

[54] **CUTTER BLADE AND GUIDE CONSTRUCTION FOR A SHEET MATERIAL CUTTER WITH A RECIPROCATING CANTILEVERED BLADE**

[72] Inventor: **David R. Pearl**, West Hartford, Conn.

[73] Assignee: **Gerber Garment Technology**, East Hartford, Conn.

[22] Filed: **Oct. 5, 1970**

[21] Appl. No.: **77,844**

[52] U.S. Cl.**83/635, 83/528, 83/563, 83/697**

[51] Int. Cl.**B26d 1/06**

[58] Field of Search .83/528, 563, 635, 925 CC, 697, 83/618, 681, 684-685, 689; 30/272, 273, 275

[56] **References Cited**

UNITED STATES PATENTS

3,585,888	6/1971	Wiatt.....	83/925 CC X
3,587,381	6/1971	Sederberg.....	83/563 X
1,585,012	5/1926	Biersdorf.....	83/528
2,580,146	12/1951	Williams.....	83/697
2,998,651	9/1961	Gronemeier.....	30/272 R

3,572,202 3/1971 Gerber83/925 CC X

Primary Examiner—Donald G. Kelly
Attorney—McCormick, Paulding & Huber

[57] **ABSTRACT**

A sheet material cutter of the type using a reciprocating cantilevered blade includes a relatively thin reciprocating blade and a guide or sheath that surrounds the blade rearwardly of its forward cutting edge to provide extra rigidity for the blade reducing lateral and rearward deflection by the forces imposed thereon during a cutting operation. In addition to a generally vertical forward cutting edge for cutting sheet material as the blade is moved in the plane thereof, the blade also includes, at its lower end, a generally downwardly facing cutting edge permitting the blade to cut in a plunging fashion by moving it and the guide generally perpendicularly into the material being cut. The blade and guide are so constructed as to allow them to cut, during plunging movement, a slit in the sheet material equal to approximately the combined front to rear dimension of the blade and guide so that as the blade and guide are plunged into the material being cut the slit made thereby will readily accommodate the blade and the guide without seriously displacing the material or causing other problems.

7 Claims, 23 Drawing Figures

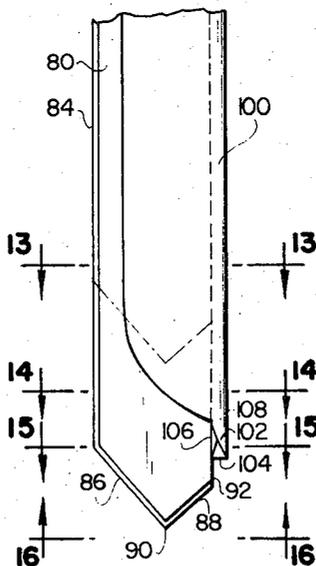


FIG. 1

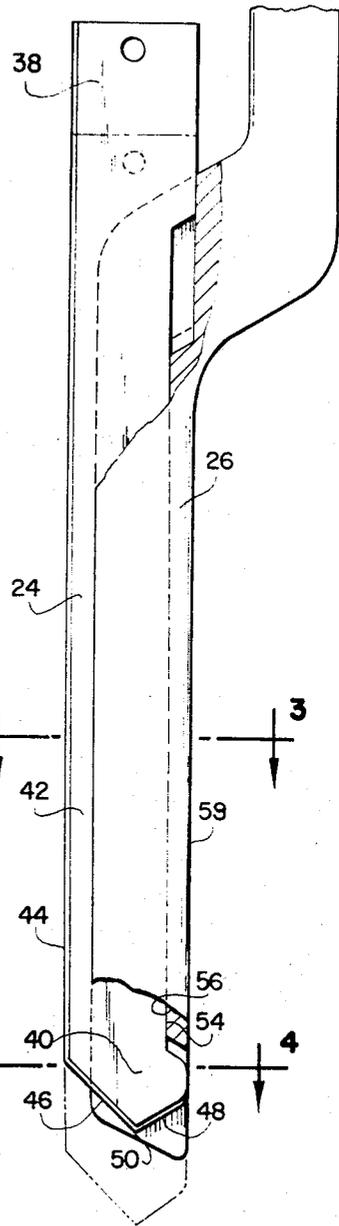
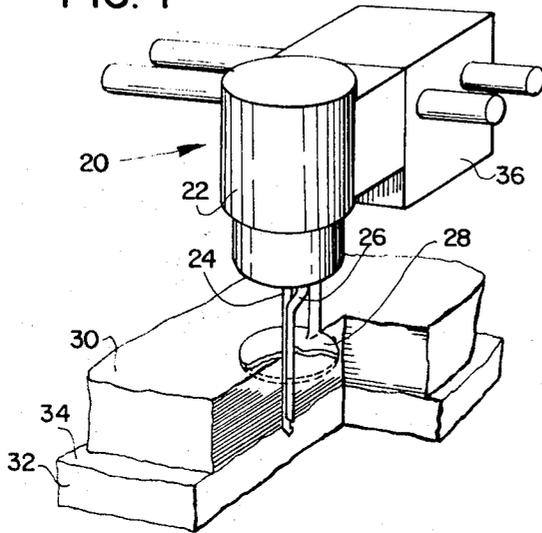


FIG. 2

FIG. 3

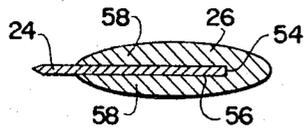
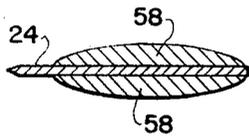


FIG. 4



INVENTOR
DAVID R. PEARL

BY
McLinnick, Raubling & Huber
ATTORNEYS

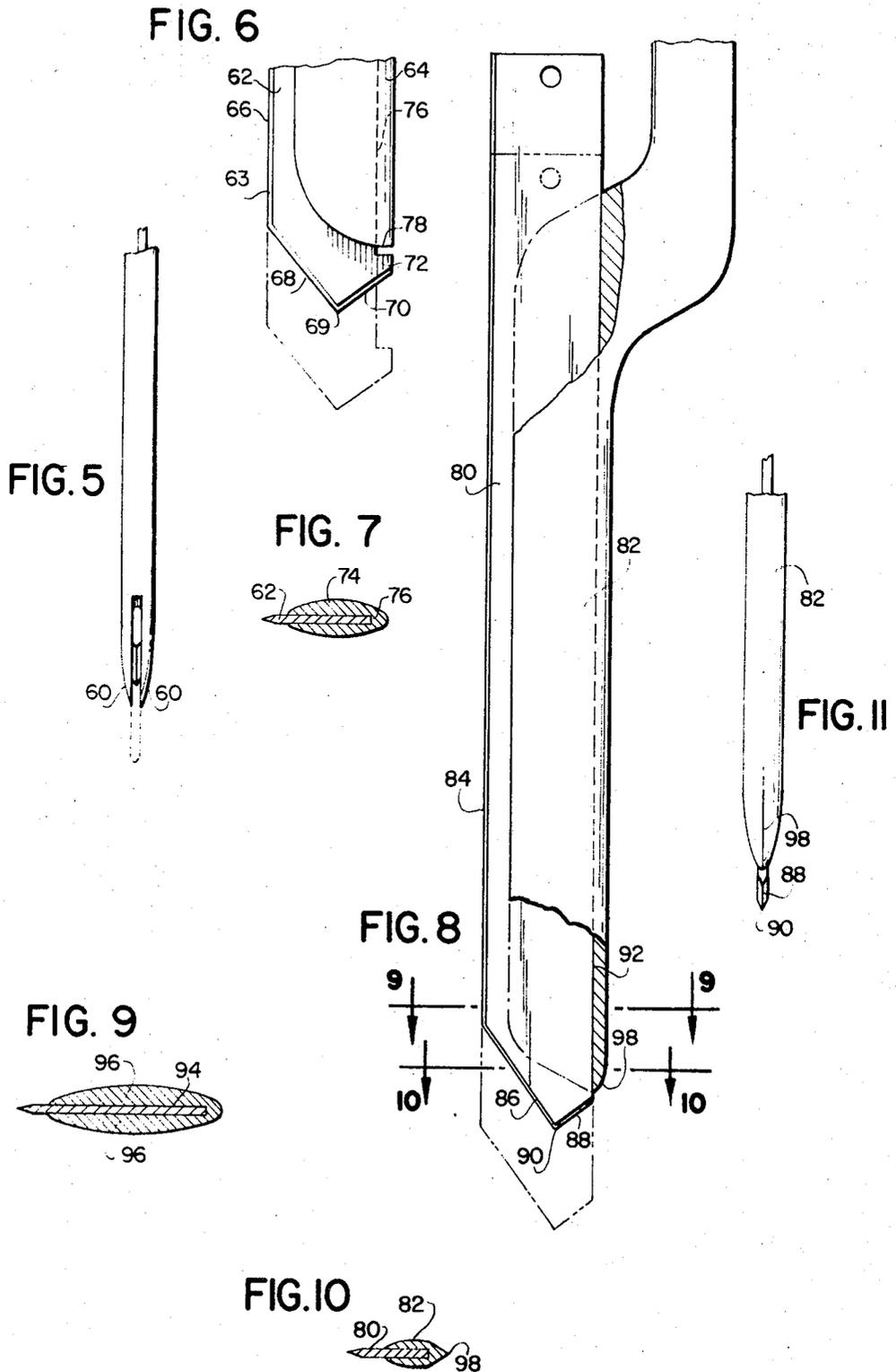


FIG. 12

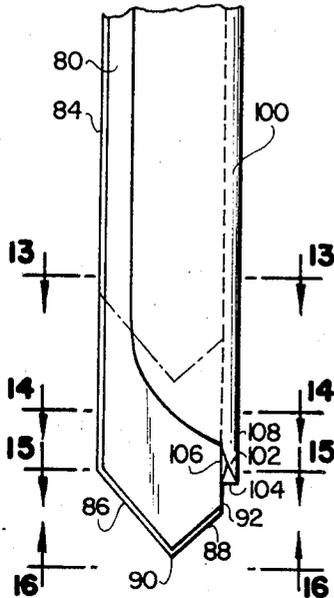


FIG. 13



FIG. 14



FIG. 15

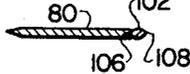


FIG. 16



FIG. 17

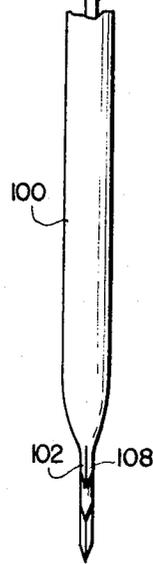


FIG. 18

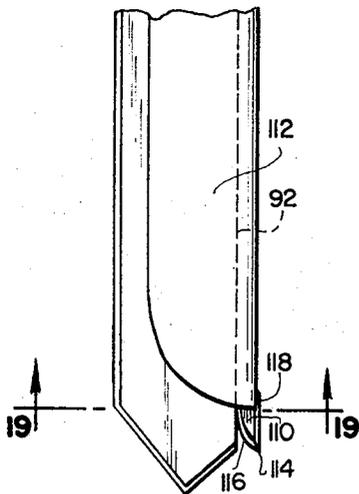


FIG. 20

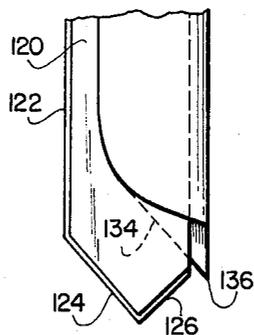


FIG. 21

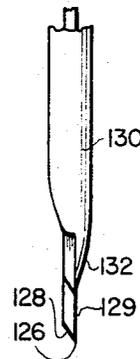


FIG. 19

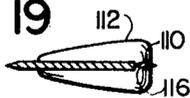


FIG. 22

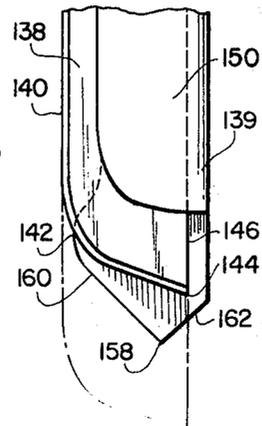
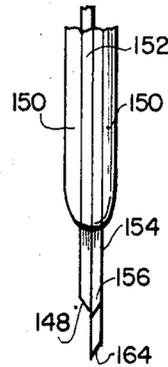


FIG. 23



CUTTER BLADE AND GUIDE CONSTRUCTION FOR A SHEET MATERIAL CUTTER WITH A RECIPROCATING CANTILEVERED BLADE

BACKGROUND OF THE INVENTION

This invention relates to cutting devices utilizing a reciprocating cantilevered blade for cutting sheet material such as layups of fabric, and deals more particularly with the construction of a cutter blade and associated guide for use with such a cutting device.

A cutting device of the type with which the blade and guide construction of this invention may be employed is shown, for example, in copending patent application Ser. No. 821,723, filed May 5, 1969 and entitled "Apparatus For Cutting Sheet Material." As shown in this copending application, the cutter is mounted above a table or bed which supports the sheet material to be cut and is moved under automatic control in the plane of the supporting surface of the bed to follow a desired line of cut on the sheet material. The sheet material may be a layup of fabric used for making garments and the cutter may be used to cut the layup into various desired garment pieces. The cutting blade of the cutter extends downwardly from the cutter body and passes through the material being cut. When cutting along a given line the blade is reciprocated along a generally vertical axis while the cutter is moved forwardly along the line, and the forward cutting edge of the blade engages the sheet material during this movement and performs the actual cutting operation. The lower end of the blade may, and preferably does, extend, at least during a portion of its stroke, a substantial distance below the bottom surface of the material being cut so as to penetrate the supporting bed, the bed being made of foamed plastic or other readily penetrable material.

In using a cutter of the aforescribed type, a cutting operation may be initiated by first positioning the cutter outside of the bounds of the material being cut and moving it into one edge of the material and from such edge through the material to the desired line to be followed. This procedure may be acceptable in many cases, but in many other cases, it is desirable to be able to begin a cut from a location located within the bounds of the material rather than from the edge of the material. To accomplish this, it is necessary that the blade of the cutter be capable of making what is referred to as a plunging or stabbing type of cut. In a plunging or stabbing type of cut, the cutter is first moved to a raised position at which the cutter blade is located throughout the full extent of its reciprocating stroke above the top surface of the material to be cut. The cutter is then held stationary in the plane of the material and while so held is moved downwardly to plunge or stab the blade thereof downwardly through the material, the blade during this plunging or stabbing motion being reciprocated. After the blade is fully plunged through the material it is then moved forwardly along the desired line of cut to cut the material along such line. Alternatively, a plunging or stabbing type of cut may be used by itself to form marking slits or the like in the material.

In reciprocating cantilevered blade type cutters, the cutter blade is supported from only one of its ends and in order to minimize lateral and rearward deflection of the blade, it is known to use a stationary sheath or guide with the blade which surrounds the blade except

for an exposed forward cutting edge portion. Such sheaths or guides are relatively effective in cases where the cutter is not used to perform stabbing or plunging type of cuts. When such stabbing or plunging type of cuts are used, however, the sheath or guide tends to interfere with such a cut insofar as the cut made by the blade is of insufficient size to accommodate both the blade and the guide. To reduce this problem, the guide may be made of a smaller size but this then reduces its effectiveness in restraining lateral and rearward deflection.

The general object of this invention is, therefore, to provide a blade and guide construction for a sheet material cutter of the foregoing character which blade and guide construction is such as to enable the blade to readily execute plunging or stabbing types of cuts with the guide nevertheless providing a high degree of rigidity to the blade thereby minimizing lateral and rearward deflection of the latter.

SUMMARY OF THE INVENTION

This invention resides in a cutter blade and guide construction for use as part of a sheet material cutter utilizing a cantilevered reciprocating cutter blade. The cutter blade is elongated and has a cutting edge extending along its forward edge portion and also a cutting edge at its lower end portion facing generally downwardly, assuming that the material to be cut is laid out horizontally and the main body of the cutter located above such material. The guide used with the blade has a recess for receiving the blade and provides the guide with two cheeks on opposite sides of the recess each of which engages a respective one of the side faces of the blade. At the base of the recess is a forwardly facing surface which engages the rear edge of the blade to prevent rearward deflection thereof. At the lower end of the blade and guide either the blade has a rearwardly extending hook portion which carries the downwardly facing edge of the blade rearwardly to the rear limit of the guide or the guide has a sharpened rear edge which in combination with the downwardly facing edge of the blade forms a composite cutting edge having a front to rear length equal to the combined front to rear dimension of the blade and guide.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a fragmentary perspective view of a cutter utilizing a cutter blade and guide constructed in accordance with the present invention.

FIG. 2 is an enlarged side elevational view of the cutter and guide of FIG. 1 with portions of the guide being shown broken away to better reveal the shape of the blade.

FIG. 3 is a horizontal sectional view taken on the line 3—3 of FIG. 2.

FIG. 4 is a horizontal sectional view taken on the line 4—4 of FIG. 2.

FIG. 5 is a rear elevational view of the blade and guide of FIG. 2.

FIG. 6 is a side elevational view of the lower end of a blade and guide comprising an alternative embodiment of this invention.

FIG. 7 is a horizontal sectional view taken on the line 7—7 of FIG. 6.

FIG. 8 is a side elevational view of a blade and guide comprising an alternative embodiment of this invention with portions of the guide being shown broken away to better reveal the shape of the blade.

FIG. 9 is a horizontal sectional view taken on the line 9—9 of FIG. 8.

FIG. 10 is a horizontal sectional view taken on the line 10—10 of FIG. 8.

FIG. 11 is a rear elevational view of the blade and guide of FIG. 8.

FIG. 12 is a side elevational view of the lower end of a blade and guide comprising an alternative embodiment of this invention.

FIG. 13 is a horizontal sectional view taken on the line 13—13 of FIG. 12.

FIG. 14 is a horizontal sectional view taken on the line 14—14 of FIG. 12.

FIG. 15 is a horizontal sectional view taken on the line 15—15 of FIG. 12.

FIG. 16 is a horizontal sectional view taken on the line 16—16 of FIG. 12.

FIG. 17 is a rear elevational view of the blade and guide of FIG. 12.

FIG. 18 is a side elevational view of the lower end of a blade and guide comprising another alternative embodiment of this invention.

FIG. 19 is a horizontal sectional view taken on the line 19—19 of FIG. 18.

FIG. 20 is a side elevational view of the lower end of a blade and guide comprising still another alternative embodiment of this invention.

FIG. 21 is a rear elevational view of the blade and guide of FIG. 20.

FIG. 22 is a side elevational view of the lower end of a blade and guide comprising still another embodiment of this invention.

FIG. 23 is a rear elevational view of the blade and guide of FIG. 22.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

FIG. 1 shows a sheet material cutter utilizing a blade and guide constructed in accordance with this invention. Referring to this figure, the cutter is indicated generally at 20, and includes a cutter head 22, a cutter blade 24, a cutter blade guide 26 and a presser foot 28. The various parts of the cutter 20 are shown in an operative cutting relationship with a piece of sheet material 30 to be cut. The sheet material 30 may, as illustrated, comprise a layup of a large number of individual layers of fabric and is supported by a supporting bed 32 having an upwardly facing supporting surface 34. The material of which the supporting bed 32 is made is of a penetrable nature, such as a foamed plastic, so that the lower end of the cutter blade 24 may penetrate it by passing through the supporting surface 34 during the cutting operation.

During the normal cutting operation illustrated in FIG. 1, the cutter blade 24 is reciprocated vertically while at the same time the cutter 20 is moved in the plane of the material 30 to follow a desired line of cut. Such movement along a desired line of cut may be automatically controlled and for this purpose the cutter 20 is mounted on a supporting carriage 36 which in turn is supported for controlled movement in both of

the illustrated X and Y coordinate directions. During a normal cutting operation, the presser foot 28 engages the top surface of the material 30 to prevent the material from moving upwardly during the upstroke of the blade 24, and from its illustrated position the entire cutter 20 may be moved upwardly relatively to the carriage 36 to a point at which the blade 24 and its associated guide 26 are raised above the top surface of the material 30. Similarly, from its raised position, the entire cutter 20 may be moved vertically downwardly while the carriage 36 is held stationary in order to move the blade 24 and its guide 26 downwardly through the material 30 in a plunging or stabbing type of cut, the blade 24 being reciprocated during such downward stabbing or plunging movement.

Turning now to FIGS. 2 to 5 for a more detailed description of the blade 24 and its associated guide 26, FIG. 2 shows the blade and guide in side elevational view with part of the guide being broken away to better reveal the shape of the blade and the guide recess which receives the blade. In this figure, the solid lines show the blade in the raised limit of its reciprocating stroke and the broken lines show the blade in the lower limit of its stroke. Considering FIGS. 2 to 5, the blade 24 has an upper end portion 38 which is adapted to be attached to a chuck or other driving means of the cutter head 22 for reciprocating it vertically between its illustrated solid line and broken line positions. At the lower end of the blade is a lower end portion 40 and between the upper and lower end portions 38 and 40 is an intermediate portion 42. The blade is of an elongated shape and is made from a relatively thin flat stock. Along its forward edge it is sharpened to provide a forwardly facing cutting edge 44 which extends vertically or longitudinally of the blade along a substantial portion of its length. The lower end portion of the blade is shaped to provide two generally downwardly facing edges 46 and 48, both of which are sharpened and meet at a point 50. The edge 46 is inclined and extends upward and forwardly from the point 50 to the edge 44, and the edge 48 is inclined and extends upwardly and rearwardly from the point 50 to the rear limit of the lower end portion of the blade. In its front to rear dimension, the lower end portion of the blade has a dimension greater than its intermediate portion 42 and includes a part 52, referred to as a hook portion, which extends rearwardly beyond the rear edge 54 of the intermediate portion 42.

The guide 26 which receives the blade 24 has a longitudinally extending recess 56 which receives the rear portion of the blade so that the guide surrounds a substantial portion of the blade leaving its forward edge portion exposed for cutting. As shown best in FIGS. 3 and 4, the recess 56 defines two cheeks 58, 58 located on opposite sides of the blade 24 which engage the side faces of the blade and thereby provide it with additional rigidity restraining it against lateral deflection. Also, along that portion of the guide 26 which receives the intermediate portion 42 of the blade the recess 56 has a forwardly facing base surface which engages the rear edge 54 of the blade and lends it additional rigidity restraining it against rearward deflection.

Along the portion of the guide which receives the lower end portion 40 of the blade the recess 56 extends rearwardly beyond the rear edge 54 of the intermediate

portion of the blade to provide space for accommodating the full front to rear dimension of the lower end portion. More particularly, at the lower end of the guide the recess 56 extends through the full front to rear dimension of the guide, and the hook portion 52 of the blade extends rearwardly to a point aligned with the rear edge 59 of the guide. As a consequence of this, the horizontal length component of the two downwardly facing cutting edges 46 and 48, taken in combination, is equal to the full front to rear dimension of the combined blade and guide.

From the foregoing, it will therefore be understood that in the construction illustrated in FIGS. 2 to 5, the guide 26 engages the blade on both sides thereof along substantially its entire length to restrain it against lateral deflection. It, also, along the intermediate portion of the blade, extends along the rear edge thereof and by engagement therewith restrains it against rearward deflection. Further, by virtue of the fact that the generally downwardly facing cutting edges 46 and 48 have a combined horizontal length component equal to the front to rear dimension of the combined blade and guide, the slit cut by such edges as the blade is moved in a plunging motion through the material being cut is sufficiently long in its front to rear dimension to receive the blade and the guide. As shown in FIG. 5, the lower end of the guide 26 is preferably feathered as indicated at 60, 60 so as to gradually blend with the side faces of the blade thereby allowing the guide to smoothly enter the slit cut by the blade as it is plunged through the material being cut.

It should also be noted from FIG. 2 that at the lower end of the blade, the point 50 is located closer to the rear limit of the blade than to the front limit. This is done so that as the blade and guide are moved in a plunging fashion through the material to be cut, the horizontal component of the force imposed by the material on the forward edge 46 will be somewhat greater than the horizontal component of the force imposed by the material on the edge 48. Therefore, the resultant of such horizontal components will be a horizontal force tending to move the blade rearwardly against the base of the recess 56. If the resultant force were directed in the other direction, it would tend to move the lower end of the blade forwardly relative to the guide 26, or out of the recess 56, which would be an undesirable condition. It should of course be understood that the shape of the cutting edge or edges provided at the lower end of the blade may vary considerably from that shown, and in some instances, for example, the lower end of the blade may include only one generally downwardly facing cutting edge preferably inclined downwardly and rearwardly from the forward cutting edge 44, as for example in the construction of FIG. 22 hereinafter discussed. Also, in the blade 24 illustrated in FIG. 2, the hook portion 52 terminates at a point aligned with the rear edge 59 of the guide, but if desired, this hook portion may, in some instances, be made to extend a slight distance rearwardly beyond the rear guide edge 58 so that the slit made by the knife during a plunging cut is slightly greater than the front to rear dimension of the combined blade and guide as measured at a point along the intermediate portion of the blade.

Also, it is not necessary in all instances to carry the guide 26 below the intermediate portion 42 of the blade. By way of example, FIGS. 6 and 7 illustrate one construction of a blade and guide which is substantially identical to the construction of FIGS. 1 to 5 except for the manner in which the guide is terminated at its lower end. In FIGS. 6 and 7, the blade is indicated at 62 and the associated guide at 64. The blade 62 has a forward vertical cutting edge 66, and at its lower end includes two generally downwardly facing cutting edges 68 and 70, the lower end of the blade also including a rearwardly extending hook portion 72. The guide 64 includes a recess 74 which receives the blade 62, and the intermediate portion 63 of the blade has a rear edge 76 which engages the base of the recess 74 to prevent rearward deflection of the blade.

In FIG. 6, the solid lines show the blade in the upper limit of its stroke, and the broken line show it in the lower limit of its stroke. From this figure, it will be noted that the guide 64 is so shaped that its lower end 78 is located slightly above the hook portion 72 when the blade is in the upper limit of its stroke, and preferably the lower end 78 is shaped so as to have a sharpened or rounded edge giving it a thickness, rearwardly of the rear blade edge 76, no greater than the thickness of the blade, the cheeks of the guide also being feathered at their lower ends to smoothly blend with the sides of the blade. Similarly to the construction of FIGS. 1 to 5, the blade edges 68 and 70 of the FIG. 6 and 7 construction meet at a point 69 located closer to the rear limit of the blade than to the front limit. They also have a combined horizontal length component equal to the combined front to rear dimension of the blade and guide so that the slit made during a plunging operating has a length sufficient to readily accommodate the blade and the guide as they are moved downwardly through the material being cut.

FIGS. 8 to 11 show another alternate construction of a blade and guide embodying this invention. In these figures the blade is indicated at 80 and the guide at 82. The solid lines show the blade in the upper limit of its reciprocating movement and the broken lines show it in the lower limit of its reciprocating movement. The blade is of a substantially uniform front to rear dimension along the major portion of its length and at its upper end is adapted for attachment to a chuck or other drive means of the cutter head for reciprocating it vertically between the solid and broken line positions. Its vertical forward edge 84 is sharpened for cutting a sheet material during a normal cutting operation as the cutter head is moved in the plane of the sheet material to cause the blade and guide to follow along a desired line of cut. The lower end of the blade 80 is shaped generally similarly to the lower end of the blade 24 of FIG. 2 to include two generally downwardly facing cutting edges 86 and 88 which meet at a point 90. The cutting edge 86 is inclined upwardly and forwardly from the edge 90 and the edge 88 is inclined upwardly and rearwardly from the point 90, the point 90 being located closer to the rear edge 92 of the blade than to the front edge 84 so that the resultant of the horizontal forces applied to the cutting edges 86 and 88 is a horizontal force urging the blade rearwardly toward the guide 82.

The guide 82 includes a recess 94 for receiving the blade 80 with the forward portion thereof projecting forwardly beyond the guide, the guide having two cheeks 96, 96 located on opposite sides of the blade for restraining the blade against lateral deflection and the base of the recess 94 being engagable with the rear edge 92 of the blade to restrain the blade against rearward deflection. As will be best noted from FIG. 8 the guide 82 extends rearwardly beyond the rear edge 92 of the blade so that the combined front to rear dimension of the blade and guide is slightly greater than the maximum front to rear dimension of the blade taken by itself. Therefore, in order to make a slit of sufficient length to accommodate both the blade and the guide during a plunging movement through the material being cut, the lower end of the guide 82 is sharpened, as indicated at 98, so that it will also cut the sheet material as it is pushed therethrough. That is, the cutting edges 86 and 88 of the blade 80 working in combination with each other and with the edge 98, during a plunging movement of the blade and guide, cut a slit in the material equal to the full front to rear dimension of the blade and guide to cause the slit to be of an adequate size to receive the blade and guide as both elements are pushed therethrough.

FIGS. 12-17 show another alternate construction of a blade and guide embodying this invention and which construction is generally similar to that of FIGS. 8-11 except for the manner in which a sharp edge is applied to the lower end of the guide rearwardly of the blade for cutting a portion of the slit as the blade and guide are plunged into the sheet material being cut. Therefore, in these figures various features which are substantially similar to those of FIGS. 8-11 have been given the same reference numerals and need not be further described. As to the differences between the guide of FIG. 12 and that of FIG. 8, the guide in FIG. 12 is indicated at 100 and includes, at its lower end, a downwardly directed extension 102 which is shaped to provide a generally horizontally extending downwardly facing cutting edge 104. The extension 102 is also preferably shaped, as shown in sectional views 15 and 16, to provide sharp edges 106 and 108 along its front and rear vertical sides, respectively. The edge 106, located between the rear edge 92 of the blade and the extension 102, serves to cut off any threads which may become lodged between the blade and the extension, and the edge 108 aides in assuring that the slit made by the knife edges 86 and 88 and the guide edge 104 has a length equal to the full front to rear dimension of the blade and guide.

FIGS. 18 and 19 show another alternate construction of a blade and guide embodying this invention and which construction is basically similar to that of FIGS. 12-17 except for the extension 102 of FIG. 12 being replaced by an insert 110 which is brazed or otherwise fastened to the remainder of the guide, indicated at 112. This allows the guide to be made of a stiff wear resistant material such as tungsten carbide and the insert to be made of another material, such as hard steel, more adaptable to providing a sharpened edge. The insert 110 has a point 114 and a curved sharpened edge 116 which extends generally upwardly and forwardly from the point 114 to the rear edge 92 of the blade. It also includes a generally vertical sharpened rear edge

118 which may, as shown, extend rearwardly a slight distance beyond the rear edge of the guide.

FIGS. 20 and 21 show still another alternative construction of a blade and guide embodying this invention, and in which construction the blade and guide are made to have a self-sharpening action on at least a portion of the downwardly facing edge or edges of the blade. In these figures, the blade is indicated at 120 and in addition to including a vertical forward edge 122 includes two generally downwardly facing edges 124 and 126. As shown best in FIG. 21 the two edges 124 and 126 are both made by beveling the blade 120, as indicated at 128, from one side only with the other side 129 of the blade being flat all the way to the edges 126 and 124.

The guide of FIGS. 20 and 21 is indicated at 130 and at its lower end includes an extension 132 located adjacent the flat side 129 of the blade. The extension 132 is sharpened to provide a cutting edge 134 located directly adjacent the flat side 129 of the blade. A portion of the extension 132 extends rearwardly beyond the rear edge of the blade and has a point 136 which aids in piercing the material being cut during a plunging operation. Along the portion of the extension which extends rearwardly beyond the blade the sharp edge 134 acts to cut the material during a plunging motion, and forwardly of the rear edge of the blade the edge 134 wipes over the edge 126 and part of the edge 124 of the blade as the blade is reciprocated and thereby produces a self-sharpening action on itself and the edges 124 and 126.

FIGS. 22 and 23 show another alternative construction of a blade and guide embodying this invention, and which construction also includes self-sharpening of the blade tip. In the construction of these figures the blade is indicated at 138 and the guide at 139. The blade 138 has a vertically extending forward cutting edge 140 and a single generally downwardly directed cutting edge 142 at its lower end, the edge 142 being inclined slightly upwardly and forwardly from a point 144 formed by the intersection of it with the rear edge 146 of the blade. The edge 142 is formed by a single bevel 148 on one side of the blade, the other side of the blade, the right hand side in FIG. 23, being flat and un-bevelled.

The guide 139 of FIGS. 22 and 23 is a composite member comprised of two cheek pieces or sides 150, 150 preferably made of tungsten carbide or other wear resistant material, a spacer 152, which may be made of the same material as the cheek pieces 150, 150 and an intermediate member 154 made of steel or other material adapted to provide a good cutting edge. The parts 150, 150, 152 and 154 are preferably brazed together. The spacer 152 extends from the rear edge of the guide to the rear edge of the blade and defines the bottom of the recess of the guide. The intermediate member 154 overlies the inside face of the right hand cheek piece 150 of FIG. 23 and at its lower end extends beyond the cheek pieces 150, 150 to provide a sharpened extension 156. The extension 156 is shaped to provide a piercing point 158 and two sharpened edges 160 and 162. The two edges 160 and 162 are each formed by a single bevel, such as that shown at 164 in FIG. 23, on the right-hand side of the extension, the left-hand side of the extension being flat and un-bevelled.

In the FIG. 22 the broken lines show the blade 138 in the lower extent of its reciprocating movement and the solid lines show it in the upper extent of such movement, and it will be noted that the lower edge 142 of the blade does not extend below the point 158 of the piercing extension. Therefore, as the blade and guide are moved in a plunging fashion through a piece of material to be cut the edges 160 and 162 of the extension 156 cut the major portion of the slit with the forward part of the edge 142 of the blade cutting a minor portion of such slot. Also, it will be understood that as the blade is moved in its reciprocating motion the rubbing between it and the extension 156 will cause the extension to have a self-sharpening effect on the major portion of the edge 142.

I claim:

1. A cutter blade and associated guide for use as part of a sheet material cutter utilizing a cantilevered reciprocating cutter blade, said cutter blade being elongated and having an upper end portion adapted for attachment to a driving means of a cutter such as aforesaid for reciprocating it along its longitudinal axis, said cutter blade having two side faces and a forward cutting edge extending longitudinally thereof, said guide extending longitudinally of said blade along at least a portion thereof and having a longitudinally extending forwardly opening recess for receiving said blade with said forward cutting edge projecting therefrom, said guide having two cheeks located respectively on opposite sides of said recess and engageable respectively with said two side faces of said cutter blade to restrain it against lateral deflection, said guide also having a forwardly facing surface at the base of said recess engageable with said blade to restrain it against rearward deflection, and means at the lower end of said blade and guide defining at least one generally downwardly facing cutting edge for cutting in a piece of sheet material as said blade and guide are plunged downwardly therethrough a slit having a length substantially no less than the combined front to rear dimension of said blade and guide, said guide having a lower end portion including a downwardly extending extension located entirely to the rear of and adjacent the rear edge of said blade, and said means defining at least one generally downwardly facing cutting edge including a generally downwardly facing cutting edge on the lower end portion of said blade and a generally downwardly facing sharp edge of said extension having a front to rear length component equal to the front to rear length of said extension.

2. A cutter blade and associated guide for use as part of a sheet material cutter utilizing a cantilevered reciprocating cutter blade, said cutter blade being elongated and having an upper end portion adapted for attachment to a driving means of a cutter such as aforesaid for reciprocating it along its longitudinal axis, said cutter blade having two side faces and a forward cutting edge extending longitudinally thereof, said

guide extending longitudinally of said blade along at least a portion thereof and having a longitudinally extending forwardly opening recess for receiving said blade with said forward cutting edge projecting therefrom, said guide having two cheeks located respectively on opposite sides of said recess and engageable respectively with said two side faces of said cutter blade to restrain it against lateral deflection, said guide also having a forwardly facing surface at the base of said recess engageable with said blade to restrain it against rearward deflection, and means at the lower end of said blade and guide defining at least one generally downwardly facing cutting edge for cutting in a piece of sheet material as said blade and guide are plunged downwardly therethrough a slit having a length substantially no less than the combined front to rear dimension of said blade and guide, one of said two cheeks of said guide at its lower end extending downwardly beyond the other of said cheeks, and said means defining at least one generally downwardly facing cutting edge at said lower end of said blade and guide comprising at least one cutting edge on the lower end portion of said blade which cutting edge is defined by a single bevel on the side of said blade opposite the side thereof which engages said one cheek so as said cutting edge is moved past the lower end of said cheek during its reciprocating movement the rubbing action between said one cheek and said blade imposes a self-sharpening effect on said at least one cutting edge on the lower end portion of said blade.

3. A cutter blade and associated guide as defined in claim 1 further characterized by said generally downwardly facing edge of said extension being oriented generally horizontally, and said extension including two other sharp edges one of which extends vertically along its forward edge and the other of which extends vertically along its rear edge.

4. A cutter blade and associated guide as defined in claim 1 further characterized by said extension having a sharpened vertically extending rear edge which rear edge is located slightly rearwardly beyond the rear limit of the remainder of said guide.

5. A cutter blade and associated guide as defined in claim 1 further characterized by said extension being an insert fixed to the remainder of said guide and made of a material different from that of said remainder of said guide.

6. A cutter blade and associated guide as defined in claim 2 further characterized by said one cheek having a generally downwardly facing cutting edge formed on the lower end thereof.

7. A cutter blade and associated guide as defined in claim 6 further characterized by said one cheek of said guide at its lower end extending rearwardly beyond the rear limit of said blade and said edge on said lower end of said one cheek also extending rearwardly beyond said blade.

* * * * *