J. B. HADAWAY.

CUTTING MACHINE.

APPLICATION FILED JAN. 12, 1920.

1,430,546.

Patented Oct. 3, 1922.

2 SHEETS—SHEET 1.

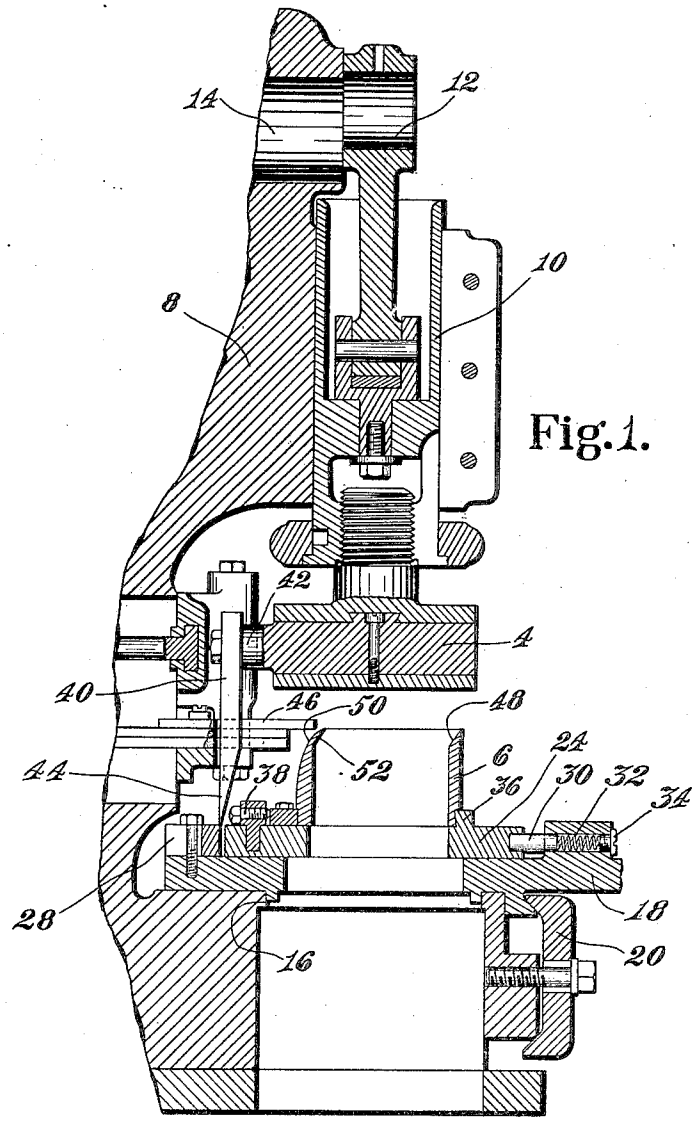


Fig. 1.

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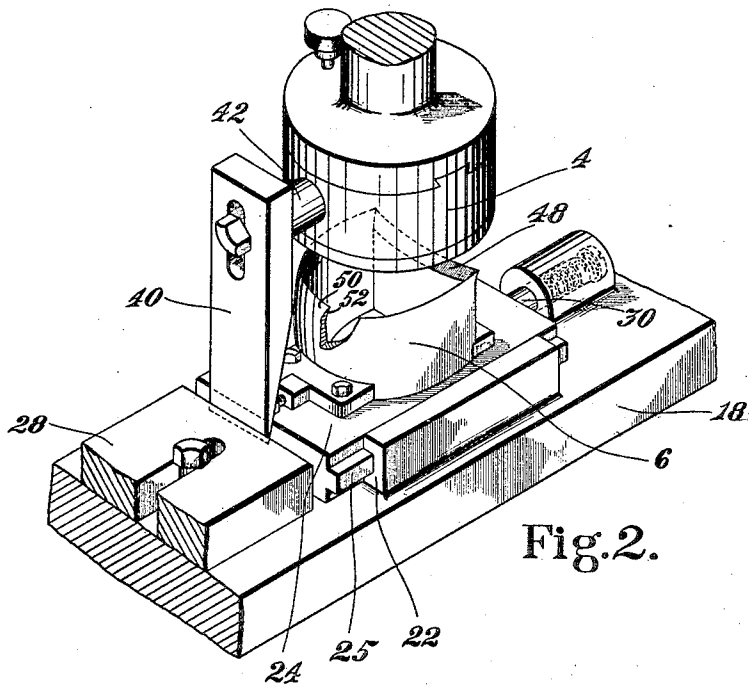


Fig.2.

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UNITED STATES PATENT OFFICE.

JOHN B. HADAWAY, OF SWAMPSCOTT, MASSACHUSETTS, ASSIGNOR TO UNITED SHOE MACHINERY CORPORATION, OF PATERSON, NEW JERSEY, A CORPORATION OF NEW JERSEY.

CUTTING MACHINE.

Application filed January 12, 1920. Serial No. 350,316.

To all whom it may concern:

Be it known that I, JOHN B. HADAWAY, a citizen of the United States, residing at Swampscott, in the county of Essex and State of Massachusetts, have invented certain Improvements in Cutting Machines, 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 cutting machines and more particularly to machines for dieing out blanks from leather or other sheet material.

In the manufacture of pitched or tapered heels, it has been common practice heretofore to assemble lifts having vertical edges into the form of a heel, the lifts being arranged in such order as to increase progressively in size from the top lift to the base or heel seat lift. After the lifts have been secured together, thus producing a heel or heel section, the latter is usually placed in a compressing machine which operates by means of side compressing dies and a breast die in co-operation with a top lift plate and a heel seat die to apply pressure both vertically and laterally to the heel. In this operation, the projecting edges of the lifts are compressed, producing flanges or fins on the exposed edges of the lifts and also compressed portions along the surfaces which have been subjected to the immense pressure applied in the compressing operation. After the heel has been attached to a shoe and during the finishing operations thereon the heel is trimmed, ordinarily by cutters, which obviously must remove all of the flanges or fins on the edges of the lifts. Otherwise, any portions of said flanges or fins which remain are likely to be displaced during other finishing operations and thus produce unsightly or at least undesirable spots or blemishes on the surface of the finished heel. In carrying out these operations, therefore, there is a distinct loss of material through the removal of material sufficient to insure the production of a perfect surface on the finished heel. Moreover, in the manufacture of tapered heels of certain styles, the said heels are provided with undercut breast portions, and in the methods ordinarily employed the undercutting of the breast portion constitutes another source of waste of material. Accordingly it has been proposed to build pitched or tapered heels using lifts which have been beveled to the desired angle along the breast portion and also along the opposite convexed portion at the rear, the substantially parallel side edges of the lifts being provided with the ordinary vertical edges. The use of lifts of the kind described in building a pitched or tapered heel results in greatly diminishing waste in shaping the heel to final form both on the rear convexed portion thereof and on the breast portion.

It is an object of the present invention to provide a simple and efficient machine for cutting beveled heel lifts of the kind above described.

The dies heretofore employed for beveling heel lifts at the same time that they are cut from sheet stock are so constructed as to exert necessarily a substantial compressing action upon all or various portions of the edges of each lift. This necessitates the application of greater power than if no compression were effected and is, moreover, objectionable from another standpoint since it is desired to trim the edges of the lifts after they have been assembled in heel form and this operation is performed more easily on edges which have not been unequally compressed and hardened by pressure.

In one aspect the invention consists in the provision of means, comprising a die, for cutting blanks such as heel lifts from sheet material, which means is organized to form a plurality of beveled edges on the blanks without compression on these edges as the blanks are died out.

In the illustrative embodiment of the invention the die is provided with an offset or beveled convexed edge portion and a beveled breast edge portion so related to each other that the lift may shift laterally relatively to the breast edge as the cutting thereof progresses during movement of the die obliquely through the sheet material.

In another aspect the invention contemplates the provision of a novel die and of means for relatively moving the die and cutting block simultaneously in directions angularly related to each other during cutting operations whereby blanks with beveled edges are produced.

In a preferred form of the invention, the die is moved in a horizontal direction by means controlled by the cutting block and

operative upon relative approaching movement of the die and cutting block in a vertical plane.

Other features of the invention, together with certain details of construction and combination of parts, will be described in the specification and pointed out in the appended claims.

In the drawings:—

Fig. 1 is a sectional view through a portion of a cutting machine illustrating one embodiment of my invention; and

Fig. 2 is a perspective view of the cutting block and die mechanism per se.

As disclosed in the drawings, there is provided preferably a movable cutting block 4 arranged to co-operate with a die 6 which is relatively stationary in the vertical plane, it being understood however, that the cutting block may be made stationary and the die movable toward the block without departing from the spirit of the invention. Mounted in the frame 8 of the machine is a reciprocable plunger 10 operated from an eccentric 12 on the main shaft 14 and arranged to carry adjustably at its lower end the said cutting block 4. Below the cutting block 4 and in alinement therewith there is provided a seat 16 on the frame of the machine designed to receive interchangeably any one of a plurality of plates 18 which carry dies of various sizes. Preferably the plate is clamped to the frame for ready detachment therefrom by means of a clamp 20. Each plate 18 is provided with grooved projecting ribs 22 (Fig. 2) designed to receive in slidable relation a plate 24 having flanges 25 receivable in said grooves and correspondingly shaped with respect thereto. The construction thus presented is such that the plate 24 is retained on the supporting plate 18 but is movable on the same in the plane of their contacting surfaces. Adjustably mounted at one extremity of the plate 18 is a block 28 against which the movable plate 24 is yieldingly held through the operation of a spring-pressed plunger 30 mounted in a bearing furnished by a projecting portion of the plate 18 at the extremity opposite to that which supports the block 28. The plunger is urged in the direction to press the plate 24 against the block 28 by means of a spring 32, an adjustable member 34 being provided to retain the spring and plunger in proper position and to permit ready removal thereof in case it should be necessary or desirable to replace either. The die 6 is removably secured to the plate 24 by means of a flange 36 on plate 24 and adjustable securing devices 38.

In the present embodiment of the invention, the means for causing movement of the die in the horizontal plane consists of a wedge member 40 secured adjustably to a projection 42 on the cutting block 4. It will be understood that as the cutting block descends in the cutting operation, the wedge portion 44 of the wedge member engages the adjacent end of the plate 24 and by a cam or wedge action forces the plate toward the right, in Fig. 1, against the action of the spring-pressed plunger 30 which operates to return the plate to normal position as the cutting block rises after each cutting operation. Reference character 46 designates a gage which is commonly used in cutting machines of this type to position the work with respect to the die. In order to move the die laterally the proper distance the cam surface on the wedge portion 44 is inclined to the vertical at the same angle as the bevel on the beveled edges of the die.

Preferably the die 6 is provided with an edge 48 (Fig. 2) beveled on the inside and with an edge 50 overhanging and formed with an undercut bevel 52 along the substantially convex edge portion, the undercut bevel being at the same angle as the bevel on edge 48, thus permitting lateral shifting of the blank or heel lift due to the bevel on edge 48 as the cutting edges pass through the material. Because of the fact that the blank can shift, there is little or no compression of the material of the blank along its beveled edges. The bevel at the breast edge of the die corresponds to the bevel along the breast edge of the lift and is of a depth corresponding to the greatest thickness of the material to be cut. It is to be noted that the cutting edge of the die in the substantially parallel sides thereof is not beveled on the inside but is beveled on the outside to produce the ordinary vertical edges at the sides of the lift, the bevel of the convex portion of the upper edge of the die being constructed to shade off gradually into the straight edge portions of the sides of the die.

In the operation of the machine, sheet material is introduced over the die and in contact with the gage, either by hand or by suitable feeding mechanism. Upon operation of the cutting mechanism, the cutting block in the illustrated embodiment of the machine descends upon the die and forces a blank into the die, the cutting operation being effected by the cutting block in its movement toward the die and also by a movement of the die occurring simultaneously with the movement first described and in a direction at right angles thereto to effect the bevelling of the lift by a cutting operation solely, as distinguished from a cutting operation in which compression of the edges of the lift is depended upon in part to produce the bevel of the edges thereof.

Having described my invention what I claim as new and desire to secure by Letters Patent of the United States is:—

1. In a cutting machine, the combination with a cutting block and a die constructed

and arranged for relative reciprocation toward and from each other to cut blanks from sheet material, of means controlled by the cutting block for moving the die in a direction transverse to the direction of relative approaching movement during the cutting operation to effect the cutting of blanks with beveled edges.

2. In a cutting machine, a hollow die for cutting blanks from sheet material and a cutting block movable toward and from each other to effect cutting operations, and means controlled by the block and operated during such relative movement of the die and block to effect movement of the die in a direction transverse to the direction of said relative movement.

3. In a cutting machine, a cutting block and a die relatively reciprocable toward and from each other to effect a cutting operation, and means carried by the cutting block for effecting a movement of the die in a direction transverse to the direction of relative movement of the die and block.

4. In a cutting machine, cutting means comprising cutting block and die members relatively movable with respect to each other to effect a cutting operation, and means carried by one of said members to effect movement of the other member in a direction transverse to the direction of relative approaching movement of said members.

5. In a cutting machine, a cutting block and a die arranged for relative movement to effect a cutting operation, and a cam member carried by the block to effect a horizontal movement of the die during the relative movement of the die and cutting block.

6. In a cutting machine, a die adapted to cut blanks from sheet material and mounted to slide in a horizontal plane, and a cutting block constructed and arranged to force material upon the said die and to cause sliding movement of the die for cutting beveled edges on the blanks during the blank cutting operations.

7. In a cutting machine, a cutting block and die relatively reciprocable toward and from each other to effect a cutting operation, means connected to the block and operative positively to move the die in a direction transverse of said relative movement of the die and block, and means for yieldingly returning the die to initial position.

8. In a cutting machine, a cutting block, a die comprising an integral hollow member constructed to cut from sheet material placed over the die a blank of the shape of the cutting edge of the member, and means for causing relative movements of the die and the cutting block in directions angularly related to each other during the cutting operation.

9. In a cutting machine, a die having a beveled portion along the upper convex edge thereof and also along the breast edge thereof and having knife edges connecting the beveled edges in a unitary die structure, a cutting block, and means for causing relative movement of the die and cutting block in directions angularly related to each other.

10. In a cutting machine, a cutting block, a unitary die structure, and means for causing relative movement of the die and cutting block simultaneously along paths angularly related to each other to effect the cutting of a blank with beveled edges.

11. A die having a beveled breast edge and a convexly curved edge formed on the inside with an undercut bevel corresponding in depth to that of the bevel of the breast edge.

In testimony whereof I have signed my name to this specification.

JOHN B. HADAWAY.