

[54] **VISION EFFECTIVE CUTTING AND MARKING DIE**  
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[52] U.S. Cl. ....12/52.5, 69/2, 83/652,  
 101/368  
 [51] Int. Cl. ....**B26f 1/46**  
 [58] Field of Search .....101/30, 368; 69/2; 83/656,  
 83/697, 652

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[57] **ABSTRACT**

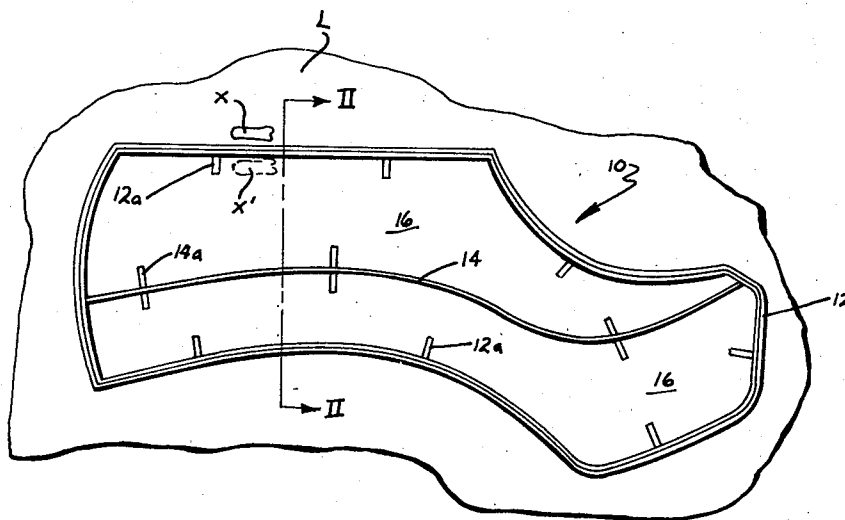
A combination cutting and marking die for materials such as leather, having marker portions specially mounted to the cutter portions with a resilient transparent polymeric material enabling the operator to rapidly cut and mark areas free of defects with total material observation.

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**1 Claim, 3 Drawing Figures**



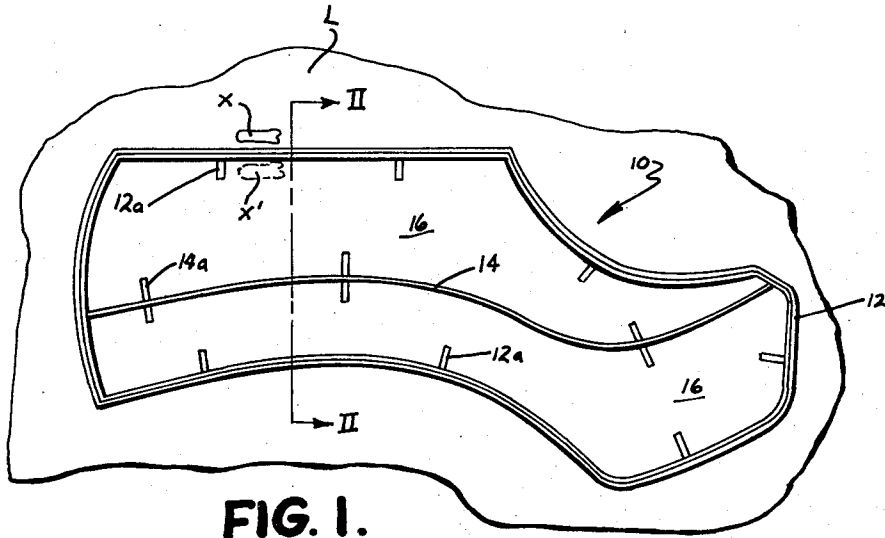


FIG. 1.

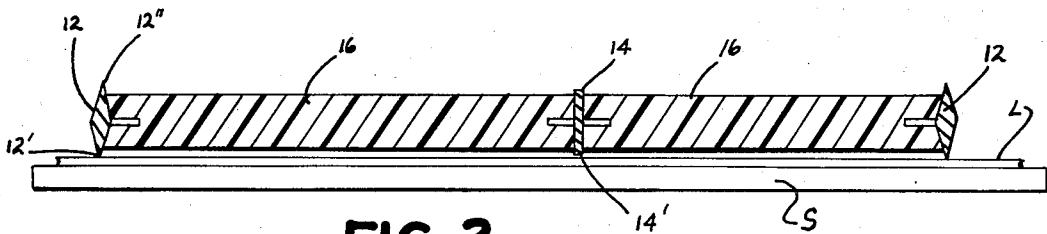


FIG. 2.

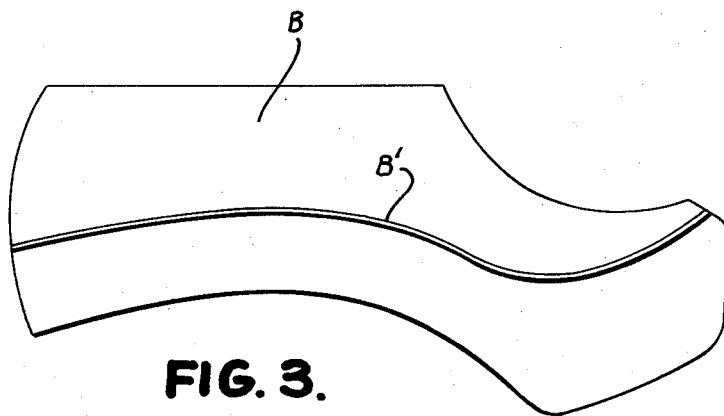


FIG. 3.

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# VISION EFFECTIVE CUTTING AND MARKING DIE

## BACKGROUND OF THE INVENTION

This invention relates to combination cutting and marking dies, and more particularly to such having special intermounting therebetween.

Manufacture of products, such as shoes, from leather or the like involves cutting of the leather into blanks of appropriate sizes and configuration, and marking of the leather surface, as by indenting, for guidance in subsequent operations. Combination cutting and marking dies have been developed for simultaneously performing both types of operations with one stroke of a press. Effective operation of such units for thousands upon thousands of repetitive press strokes is dependent heavily upon the mounting between the cutting die portions and the marking die portions. Also, for quality blanks to be repeatedly, rapidly, and most efficiently made, complete and constant observation of the leather areas should be possible for quick spotting of blemish areas to enable accurate, rapid positioning of the die.

## SUMMARY OF THE INVENTION

It is an object of this invention to provide a novel cutting and marking die that combines the characteristics of effective cooperative intermounting between the marking die portions and cutting die portions, and optimum viewing of the leather or other material being worked upon.

Since this invention was conceived relative to shoe manufacture from leather it will largely be explained in that context. However, the concept could be employed in other similar areas.

The novel structure has a special marking die mounting to the cutting die portions, with a transparent resilient polymeric interconnection and support bonded to these portions around embedded anchors.

These and other objects and features of the device will be apparent from the following specification and drawings.

## BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a plan view of the novel combination cutting and marking die, shown in one particular configuration;

FIG. 2 is an enlarged sectional view taken on plane II—II of FIG. 1; and

FIG. 3 is a plan view of a piece of material such as leather after having been operated on by the novel die.

## DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now specifically to the drawings, the combination cutting and marking die 10 there shown includes a peripheral cutting element 12 and a marking element 14, interconnected by a special body 16.

Cutting element 12 defines a selected configuration for forming a blank, for example for one part of a shoe, from a piece of leather L. Obviously the over-all configuration of this peripheral element will vary greatly depending upon the article to be made. The lower edge 12' of element 12 is a sharp cutting edge (FIG. 2) lying in one plane. Preferably, the opposite edge 12'' of ele-

ment 12 is also a cutting edge, so that, left or right hand versions are capable with one die. Cutting element 12 is used to sever the desired leather blank B (FIG. 3) from the piece of leather L by pressing it down upon the leather supported on a flat support surface S.

Marking element 14 may also have any desired configuration necessary. It lies within the space defined by peripheral cutting element 12. Its lower marking edge 14' is generally blunt or dull, although it may be honed to a small enough width to form an effective marker. This lower edge 14' also lies in a common plane recessed from and parallel to the plane of cutting edge 12'. Hence, edge 14' is spaced from the leather when cutting edge 12' first engages the leather. Pressure on the die causes cutting edge 12' to be forced into the leather, at which point marking edge 14' engages the leather. Further pressure shifts edge 12' further into the leather, causing marking edge 14' to indent the leather. Further pressure forcing edge 12' through the leather results in marking edge 14' not shifting, due to the resistance of the leather to its further movement. At this time, therefore, edge 14' relatively shifts slightly further away from the plane of cutting edge 12'. This is accommodated by having marking element 14 mounted to element 12 with a limited resiliency of body 16.

Body 16 interconnects element 12 and 14. In the invention, body 16 comprises a polymeric material which is molded in place in the die, anchoring the elements together, bonding to the inside peripheral surfaces of element 12 and the opposite side surface areas of element 14. In this particular embodiment illustrated, the polymeric body is formed generally in two parts, one on each side of element 14. It is important that this polymeric material be transparent. This enables blemishes such as X (FIGS. 1 and 2) to be immediately and constantly observed, whether under the die or not, thereby enabling the operator to quickly and repeatedly position the die for high speed cutting of blanks from the leather material, and obtain top quality blanks without blemishes. This transparent polymeric material, which is preferably a silicon rubber or alternatively a material such as clear polyvinyl chloride or the equivalent, is molded in place with its upper and lower surfaces being recessed considerably from both cutting edge 12' and marking edge 14'. It bonds to the side edges of elements 12 and 14, and embeds anchor protrusions 12a and 14a projecting laterally from elements 12 and 14 respectively.

In operation therefore, the novel die 10 is manually positioned by a machine operator over the leather L, with the operator viewing the entire leather area around the die, and also beneath it by observing the leather through the transparent resilient body 16. Hence, if the blemish X is spotted beneath the die as shown at X' in FIG. 1, in phantom lines, the die is rapidly shifted to a position where the blemish is outside the die. Then the press (not shown) is activated to engage the top of the die and force cutting edge 12' part way downwardly into the leather, at which time marking edge 14' engages it. Further lowering of the press causes cutting edge 12' to sever the periphery of the blank B while impressing mark B' into the leather blank. At the end of the stroke, the marking die, after forming the indent, has a relative movement with

respect to the cutting die, through the resiliency of body 16.

It will be apparent to those in the art that various details of construction may be modified within the concept presented, to suit particular manufacturing operations, materials being cut and marked, and the like. Hence, it is intended that the invention is to be limited only by the scope of the appended claims and reasonable equivalents thereto.

The embodiments of the invention in which exclusive property or privilege is claimed are defined as follows.

1. A die for cutting and marking material comprising, in combination: a peripheral configured cutting element defining a space therewithin and having a coplanar cutting edge, and a marking element within said space having a marking edge recessed slightly from

the plane of said cutting edge; said cutting element and marking element being interconnected by a polymeric material bonded thereto, said polymeric material being transparent, enabling viewing therethrough of a material to be cut and marked, and having limited resiliency, enabling limited movement of said marking element relative to said cutting element whereby the recess between said cutting and marking edge increases during cutting after said marking edge engages said material being cut and marked, said cutting element and said marking element including anchor projections extending therefrom towards said space therewithin, said polymeric material being molded in place in the die and embedding said anchor projections therein.

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