R. W. PERRY.

HEEL LIFT CUTTER.

APPLICATION FILED JULY 1, 1908.

911,905. Patented Feb. 9, 1909.

2 SHEETS—SHEET 1.

Fig. 1.

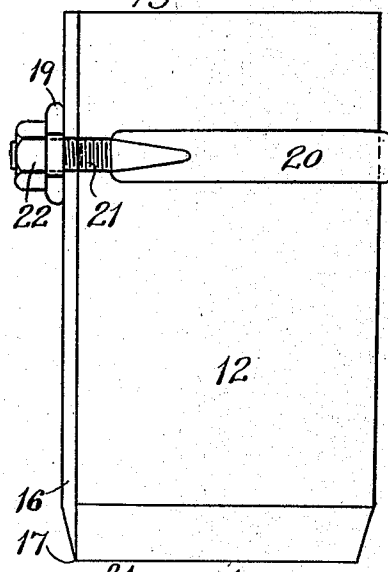


Fig. 3.

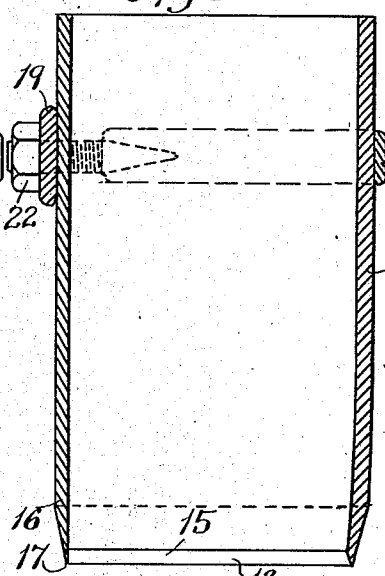


Fig. 5.

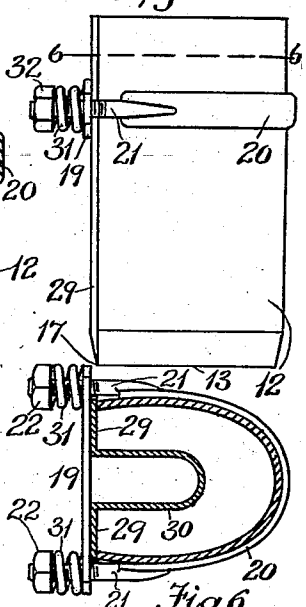


Fig. 2.

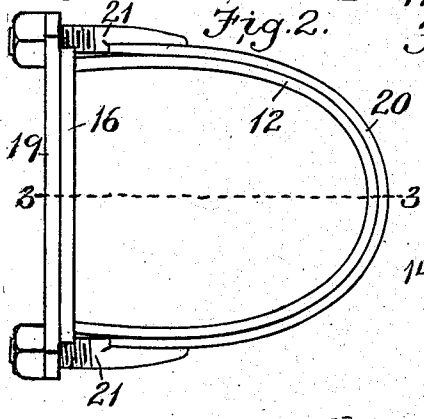


Fig. 4.

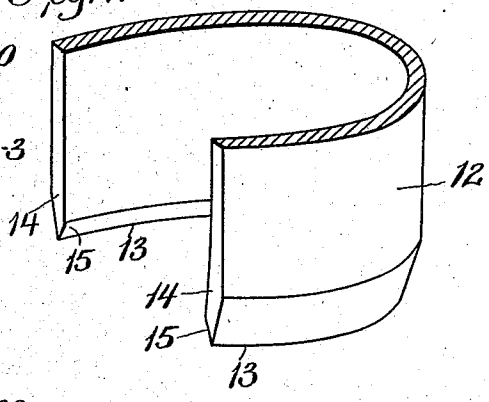


Fig. 6.

Fig. 8.

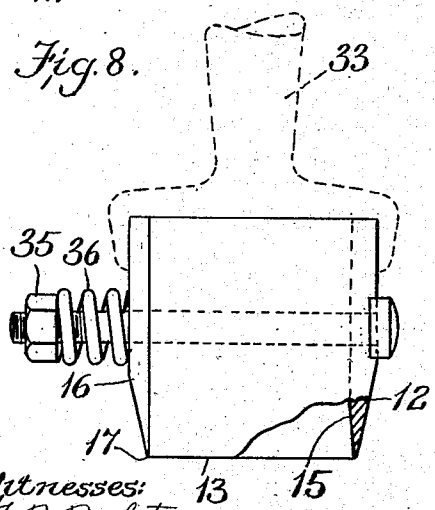
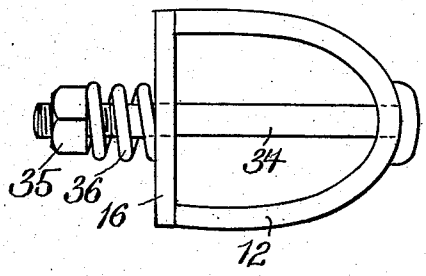


Fig. 7.



Witnesses:
F. R. Ronketone
P. W. Pezzetti

Inventor:
R. W. Perry
by Wright Brown Quinby & May
Attys

R. W. PERRY.

HEEL LIFT CUTTER.

APPLICATION FILED JULY 1, 1908.

911,905. Patented Feb. 9, 1909.

2 SHEETS—SHEET 2.

Fig. 9.

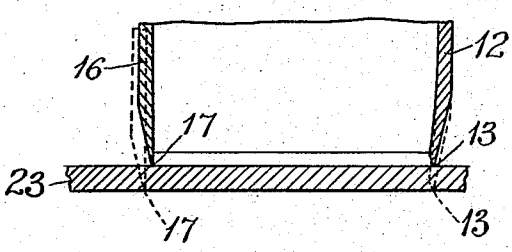


Fig. 10.

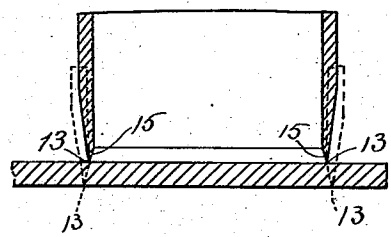


Fig. 11.

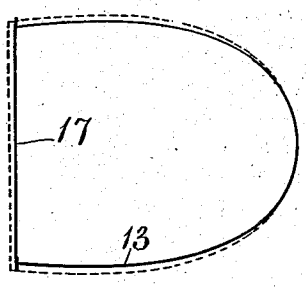


Fig. 13.

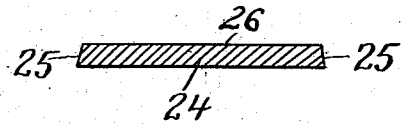
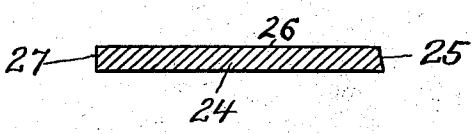


Fig. 12.



Witnesses:
A. R. Roulstone
P. H. Pezzetti

Inventor:
R. W. Perry
by Wright Brown Quinby & May
Attys.

UNITED STATES PATENT OFFICE.

REUBEN W. PERRY, OF STONEHAM, MASSACHUSETTS, ASSIGNOR OF ONE-HALF TO GEORGE H. STEVENS, OF MELROSE, MASSACHUSETTS.

HEEL-LIFT CUTTER.

No. 911,905. Specification of Letters Patent. Patented Feb. 9, 1909.

Application filed July 1, 1908. Serial No. 441,347.

To all whom it may concern:

Be it known that I, REUBEN W. PERRY, of Stoneham, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Heel-Lift Cutters, of which the following is a specification.

This invention relates to cutters or cutting dies employed for cutting out from sheets of sole leather, or like material, lifts of proper form for boot and shoe heels, and especially for top lifts, so called.

It is desirable in many cases to provide a top lift with a beveled margin, that is to say, it is desirable that the curved edge of the lift be inclined so as to form a somewhat obtuse angle with the tread face of the top lift. It is also desirable that the breast edge of the lift be substantially at a right angle with the tread face of the lift.

Heretofore, lift-cutting edges adapted to form the curved and breast edges of a lift simultaneously, have been rigidly connected to form a lift-shaped cutting edge, the cutter having a beveled face which forms one side of the cutting edge of the curved body portion of the die, the portion of the cutting edge which forms the breast having its inner side substantially at right angles with the sides of the sheet of leather on which the die acts. While a cutting die of this character is adapted to form a lift having a beveled curved edge, the rigid connection between the body and lift cutting portions of the die causes such a compression of the lift within the die that the lift is distorted and bent upwardly at its corners, so that its faces, instead of being substantially flat, are more or less dished, and given a bulging appearance on one side, and a convex appearance on the opposite side.

My invention has for its object to provide a heel-cutting die adapted to cut out lifts having beveled curved edges without distorting or bending the lifts, the sides of the lift being in practically the same flat condition as the sides of the sheet of sole leather from which they are cut.

The invention is embodied in a heel lift cutter comprising a body cutting member having a curved resilient cutting edge, usually practically U-shaped, and a beveled inner side which forms one side of the cutting edge, and a breast cutting member, the cutting edge of which is adapted to be displaced outwardly by the pressure against it of the material being cut, the arrangement being such that when the cutter is pressed into a sheet of sole leather, the beveled inner surface of the curved member will cause the curved cutter to expand, and will, at the same time, force the material of the lift being cut against the breast cutting member, slightly displacing the latter, the result being an expansion of the cutter to such an extent that the difference between the areas of the two faces due to the bevel of the curved edge is compensated for, and the sides of the completed lift are left flat.

Of the accompanying drawings forming a part of this specification, Figure 1 represents a side elevation of a lift-cutting die embodying my invention. Fig. 2 represents a top plan view of the same. Fig. 3 represents a section on line 3—3 of Fig. 2. Fig. 4 represents a perspective view of the lower end portion of the body-cutting member of my improved die. Fig. 5 represents a side elevation showing a modification hereinafter referred to. Fig. 6 represents a section on line 6—6 of Fig. 5. Fig. 7 represents a plan view and Fig. 8 a side view of a different form of die embodying my invention. Figs. 9 and 10 represent sectional views illustrating the operation of my improved die. Fig. 11 represents a diagrammatic view showing a plan of the cutting edges of the two members of the die. Fig. 12 represents a longitudinal section, and Fig. 13 a transverse section of a top lift cut by my improved die.

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

In the drawings, 12 represents the body cutting member of a cutting die, said member having a curved cutting edge 13, which is practically U-shaped, that is to say, it is adapted to form the curved margin of a heel top lift. The end portions 14, 14 of the member 12 are free to approach and recede from each other, to a limited extent, the member being sufficiently resilient to permit the side portions of the cutting edge to spring outwardly, as indicated by full and dotted lines in Fig. 11, where the full lines show the normal shape of the cutting edge 13, and the dotted lines show the shape to which it may be expanded, as hereinafter described.

The inner side of the member 12 has a

beveled face 15 which intersects a correspondingly beveled face on the outer side of the member to form the cutting edge 13.

16 represents the breast-cutting member of the die, this member being made in a separate piece from the member 12, and being held yieldingly against the ends 14 of said member, so that its cutting edge 17 which extends across the ends of the curved cutting edge 13, as shown in Fig. 11, is adapted to spring slightly away from said ends, as indicated by dotted lines in Fig. 11.

In the construction shown in Figs. 1, 2, and 3, which represent an elongated lift-cutting die, the breast cutting member is provided with an elongated shank which is rigidly secured to the member 12 by means of a clamp composed of a cross bar 19 and a yoke 20, the ends of which are screw-threaded bolts 21 passing through orifices in the cross bar 19, and are provided with clamping nuts 22. When said nuts are tightened, the upper portion of the shank is rigidly attached to the member 12, and the portion between the cross bar 19 and the cutting edge 17 is sufficiently resilient to hold the cutting edge 17 normally in the position shown in full lines in Fig. 11, and permit said cutting edge to spring outwardly, as indicated by dotted lines in Fig. 11. When the die thus constructed is applied to a sheet 23 of sole leather, the latter being supported on a cutting bed, and pressure is applied to the die to force its cutting edges through the leather sheet, the beveled face 15 exerts lateral pressure on the portion of the leather which forms the top lift, said pressure tending to force the leather against the breast cutting member 16, and at the same time tending to separate the end portions of the curved cutting edge 13. The result of this pressure is the expansion of the cutter formed by the edges 13 and 17, as indicated by dotted lines in Figs. 9, 10, and 11, and the formation of a top lift 24 having a beveled curved margin 25, which forms a somewhat obtuse angle with the tread face 26 of the lift. The inner side of the breast cutting member 16 is substantially at right angles with the sides of the leather sheet upon which it acts, so that said member in entering the sheet forms a breast 27 which is substantially at right angles with the sides of the lift 24.

The described expansibility of the cutting die enables a top lift having the edge formation described, to be produced without bending or distorting the sides of the lift, said sides being left in practically the same condition as they are in the sheet of leather.

In Figs. 5 and 6, I show a modification in which the breast cutting member is composed of two end portions 29, which bear on the ends of the member 12, and an intermediate bend 30 which projects into the member 12, as shown in Fig. 6, the said breast member having a cutting edge of the same contour, so that the die as a whole is adapted to form a U-shaped lift. The breast member is, in this modification, connected with the body member 12 by a clamp composed of a cross bar 19 and a yoke 20, spiral springs 31 being interposed between the cross bar 19 and the nuts 22 to permit the entire breast member to yield and move slightly away from the body member 12.

In Figs. 7 and 8, I show a die adapted to be used in connection with a handle 33. The only difference between the die shown in these figures and that shown in Figs. 1, 2 and 3 is in the length of the cutting members, and in the means employed for holding the cutting edge of the breast cutting member yieldingly against the ends of the cutting edge of the body cutting member. The cutting members 12 and 16 are relatively short, and the body cutting member 12 is provided with a bolt 34 which passes loosely through an orifice in the breast cutting member 16, and is provided with a nut 35, between which and the breast cutting member 16 is interposed a spiral spring 36. The spring yieldingly holds the cutting edge of the breast cutting member 16 against the ends of the cutting edge of the body cutting member 12, and is in this respect an equivalent of the resilient shank shown in Figs. 1 and 3.

In the form of die shown in Figs. 7 and 8, the beveled face 15 is relatively wide, its width exceeding the thickness of the leather, so that the contraction of the body member 12 after it is relieved from pressure, automatically ejects the lift from the die. When the beveled face 15 is relatively narrow, its width being approximately the same or less than the thickness of the leather, as shown in Figs. 3, 4, 9 and 10, the cut lifts are permitted to move upwardly and accumulate in the die, and may be removed from the top.

I find that a lift-cutting die having a breast-cutting portion and a body-cutting portion made in separate parts, is more durable than a die in which both portions are made as a single part, as heretofore, because there is no possibility of breakage or cracking of the cutting edge at the angles formed by the intersection of the body and breast cutting edges.

In a single piece die, the outward pressure exerted on the walls of the die by the lifts within it, tends to crystallize the metal of the die at the corners and is liable to cause the breakage of the die at the corners, a difficulty which is entirely avoided by making the die in two parts. I desire it to be understood, therefore, that I consider a lift cutting die composed of a body-cutting member and a breast-cutting member made in separate parts, as an embodiment of my invention, whether said die is adapted to be ex-

panded as described or not, it being obvious that by locating the clamp shown in Figs. 1, 2 and 3, sufficiently near the cutting edges 13 and 17, said edges would be rigidly confined so that the die would be non-expansible.

An essential characteristic of the body-cutting member 12 is the adaptability of its cutting edge to expand freely during the cutting operation, as indicated in Figs. 9, 10 and 11, this freedom of the cutting edge to expand enabling it to produce a lift which is of greater area at one side than at the other. In the embodiment of the invention shown in Figs. 7 and 8, the width of the beveled face 15, which is greater than the thickness of the lift, enables the expanded cutting member, in contracting, to eject the lift, as described.

I claim:

1. A heel lift cutter having a resilient cutting edge which is free to expand when in operation, and a beveled inner side adapted to cause the expansion of said edge by contact with the work.

2. A heel lift cutter comprising a body-cutting member having a resilient cutting edge which is free to expand when in operation, and a beveled inner side, and a breast-cutting member, the cutting edge of which is adapted to be displaced outwardly by the pressure of the work against it.

3. An expansible heel lift cutter having means for engaging the work during the cutting operation, to cause the expansion of the cutter, and produce a lift with a beveled edge, the cutter being free to expand when in operation.

4. A heel lift cutter comprising a resilient body-cutting member adapted to form a curved margin which is beveled relatively to the sides of the lift, said member being free to expand when in operation, and a breast-cutting member adapted to form a breast which is substantially at right angles with the said sides, said members being made in separate parts.

5. A heel lift cutter comprising a body-cutting member having a U-shaped resilient cutting edge which is free to expand when in operation, and a beveled inner side, and a breast-cutting member, the cutting edge of which extends across the ends of the said U-shaped edge, and is separable therefrom, means being provided for normally holding the breast-cutting edge in yielding contact with said ends.

6. A heel lift cutter comprising a body-cutting member having a U-shaped resilient cutting edge, and a beveled inner side, whereby the said cutting edge is adapted to form a beveled margin on a lift, said member being free to expand when in operation, and a breast-cutting member, the cutting edge of which extends across the ends of the U-shaped cutting member, and is normally held in yielding contact therewith, the said breast-cutting member being adapted to form a breast which is substantially at right angles with the sides of the lift.

7. A heel lift cutter comprising a body-cutting member having a U-shaped cutting edge, and a beveled inner side, said member being free to expand when in operation, a breast-cutting member having a cutting edge which extends across the ends of the U-shaped cutting edge, and is separable therefrom, and means for yieldingly holding the edge of the breast-cutting member against said ends.

8. A heel lift cutter comprising a body cutting member which is free to expand when in operation, and a breast cutting member made in separate parts.

9. A heel lift cutter comprising a body cutting member which is free to expand when in operation, and a breast cutting member made in separate parts, and means for detachably connecting said parts.

10. A heel lift cutter comprising a body-cutting member having a resilient cutting edge and a beveled inner side, said member being free to expand when in operation, and a breast-cutting member, the cutting edge of which is adapted to be displaced outwardly by the pressure of the work against it, the said beveled inner side being wider than the thickness of the material from which the lifts are cut, so that it acts in contracting from its expanded position to eject the lifts from the die.

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

REUBEN W. PERRY.

Witnesses:

C. F. BROWN,

P. W. PEZZETTE.