

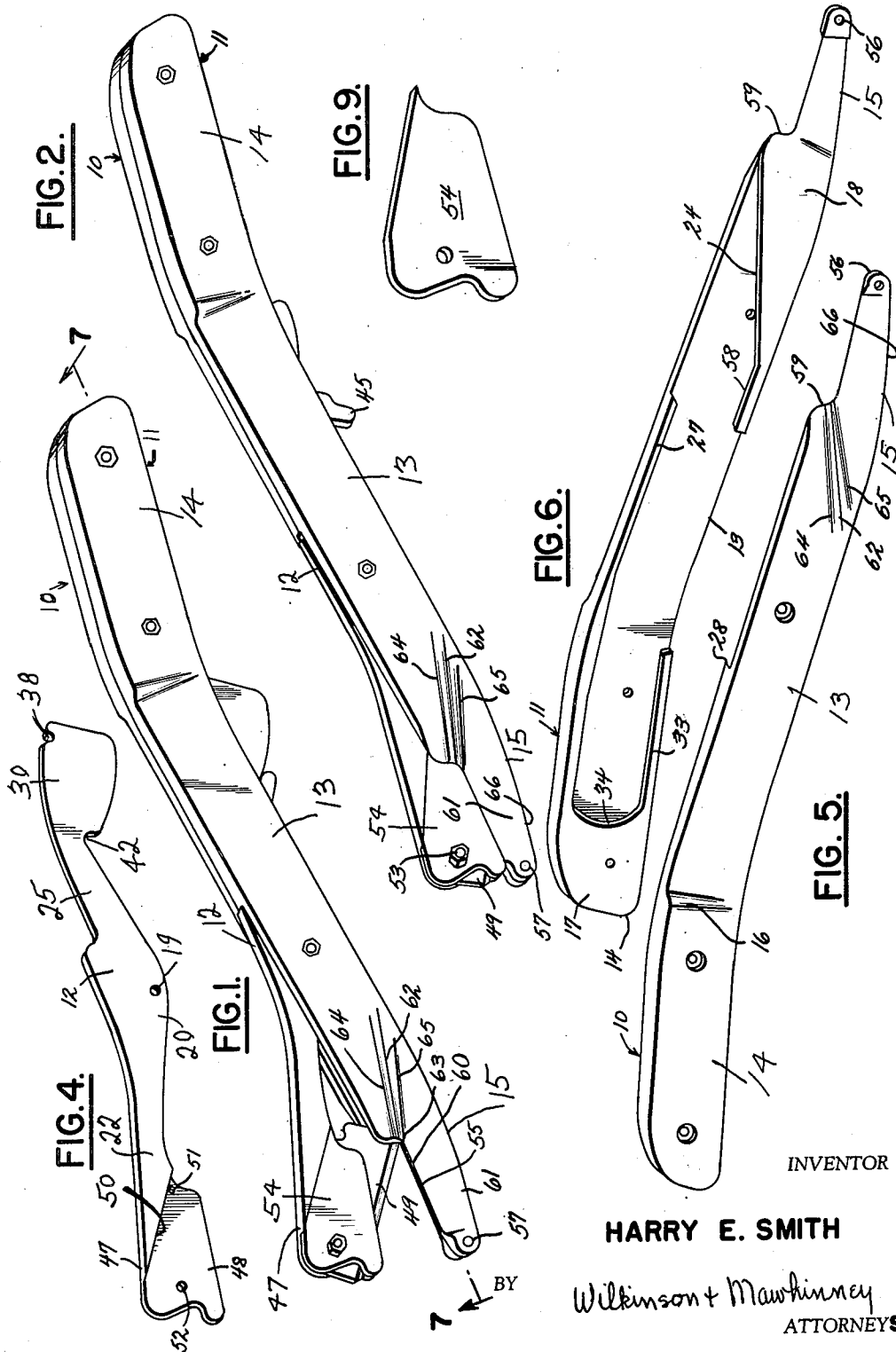
May 20, 1952

H. E. SMITH
CUTTING AND SLITTING DEVICE

2,597,540

Filed Nov. 9, 1949

2 SHEETS—SHEET 1



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2 SHEETS—SHEET 2

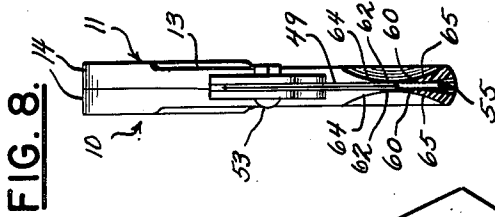
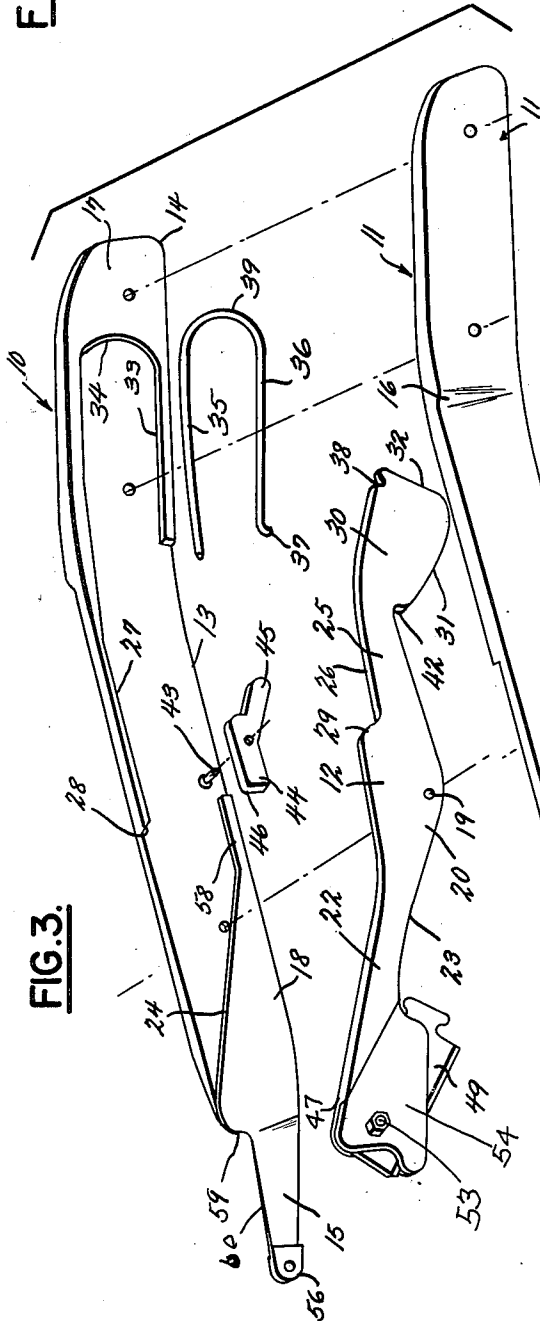
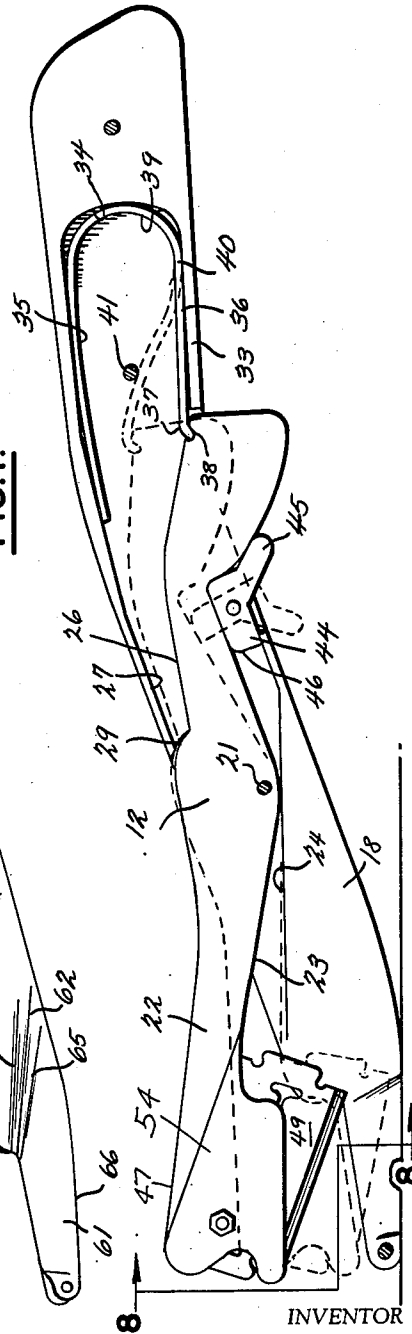


FIG. 7.



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2,597,540

CUTTING AND SLITTING DEVICE

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Application November 9, 1949, Serial No. 126,345

6 Claims. (Cl. 30-156)

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The present invention relates to improvements in a cutting and slitting device and has for an object certain improvements over the Cut-Easy Device disclosed in my prior co-pending application Serial No. 3,992, filed January 23, 1948 and which matured into Patent No. 2,548,243 granted Mar. 10, 1951.

An object of the present invention is to provide a device for cutting and slitting paper, cloth, both light and heavy material, rugs, linoleum, carpet, burlap and upholstery to name a few examples in which the implement may be advanced along the work with the cutting blade carried diagonally or angularly whereby the act of movement of the blade through the work will suffice for slitting the same without any scissors-like movement of the jaws, which however is a permissible operation of the implement when necessity requires.

It is another object of the present invention to provide an improved cutting and slitting device in which the construction is simple and light and readily adapted to the hand of the user in such a way that manipulation of the implement is easy and efficient in both slitting and cutting actions and in which the implement lends itself most readily to cutting and slitting not only in a straight line but also on various arcs and curvatures in which facility of severing is promoted by the tilting of the implement toward the inside of the curve on its thin rounded supporting edge.

A further object of the invention resides in providing an improved cutting and slitting device in which the material operated upon is automatically spread along the line of cut to facilitate the severing operation and at the same time such material is deflected downwardly away from the hand of the operator which grasps an elevated handle lying above the plane of the work to the end that paper cuts on the hand of the operator may be avoided and the hand of the operator maintained out of contact at all times with the work whether it be of paper or other material which would be apt to cut or abrade the skin.

A still further object of the invention is to provide an improved device for cutting and slitting various materials in which a lever carries the cutting implement in a diagonal or angular position adjustable by the finger of the operator in the natural position of holding the hand grip and in which a locking device is provided in conjunction with this lever and the frame of the device for maintaining the jaws in a closed posi-

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tion in which the cutting edge of the blade is housed in a clearance slot to provide a safety factor which renders the implement harmless in transportation and periods of non-use.

With the foregoing and other objects in view, the invention will be more fully described hereinafter, and will be more particularly pointed out in the claims appended hereto.

In the drawings, wherein the symbols refer to like or corresponding parts throughout the several views:

Figure 1 is a perspective view of an improved cutting and slitting device constructed in accordance with the present invention and with the jaws in the open position in readiness for operation.

Figure 2 is a similar view with the device closed and locked.

Figure 3 is an exploded perspective view showing the various parts in disassembled relation.

Figure 4 is a perspective view of a form of lever employed with the cutting blade and clamp plate removed.

Figure 5 is a perspective view of one of the frame members taken from the external side thereof.

Figure 6 is a perspective view of the companion frame member taken from the internal side thereof.

Figure 7 is a perspective view of one of the members of the frame and the lever showing in full lines the open position of the jaws and in dotted lines the closed and locked position of the same.

Figure 8 is a transverse sectional view taken on the line 8-8 in Figure 7, and

Figure 9 is a perspective view of a form of clamp plate employed.

Referring more particularly to the drawings the device comprises generally a frame made from two members 10 and 11 and a lever 12 included between the same. The members of the frame may be made from plastic or other material and the lever 12 may be made from aluminum although I do not wish to be restricted to any particular materials.

Each member 10, 11 is made with an intermediate diagonal shank portion 13, an end handle portion 14 and an opposite end jaw portion 15.

Externally the handle portions 14 are thickened terminating at the external shoulder 16.

Internally the members 10 and 11 are provided with lands 17 and 18 which are adapted to abut together when the members 10 and 11 are brought

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together whereby a suitable cavity or recess is provided between the lands for receiving the lever 12 and for giving the lever opportunity to rock in such recess. The lever is provided with a perforation 19 in its intermediate dropped lower portion 20, which perforation is adapted to fit over a pin or fastening screw 21 carried between members 10 and 11 in the shank portions thereof. The forward arm 22 of the lever extends upwardly in a diagonal direction from the central side portion 20 and its lower edge 23 is adapted to abut the diagonal shoulder 24 of the forward lands 18.

The rear arm 25 of the lever also extends upwardly and rearwardly from the wide central portion 20 and its upper edge 26, in the closed position of the lever is adapted to abut against the forward land extension strips 27 of the rear lands 17. These extension strips 27 lie along the upper edges only of the members 10 and 11. The terminal free ends 28 of these extension strips 27 are preferably beveled or inclined to mate with an inclined or rounded shoulder 29 on the upper portion of the intermediate part of the lever 20.

The rear end of the rear lever arm 26 terminates in an operating or trigger member 30 which inclines downwardly and rearwardly from the uppermost rear portion of the rear arm 26 and which is formed with a downwardly and rearwardly inclined lower edge 31 adapted to project below the lower edge of the frame for operation by the index finger in a rearwardly wiping action along the lower edge of such frame.

The rear edge 32 of the trigger or operating member 30 is also inclined or curved to slide snugly up and down past the forward terminal edges of the lower land extension strips 33. The lands 17 of the two members 10 and 11 together with their upper and lower extension strips 27 and 33 form a pocket between the members of the frame having a rounded rear end 34. A spring is adapted to fit into this pocket having the upper leg 35 fitting beneath the upper land extensions 27, the lower leg 36 fitting against the lower land extensions 33 with a down-turned lug 37 at its forward edge for engaging in a notch 38 in the upper rear edge portion of the trigger or operating member 30 of the lever. A round bow 39 connects the upper and lower legs 35 and 36 of the spring and is adapted to fit against the curved wall 34 of the pocket. As shown in Figure 7 the rear portion of the lower leg 36 is shown to act as a fulcrum 40 when the lower spring leg 36 is flexed upwardly as indicated in dotted lines by the rocking of the lever to a closed position as hereinafter described. This lower spring leg 36 is rockable or bendable from a position against the lower land extensions 33 up to a screw or other fastening 41 which is one of a number of fastenings employed to bind the two members 10 and 11 of the frame together on the lands 17 and 18.

Between the lower portions of the operating or trigger member 30 and adjacent part of the rear lever arm 25 the lever is cut away as indicated at 42 to accommodate a locking or latch member. This locking or latch member is a lever fulcrumed on a screw, pin or fastening 43 carried by the members of the frame and the lever comprises a locking lug 44 and a handle 45. The handle is offset downwardly and rearwardly from the rear end of the lug 44 so that in the full line position of Figure 7 the handle 45 may lie along the lower edge 31 of the trigger 30 with the rear upper corner portion of the lug 44 received into

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the notch or cut-away portion 42 of the lever. The forward upper corner portion 46 of the lever is preferably slightly rounded or inclined in order to facilitate the turning movement of the lug 44 beneath the lower edge of the rear arm 25 of the lever.

The forward end of the forward lever arm 22 constitutes a movable jaw 47 having dependent therefrom a plate 48 against which a razor or other blade 49 is adapted to be placed with the upper edge of the blade engaging against the inclined wall 50 of the outer portion of the forward lever arm 22 which projects out from the plate 48. A burr 51 preferably outstands from the rear portion of the plate 48 as shown in Figure 4 and the plate may be perforated at its forward portion as shown at 52 to receive a fastening 53 by which a clamp plate 54 and the blade 49 are tightly bound to the plate 48. The clamp plate 54 may in general conform to the formation of the base plate 48. The fastening 53 may be a nut and bolt as shown. The lower edges of both plates 48 and 54 are inclined rearwardly and upwardly in order to expose a major portion of the lower edge of the blade 49 when the jaws 15 and 47 are in the open position shown in Figure 1. The blade rests against the burr 51 and the clamp plate 54 presses the blade tightly against the face of the base plate 48 and against the burr 51 thus tending to slightly bend or warp the blade 49 and thus put the same under tension which will add to the rigidity of its lower unsupported cutting edge and tend to maintain this edge of the blade under proper cutting tension. The lower exposed portion of the cutting blade 49 is adapted to fit down into a slot 55 (Figs. 1, 7 and 8) which lies forwardly of the forward lands 18. At the front ends of this slot 55 enlarged bosses 56 are perforated to receive screws, bolts or other fastenings 57 which tend to hold the members of the frame together.

As shown more particularly in Figure 8 the slot 55 enlarges downwardly by reason of divergent side walls. This slot not only houses the lower edge of the cutting blade 49 when in the closed position of Figure 2 but it also in operation forms a clearance slot through which particles of the paper or other material or foreign matter may pass to avoid clogging the implement.

Extension land strips 58 project rearwardly from the rear ends of the front lands 18 and are adapted to come together when the members 10 and 11 are assembled and together form a stop engageable by the locking lug 44 when in the full line position of Figure 7. The free rear ends of these extension land strips 58 also constitute a stop for the handle 45 in the dotted line position of Figure 7 to prevent the further clockwise movement of the locking lever so as to hold the same in a dead center position locking the jaw lever in closed position.

At the forward portion of the frame both members are cut down as indicated at 59 to provide a substantially horizontal upper edge 60 for the lower fixed jaw 61.

Externally of the frame on the outside surfaces of both members 10 and 11 adjoining the rear edge of the jaw surface 60 are indented ways 62 which extend rearwardly and downwardly from the crotch 63 at which the paper or other material is cut. Upper and lower sloping surfaces 64 and 65 incline inwardly to the indented ways 62.

The lower edge 66 of the lower fixed jaw is rounded or curved and is adapted to rest on a

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supporting surface on which the material to be cut is also supported.

In the use and operation of the device, the parts are normally in the position of Figure 2 in which the trigger or operating member 30 has been pressed upwardly causing the lever 12 to rock about its pivot 21 and to move the upper movable jaw 47 downwardly, carrying with it the blade 49 so as to house the lower cutting edge of the blade in the slot 55 where such cutting edge will be protected and where persons handling the device in transportation or periods of non-use will be protected from accidental cuts to the hands or other parts.

The device is maintained in this position by rocking the handle 45 of the locking lug 44 in a clockwise position from the full to the dotted line position of Figure 7. The spring 36 is put under tension in this operation and the tension of the spring is communicated to the rear arm 25 of the lever. The load of the spring may be adjusted so that adequate pressure is brought to bear on the lug 44 to maintain this lug in the locked position and with the handle 45 against the rear edges of the land extension strips 58. By forcibly rocking the lug 44 in a counterclockwise direction its rounded nose 46 will ride down inclined or diagonal edge of the rear lever arm 25 until the lug 44 encounters the upper edges of the land extension strips 58 in which condition the lower spring leg 36 will have expanded to its maximum and engaged the upper edges of the land extension strips 33. The lever 12 is thus rocked to fully open the movable jaw 47 carrying the cutting blade 49.

It will be noted from Figure 1 that in the open position the blade 49 is carried by the holder in such an inclined or diagonal position that its rear end overlaps the crotch 63 so that by grasping the implement by the handle 14 the same may be pushed along the supporting surface with the lower rounded edge 66 riding on this surface and with the material to be cut received between the two jaws. The material rides along a substantial horizontal upper edge 60 of the lower fixed jaw until it encounters the cutting edge of the blade 49 at or about the crotch 63. At this point the material is cut without any motion of the lever but simply by the forward movement of the implement. The severed edges of the material are received upon the indented ways 62 which tends to part the material at the incision and thus render cutting easier. At the same time the indented ways being inclined downwardly and rearwardly the cut material is deflected downwardly and away from the hand of the operator, which hand is at an elevated position above the plane of the material being cut by virtue of the diagonal shank portions 13 of the frame. The sloping surfaces 64 and 65 contribute with the indented ways 62 to guide the material downwardly and to keep the cut material from rising to a level where the same would be apt to encounter and cut or abrade the hand of the operator grasping the handle 14.

It will be understood that the trigger 30 may be shifted upwardly to a desired angular position to cause the lower inclined edge of the cutting blade 49 to descend lower in the slot 55 thus slightly changing the angle at which the lower cutting edge meets the material. A most favorable angular position will be quickly found by moving the trigger 30 up and down. Any debris incident to the cutting operation will fall through the progressively enlarged slot 55 so that the device is self clearing and will not clog.

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If desired the trigger 30 may be oscillated back and forth to give the cutting tool 49 the action of a scissors in conjunction with the slotted upper edge 60 of the lower fixed jaw 61.

During cutting and slitting operations the handle 14 may be lifted and lowered as the tool is rocked upon the lower rounded surface of its forward edge where a proper angular position most favorable for cutting the particular material operated upon may be readily found by experimentation.

It will be noted that although the frame is composed of the two members 10 and 11, these members are thin and the frame is thus thin as a whole and does not offer any bulky obstacle to the passage through the slits or cuts made in the material. The thinness of the frame is also critical of the good results secured in cutting material along rounded or curved lines as the frame may be tilted slightly at an angle to the vertical or in other words laid over angularly on the rounded pilot edge 66. This will be found to facilitate movement of the implement on a curved path through almost any kind of material.

The implement is simple and inexpensive in construction, light and easily useable and efficient in operation.

The device cuts to better advantage when turned transversely out of the vertical on the transversely rounded lower edge of the fixed jaw and at the same time the hand does not drag on the desk or other supporting surface.

Although I have disclosed herein the best form of the invention known to me at this time, I reserve the right to all such modifications and changes as may come within the scope of the following claims.

What I claim is:

1. A cutting and slitting device comprising an elongated curved member having a pair of juxtaposed fixed jaw portions at the forward end thereof and a rearwardly extending handle portion, said handle portion being raised above the plane of said fixed jaw portions and connected thereto through an intermediate diagonal shank, said shank forming a rounded fulcrum rest along the lower edge of said jaw portions, the shank rising upwardly and rearwardly from said fixed jaw portions, a recess in said elongated curved member, a lever pivoted in said recess having forward and rearward arms, a blade-carrying movable jaw on the forward arm, said movable jaw cooperating with said fixed jaw portions whereby a cutting blade carried by said movable jaw is adapted to engage between said juxtaposed fixed jaw portions, the rear arm of said lever being adapted to be actuated to bring about pivoting of said lever and movement of said blade-carrying jaw.

2. A cutting and slitting device as in claim 1 wherein the rear arm of said lever is cut-away on its lower edge, a locking lug pivoted on said curved member and adapted to fit in said cut-away portion and engage said rear arm, said locking lug being adapted to be rotated to elevate the rear lever arm and lower the forward jaw portion to a closed non-cutting position.

3. A cutting and slitting device as in claim 2 in which said rear lever arm is provided with a notch in the upper rear edge portion, and a spring carried by said handle portion having one end engaging in said notch for urging said lever to an open-jaw cutting position.

4. A cutting and slitting device comprising an

elongated curved member having an intermediate upwardly and rearwardly inclined shank portion, a handle at the upper end of the shank, and a fixed jaw at the lower end of said shank portion, a lever pivoted to said shank portion 5 having forward and rear arms, a movable jaw on the forward arm arranged opposite and cooperating with said fixed jaw, a cutting blade removably mounted on said movable jaw, and means comprising a clamping plate carried by 10 said movable jaw for mounting the cutting blade with its cutting edge diagonally disposed with respect to the longitudinal axis of said movable jaw and intersecting the crotch portion of said fixed jaw.

5. A cutting and slitting device according to claim 4 in which inclined indented ways are provided on opposite sides of said shank adjacent the crotch portion of said fixed jaw for guiding the cut material downwardly and to 20 prevent the material from rising to a level with the handle where the cut material would encounter the hand of an operator grasping the handle.

6. In a cutting and slitting device, a blade 25 carrier comprising an open forward mouth, a shank extending off the rear end of the mouth, and a handle off the rear end of the shank, a blade in the mouth inclining downwardly and rearwardly to the rear end of the mouth, a 30 rocking fulcrum on the bottom edge of the blade carrier at the forward portion of the shank on which the carrier may be moved forwardly along a supporting surface while tilting the carrier edgewise in a substantially vertical plane

to vary the angle of attack of the inclined blade edge upon the sheet material to be cut or slit, the lower edges of the carrier being inclined upwardly from said fulcrum in both forward and rearward directions to give clearance for the edgewise adjustment of the carrier on said fulcrum, said shank being inclined upwardly and rearwardly from the fulcrum to carry the handle substantially above the plane of the material, said mouth to and including its rear end being spaced above the fulcrum, and downwardly and inwardly inclining side walls on the carrier just back of the rear end of the mouth for receiving the severed edges of the material and guiding the material down from the handle.

HARRY E. SMITH.

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