J. H. POPE.

CUTTING DIE.

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1,171,459. Patented Feb. 15, 1916.

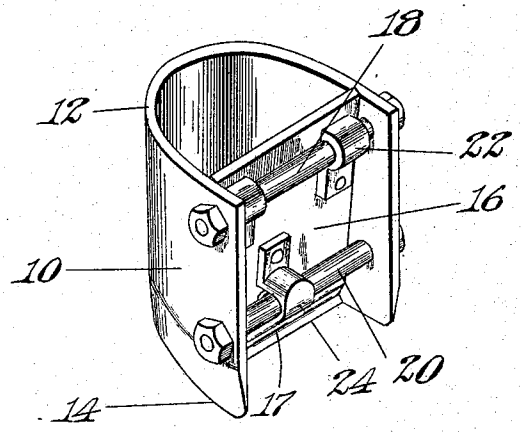


Fig.1.

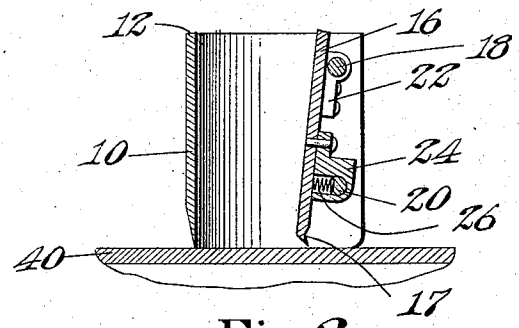


Fig.2.

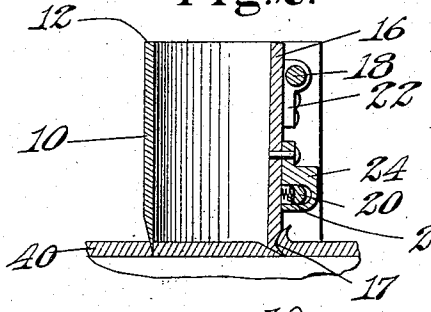


Fig.3.

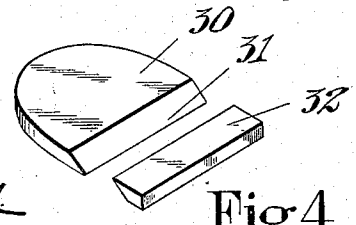


Fig.4.

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CUTTING-DIE.

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To all whom it may concern:

Be it known that I, JOSEPH H. POPE, a citizen of the United States, residing at Hamilton, in the county of Essex and State of Massachusetts, have invented certain Improvements in Cutting-Dies, of which the following description, in connection with the accompanying drawings, is a specification, like reference characters on the drawings indicating like parts in the several figures.

This invention relates to improvements in dies for cutting sole leather or other sheet material used in the construction of heels for boots and shoes.

In manufacturing heels it is advantageous to utilize small pieces of scrap leather to produce lifts composed of two or more pieces because in this way much smaller pieces of scrap can be utilized than would be required to form complete lifts. In assembling the pieces or sections of a pieced lift a more perfect union of the pieces may be made if their contacting edges are beveled so that one overlaps part of another.

An object of the present invention is to provide a die whereby lift sections having a beveled edge may be produced directly from sheet material.

To this end an important feature of the invention consists in the provision of a die having a body portion shaped for cutting part of the outline of a section and a transversely movable cutting blade arranged in sliding contact at its ends with the sides of the body portion, so that the die as a whole presents a complete peripheral cutting outline throughout the entire dieing out operation regardless of the position of the transversely movable blade.

As herein shown, the die is provided with a movable blade beveled at the cutting edge upon its inner surface and yieldingly held in its initial position. In using a die of this construction the movable blade will be forced transversely by the stock during the cutting operation and that edge of the blank which it cuts will therefore be beveled. It is intended to employ two or more dies of complementary shapes so that the assembled sections cut by the various dies will constitute a complete lift. The corresponding edge of each group of dies is formed by a transversely movable blade so that the adjacent edges of the lift sections will be beveled.

Other features of the invention relate to the manner of mounting the movable blade within the die. As herein shown, the blade is mounted for pivotal movement about an axis remote from the operative edge of the die. This arrangement affords a mechanical construction well suited for the use to which the die is subjected, while the curvature of the path of the cutting edge of the blade departs so slightly from a straight line as to be unnoticeable in the beveled edge of the lift.

This construction presents the further advantage that by properly arranging the beveled blade within the die an initial transverse movement may be imparted to the edge of the blade before it has entered the stock sufficiently to be moved transversely by reason of its bevel alone. As herein shown, the pivoted blade stands in its initial position with the inner portion of its pressure receiving edge slightly above the pressure receiving edge of the rigid portion of the die. As a result of this arrangement the arm of the cutting press will be effective to swing the beveled blade slightly in an outward direction as it begins to force the die through the stock. As a result of the initial transverse movement so imparted to the movable blade, it is possible to secure a sharper angle of bevel in the lift section than would be possible otherwise.

The invention further contemplates, as an important feature, the provision of a beveled cutting blade of a novel form which further assists in producing a sharp angle of bevel in the blank. To this end the cutting edge of the movable blade is counter-beveled upon its outer side, or the side away from the blank, so that the outer surface of the blade above the cutting edge will offer little or no opposition to the lateral movement of the blade during its passage through the leather.

These and other features of the invention will be best understood and appreciated from the following description of a preferred embodiment thereof selected for purposes of illustrations and shown in the accompanying drawings, in which,—

Figure 1 is a view in perspective of the die; Fig. 2 is a view in section showing the

die resting upon a piece of stock; Fig. 3 is a similar view showing the die at the completion of the dieing out operation, and Fig. 4 is a view in perspective of a pair of complementary lift sections.

The die herein shown comprises a rigid curved body portion 10 shaped to correspond to the rear portion of a lift and having a sharpened cutting edge 14 and a flat pressure receiving edge 12 disposed in parallel planes. The cutting edge 14 is formed by beveling the die upon its outer surface while the inner surface of the die is straight. Extending between the extremities of the body portion 10, which are disposed in parallel relation, are supports comprising a pair of cross bolts 18 and 20 threaded at their outer ends to receive nuts.

The forward side of the die is formed by a straight blade 16 to the outer side of which are secured a pair of journal pieces 22 for the reception of the upper supporting bolt 18. The connection of blade 16 with the bolt 18 holds the upper edge of the blade in place but permits it to be moved pivotally about the bolt 18 as an axis between the extremities of the rigid curved portion 10. Movement of the blade 16 is limited by a bracket piece 24 fast to the plate and slotted to receive the lower bolt 20 as shown in Figs. 2 and 3. Between the bolt 20 and the outer surface of the blade 16 is interposed a compression spring 26 which normally holds the blade 16 rearwardly in its initial position.

The cutting edge of the blade 16 is formed by beveling its lower edge on the inside at an obtuse angle and by counterbeveling its outer surface as shown at 17. It will be seen that when a blade having a cutting edge of this character is forced into the stock it will have a strong tendency to move laterally and form a bevel in the stock, the angle of which is substantially half way between the angles of the two bevels forming the cutting edge.

In order that the path of the cutting edge of the blade 16 in entering the stock may be inclined the pressure receiving edge of the blade is arranged to stand slightly above the plane of the pressure receiving surface of the body portion of the die, as well shown in Fig. 2. The press arm will therefore encounter this portion of the blade before it has forced the die into the stock and will swing the blade outwardly about the bolt 18 as an axis.

The operation of the die herein shown will be apparent from Figs. 2 and 3. In its initial position the die rests upon the surface of the stock 40 which may be supported upon a suitable cutting block. Pressure is applied to the die, preferably by the arm of a cutting press, and the die is forced through the stock into the position shown in Fig. 3. Before the cutting edge of the body portion of the die has entered the stock the outward swinging of the blade 16 causes its cutting edge to enter the stock on an inclined or oblique path. During its passage through the stock the beveled cutting edge of the swinging blade 16 will cause the blade to move farther in the same general direction, to its final position, shown in Fig. 3, thereby forming a lift or a portion of a lift 30 having a beveled front edge 31 and shown in Fig. 4. On account of the fact that the extremities of the rigid portion of the die are parallel it will be seen that the cutting periphery of the die is complete at all stages so that the blank will be entirely severed from the stock.

In using the die herein shown to produce heel lifts it is intended that a die of complementary shape should be also used which will produce a blank substantially like the blank 32 shown in Fig. 4, but it will be apparent that a lift may be apportioned in any desirable way between two or more complementary dies, or that a complete beveled lift may be formed by the die and used without a complementary piece should occasion offer.

The feature of the invention which consists in arranging the movable blade to be initially acted upon by the press arm is desirable and contributes to improve the results secured by using the die but it is within the scope of the invention to employ a die in which the transverse movement of the movable blade is secured solely by the action of its beveled edge in being forced through the stock.

Having thus explained the nature of my invention and described a preferred embodiment thereof, what I claim is,—

1. A die having a cutting blade movable transversely in the die during the cutting operation, and a rigid cutting portion having an edge so shaped that the die as a whole presents a complete peripheral cutting edge throughout the cutting operation.

2. A die having a rigid portion sharpened for cutting at one edge and having extremities disposed in parallel relation, and a transversely movable cutting blade arranged in sliding contact at its ends with the parallel extremities of the rigid portion.

3. A die having oppositely disposed parallel cutting edges, and a blade arranged between said parallel edges and movable transversely between said edges and in direct engagement therewith during the cutting operation.

4. A die having oppositely disposed portions with cutting edges, transverse supports located between said portions, and a straight cutting blade pivoted to one support and movably connected with the other.

5. A die having oppositely disposed cutting edges and a movable blade interposed between the edges, both surfaces of the blade

being beveled so that they are inclined in the same general direction to the surface of the stock to be cut.

6. A die having at all times a continuous cutting periphery and an unobstructed center, a portion of the die being movable so that the cutting outline is expanded in one direction during the dieing out operation, and means located without said die for yieldingly opposing its expansion.

7. A die having a rigid portion with a cutting edge, and a movable portion with a cutting edge arranged to be shifted relatively to the rigid portion by the engagement of a presser member and preliminarily to the cutting movement of the die as a whole.

8. A die having a rigid portion so beveled at its cutting edge as to cut the edges of a blank substantially perpendicularly to its surface, and a movable blade arranged to be shifted transversely initially by the engagement of a presser member and then shifted farther independently of the action of the presser member.

9. A die having a cutting portion shaped to cut part of the outline of a blank with substantially perpendicular edges, and a blade shaped to cut the remainder of the outline of the blank on a bevel, said blade being so mounted in the die that its pressure receiving edge is acted upon by a presser member at the beginning of the cutting operation to cause transverse movement of the blade but being arranged to move during the cutting operation into a position out of range of the presser member.

10. A die having a body portion, and a blade with a pressure receiving edge mounted for movement about an axis offset with respect to its pressure receiving edge and arranged to be engaged by the presser member.

11. A die having a body portion, and a blade with oppositely disposed pressure receiving and cutting edges mounted for movement about an axis out of line with said edges.

12. A die having a body portion with a cutting edge, a movable blade mounted therein and forming at all times a continuous cutting periphery with the body portion of the die, means for holding the blade yieldingly in an initial position, and means for positively limiting its path of movement.

13. A die having a body portion with a cutting edge, and a blade mounted for pivotal movement in the body portion about an axis remote from its cutting edge and adapted to move about said axis during the passage of the blank through the material in the dieing out operation.

14. A die having a body portion with its pressure receiving edge disposed in a single plane, and a movable blade mounted in the body portion with a portion of its pressure receiving edge initially projecting beyond the plane of the pressure receiving edge of the body portion.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOSEPH H. POPE.

Witnesses:
CHESTER E. ROGERS,
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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."