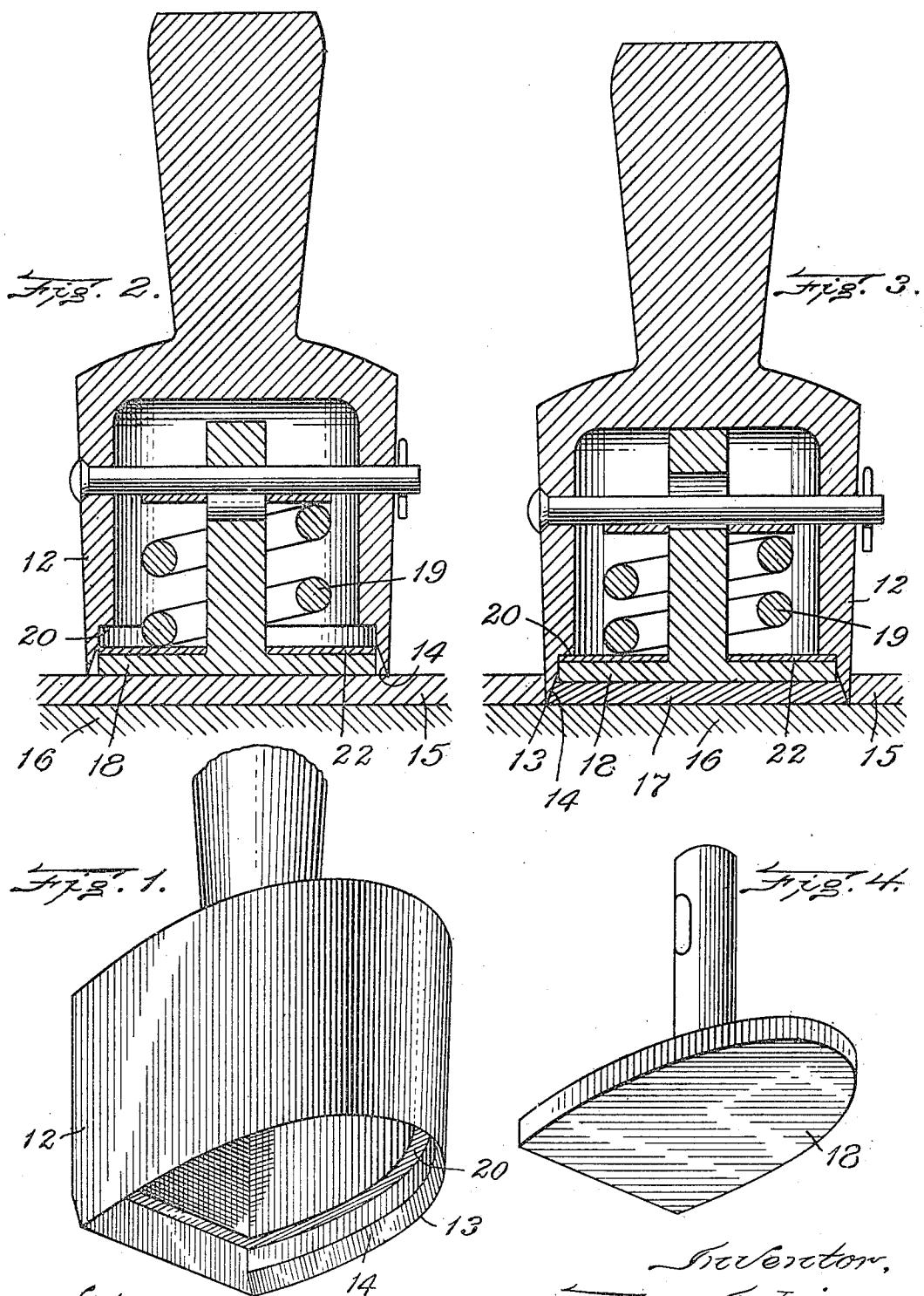


No. 831,791.

PATENTED SEPT. 25, 1906.

F. J. LIMA.
CUTTING DIE.
APPLICATION FILED MAY 31, 1906.



Witnesses:

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UNITED STATES PATENT OFFICE.

FRANK J. LIMA, OF LYNN, MASSACHUSETTS.

CUTTING-DIE.

No. 831,791.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, FRANK J. LIMA, of Lynn, in the county of Essex and State of Massachusetts, have invented certain new and useful Improvements in Cutting-Dies, of which the following is a specification.

This invention relates to dies for cutting from sole-leather or other material articles such as heel-lifts.

10 The invention has for its object to provide a cutting-die adapted to form a piece or part, such as a heel-lift, having a beveled edge, which is made permanent by the compression of the article during the operation of cutting the same from a sheet or piece of material.

The invention consists in the improvements which I will now proceed to describe and claim.

20 Of the accompanying drawings, forming a part of this specification, Figure 1 represents a perspective view of the body portion of a cutting-die embodying my invention, the platen, hereinafter referred to, being removed.

25 Fig. 2 represents a longitudinal section showing my improved die in condition for operation, the die being shown as resting on a sheet of material from which a lift is to be cut. Fig. 3 represents a view similar to a portion 30 of Fig. 2, showing the relative positions of the die and platen after the edge of the die has passed through the material. Fig. 4 represents a perspective view of the platen.

The same reference characters indicate the 35 same parts in all the figures.

In the drawings, 12 represents the body of a hollow die having at one end a continuous cutting edge 13, which in this embodiment of my invention is of heel form and is adapted 40 to cut from a piece of sole-leather a top lift for a heel. The cutting edge 13 is formed by the intersection with the outer face of the die of an inner wall or face 14, which is beveled or inclined inwardly from the cutting edge 45 toward the upper end or head of the die, so that when the die is resting on a sheet of leather 15, as shown in Fig. 2, the wall or face 14 will overhang portions of the upper surface of said sheet and will exert inward compressive 50 force on the portion of the sheet which is cut out by the action of the die when the die is forced into the sheet.

Cutting-dies the cutting edges of which are formed by beveled inner walls or faces 55 arranged substantially as above described

are well known; but heretofore they have been of such construction as to cause the inward displacement of the material by the beveled wall or face 14 to laterally displace or buckle the lift or piece 17 cut from the 60 sheet, the central portion of the piece bulging upwardly from the cutting-bed 16 into the interior of the die. When the piece 17 is removed from the die, it tends to spring back to its normal flat condition, this action changing the bevel or inclination of the edge of the 65 blank formed by the beveled face of the die.

In carrying out my invention I provide the die with means for limiting the movement of the upper face of the piece or lift 17 into the 70 die and for preventing the inward bending or deflection of the blank by the displacing action of the beveled wall 14, the said means coöoperating with the cutting bed or block in compressing the piece 17 between its top and 75 bottom faces while the edges of the piece are being compressed by the inclined die-wall 14. To this end I provide a presser or platen 18, which is movable to a limited extent into the die and is formed to cover the greater part 80 of the upper surface of that portion of the material which forms the piece 17. The platen 18 is preferably projected by a spring so that its outer face is substantially flush with the cutting edge of the die. 85

20 represents a shoulder formed on the internal surface of the die above the cutting edge, said shoulder forming a stop against which the platen abuts when it has been forced into the die by its bearing on the material, said stop positively arresting the inward movement of the platen and making it, in effect, a rigid part of the die. The arrangement of the platen and of the stop 90 95 20 is such that the platen is arrested by the stop before the cutting edge of the die has passed through the material, so that the piece 17 is compressed between the cutting-bed 16 and the platen during the operation of cutting or dying out the said piece. 100

It will be seen that the platen controls the material from the beginning of the cutting operation and prevents it from being laterally deflected or buckling upwardly into the die. The material displaced or crowded inwardly by the inclined wall 14 of the die is therefore compressed into the body of the piece 17 instead of being taken up by the extended area of the piece formed by the bulging of the same into the die which would 105 110

take place if the platen were not employed. The material is therefore compressed both vertically by the platen and laterally by the beveled inner walls, so that the beveled edge 5 of the piece is made permanent. It will also be seen that the compression of the piece 17 between the cutting-bed and the platen and the inward compression of the edge of the piece by the inclined wall 14 insures a compression of all the surface portions of the piece 17, the top and bottom surfaces being compressed by the cutting-die and the platen, while the edges are compressed by the inclined wall 14. The piece 17 therefore 15 emerges from the die completely formed and free from liability to lose the predetermined form imparted by the die by any springing or expanding action.

My improvement above described is especially useful in the production of top lifts for 20 heels, as it enables completed lifts to be rapidly and economically produced, the finish imparted to the lifts by the die being such that no subsequent trimming or burnishing 25 operations are necessary.

The portion of the cutting edge which forms the breast of a top lift will usually be provided with an inner face without the described inclination or bevel, so that the 30 breast of the top lift will be substantially at right angles with its tread-surface.

The spring 19, besides holding down the material and preventing it from buckling into the die during the dying-out operation, also 35 projects the platen and ejects the completed piece 17 from the die. The platen 18 may be rendered adjustable by means of one or more thin washers 22 of the same general form as the platen. When the sheet 15 to be 40 cut is of maximum thickness, the washer will not be required; but when a thinner sheet is to be cut one or more washers may be placed on the back of the platen to increase its thickness.

I claim—

1. A hollow cutting-die having its inner wall beveled or inclined inwardly from the cutting edge toward the head of the die to impart a beveled edge to the cut blank, a presser, and means for limiting the movement of the presser to restrict movement of the upper face of the blank into the die and prevent the inward bending or deflection of the blank by the displacing action of said beveled wall, whereby the material is compressed 55 both vertically and laterally.

2. A hollow cutting-die having its inner wall beveled or inclined inwardly from the cutting edge toward the head of the die to impart a beveled edge to the cut blank, the die having also a blank-pressing platen which is movable to a limited extent within the die, and means for positively stopping the inward movement of the platen before the cutting edge completes its operation to cause the 65 compression of the blank between the platen and the cutting-bed, the said platen preventing inward deflection or bending of the blank by the action of the inclined die-wall.

3. A hollow cutting-die having its inner 70 wall beveled or inclined inwardly from the cutting edge toward the head of the die to impart a beveled edge to the cut blank, the die having also a blank-pressing platen which is movable to a limited extent within the die, 75 and a rigid stop which engages the platen and positively limits its entrance into the die, with its pressing-surface at a point below the upper portion of the said beveled inner walls, whereby the blank is vertically compressed 80 at the same time that it is laterally compressed.

In testimony whereof I have affixed my signature in presence of two witnesses.

FRANK J. LIMA.

Witnesses:

J. A. WELCH,
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