toes to be readily inserted between the envelope body and the outer end portions of the tongues 1. The entire tool is preferably made of a hard material such as steel but may be made of other material or materials as desired.

In using the tool, the envelope is placed, with either the flap 8 open or closed, and with the tongues 1 bent flat, on a suitable supporting surface and, with the flat portion 16 resting against the envelope the tool is pushed forward to the position indicated in Figs. 1 and 2, and the tips 20 of the toes inserted under the outer end portions of the tongues 1. Further forward motion of the tool, while keeping the bottom surfaces 16 of the toes in contact with the envelope or flap, causes the tongues to be progressively bent upwardly and inwardly, by the deflecting surfaces 18 and 19 until they are parallel and their outer faces are in engagement with the inner vertical wall surfaces 22, as shown in Fig. 3. Further forward motion of the tool causes the surfaces 22 to move along the upbent tongues 1 and the tool to finally leave the fastener with the tongues upbent into the desired position of substantial parallelism. It is to be pointed out that the upbending operation is effected by a single forward motion of the tool without raising or lowering its handle portion 11a and while maintaining the flat portions 16 of the toes against the body or flap of the envelope. The clear passageway through the center of the tool provides a clearance space for its passage over the lobes 3 and the upbent tongues 1.

Referring to Figs. 4 to 7, the fastener closing tool 24 is shown as comprising a handle portion 24a and a foot portion 25 having a flat top surface 26 and similar parallel side faces 27 and 28 which extend forward to the region defined by the curved edge 29. The front end of the foot is formed to define a narrow centrally disposed vertical toe portion 30 whose side faces 31 and 32 are parallel for a substantial distance from the top face 26 and then taper inwardly somewhat as indicated at 33, Fig. 7. From the toe 30 each side face curves outwardly and downwardly progressively toward the rear to define bending or deflecting surfaces 34 and 35 which intersect the flat surfaces 27 and 28 along the curved lines 29, the upper portions of the surfaces 34 and 35 in the plane of the top surface 26 being defined by the concave curves 36 and 37 (Fig. 5). The bending surfaces 34 and 35 are defined at the bottom of the foot by curved lines 38 and 39 which widen out rearwardly as shown in Fig. 5 and each of which extends from a flat portion 40 at the rear of the foot to the bottom of the toe 30 as shown in Fig. 4. The bottom of the foot is also cut away as indicated by curved line 41 (Fig. 6) to provide a suitable clearance space as defined by curves 38, 39 and 41 in order that the bottom of the foot will clear the lobes 3 of the fastener and permit the flat portions 40 to glide along the envelope wall during the operation of closing the fastener.

To secure the closure of an envelope, the flap 8 is folded down flat against the rear wall thereof with the fastener tongues 1 projecting upwards through the opening 9 in the flap, as shown in Figs. 4 and 5. The operator then places the tool on the envelope wall 7 with the narrow toe portion 30 between the upstanding fastener tongues 1. The tool is then advanced, keeping the flat foot portions 40 in contact with the envelope wall 7, the bending surfaces 34 and 35 spreading the tongues apart and bending them downwardly as the tool progresses. The forward motion is continued until the flat surfaces 40 ride over the outer ends of the tongues and press the tongues flat and into firm contact with the surface of flap 8, thereby effecting the closure of the envelope.

A feature of the invention which is utilized in both the opening and closing tools is the provision of spaced apart deflecting or bending surfaces, as exemplified by the surfaces 18 and 19 of the opening tool and surfaces 34 and 35 of the closing tool, whose slope or inclination progressively changes along the length of the foot. As above explained, these oppositely disposed surfaces may be used to bend the tongues into substantial parallelism or flatten them out, as desired.

While the invention has been described in connection with the closure fastener of an envelope, it will be understood that both the opening and closing tools or either of them separately may be employed to upbend or flatten out simultaneously two bendable members associated with a member other than a fastening device.

I have described what I believe to be the best embodiments of my invention. I do not wish, however, to be confined to the embodiments shown, but what I desire to cover by Letters Patent is set forth in the appended claims.

I claim:

1. A tool adapted to bend two oppositely disposed bendable members comprising in combination, a handle, a foot portion secured to said handle, and comprising spaced apart toes, each having a tip portion adapted for insertion under one of the bendable members and a deflecting surface which rises progressively from the tip portion rearward and the rear portions of the oppositely disposed deflecting surfaces being spaced apart so as to bring the ends of the bendable members into desired, spaced apart positions.

2. A tool adapted to bend two oppositely dis-

posed bendable members comprising in combination, a handle, a foot portion secured to said handle and comprising oppositely disposed toes, each having a tip portion adapted for insertion under one of the bendable members and a deflecting surface arranged to progressively raise the bendable member upon the forward movement of the tool and the rear portions of the deflecting surfaces being so disposed as to bring the bendable members into substantial parallelism.

3. A tool adapted to bend two bendable members projecting from the opposite sides of a fastener device and comprising in combination, a handle, a foot portion secured to said handle and comprising two oppositely disposed toes, each toe having a substantially flat bottom portion and a deflecting surface which is disposed to form an acute angle with the front of said flat bottom portion and to progressively raise the bendable member upon forward movement of the tool and the rear portion sof the deflecting surfaces being spaced apart and substantially parallel.

4. A tool adapted to bend two bendable members projecting from the opposite sides of a fastener device and comprising in combination, a handle, a foot secured to said handle and comprising two oppositely disposed toes, each toe having a tip portion adapted for insertion under one of the bendable members near its outer end, and a deflecting surface merging into said tip portion and sloping progressively inwardly and upwardly toward the rear of the toe and there terminating in a substantially vertical wall.

5. The combination as defined in claim 4 in which the vertical walls extend through to the rear of the foot to thereby provide a clear passageway through the foot for the passage of the unbent bendable members therethrough.

6. A tool adapted to bend into substantial parallelism two tongues extending from the opposite sides of a fastener device and comprising a handle, a foot portion secured to said handle and having a central aperture formed therethrough, the side walls of said aperture being disposed progressively inwardly and upwardly from front to rear and the height of said aperture being somewhat greater than the length of said tongues.

7. A tool adapted to flatten out two upstanding bendable members comprising in combination, a handle, a foot portion secured to said handle and having oppositely disposed side faces which are in substantial horizontal alignment at the rear portion of the foot and become progressively more vertical towards its front portion, the side faces at the front of the foot being spaced slightly apart to form a narrow toe portion adapted for insertion between the bendable members and the side faces intersecting the top surface of the foot in a pair of oppositely disposed concave curves terminating in the narrow toe portion.

8. A tool adapted to flatten out two upstanding bendable members comprising, in combination, a handle, a foot secured to said handle and having its lower rear surface horizontally disposed, a narrow vertical toe portion at the front of the foot and adapted for insertion between the bendable members and said foot having progressively curved side faces which terminate in the opposite faces of the toe portion and in the horizontal surface at the rear of the foot, the lower rear surface of the foot being formed with a longitudinally extending recess to thereby provide two spaced apart bearing areas adapted to engage the ends of the bendable members.

9. A tool adapted to flatten out two upstanding bendable members comprising in combination, a handle, a foot secured to said handle and having its lower rear surface formed to provide a pair of spaced apart bearing faces, a narrow front toe portion adapted for insertion between the bendable members and progressively curved side faces which terminate at the rear in said bearing faces and at the front in the opposite faces of said toe portion, the lower portions of the side faces terminating in a pair of oppositely disposed concave marginal edges.

10. A tool adapted to simultaneously bend a pair of tongues extending from the central body portion of a sheet metal fastener, said fastener being also provided with a pair of aligned lobes having envelope attaching means, said tool comprising a handle, a foot secured to said handle and being provided at its forward end with a pair of oppositely inclined spaced deflecting surfaces adapted to engage the faces of the fastener tongues, the inclination of each of said surfaces progressively increasing in the lengthwise direction of the foot and the lower surface of the foot being formed to provide a pair of spaced coplanar foot-supporting areas and with a centrally disposed, longitudinally extending recess adapted to receive and pass the aligned lobes during a traverse of the tool for bending the tongues of a fastener.

11. A tool adapted to flatten out two upstanding bendable metallic securing members comprising in combination, a handle, a foot fixedly secured to said handle and having its lower rear surface horizontally disposed, a narrow vertical toe portion formed integral with said foot at the front thereof and adapted for insertion between the bendable members and said foot having progressively curved side faces which terminate in the opposite faces of the toe portion and in the horizontal surface at the rear of the foot, said side faces terminating at their lower ends in a pair of oppositely disposed concave marginal edges.

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