

H. A. HENDERSON & H. C. PAINE.
Heel-Trimming Machine.
No. 220,920. Patented Oct. 28, 1879.

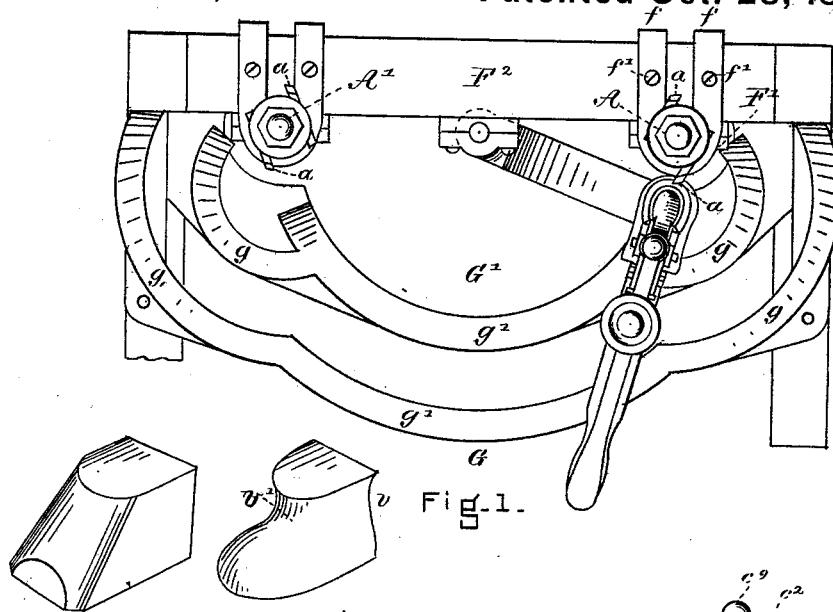


Fig. 1.

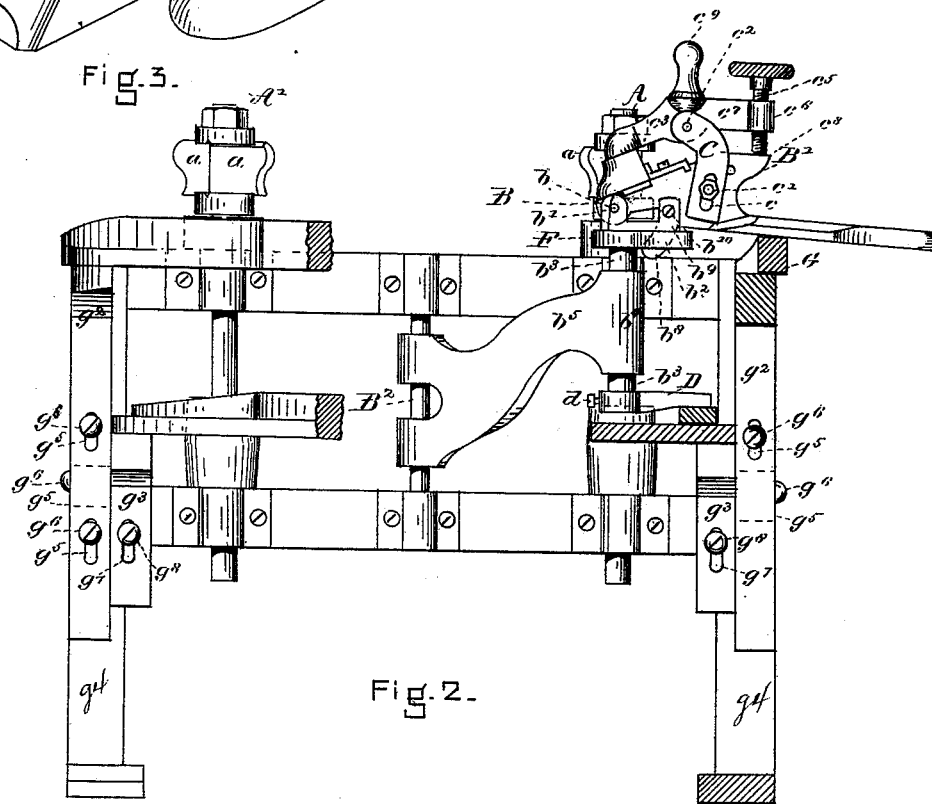


Fig. 2.

WITNESSES.
A. J. Ottinger
Geo. F. Walker

INVENTORS
Henry A. Henderson.
Hollis C. Paine.
Arthur C. Paine.
Clark & Raymond.

H. A. HENDERSON & H. C. PAINE.
Heel-Trimming Machine.
No. 220,920. Patented Oct. 28, 1879.

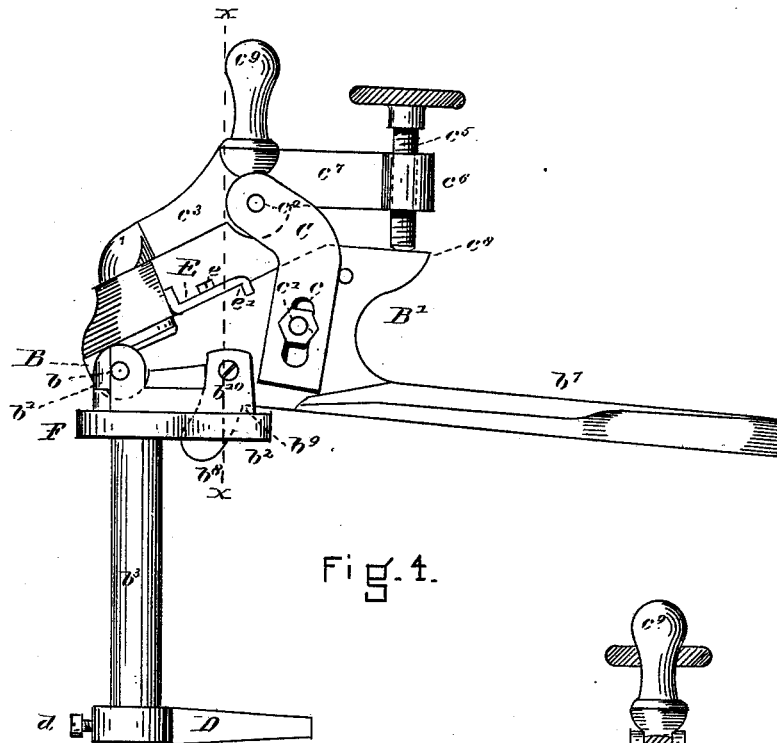


Fig. 4.

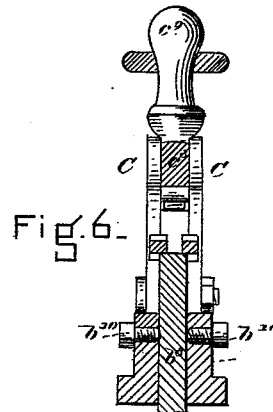


Fig. 6.

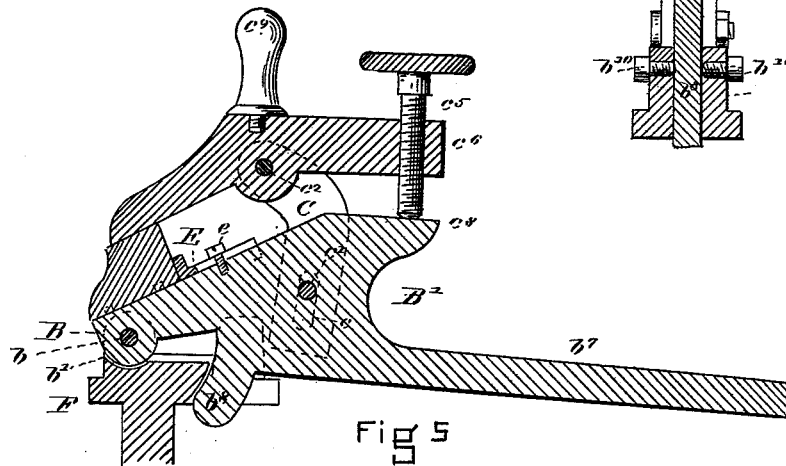


Fig. 5.

WITNESSES
A. J. Ottinger
Geo. F. Walker

INVENTORS
Henry A. Henderson.
Hollis C. Paine.
by their attys.
Clarke & Raymond.

UNITED STATES PATENT OFFICE.

HENRY A. HENDERSON AND HOLLIS C. PAINE, OF LYNN, MASSACHUSETTS.

IMPROVEMENT IN HEEL-TRIMMING MACHINES.

Specification forming part of Letters Patent No. **220,920**, dated October 28, 1879; application filed August 4, 1879.

To all whom it may concern:

Be it known that we, HENRY A. HENDERSON and HOLLIS C. PAINE, both of Lynn, in the county of Essex, in the Commonwealth of Massachusetts, have invented an Improvement in Heel-Trimming Machines, of which the following is a specification.

This invention has for its object the following improvement in heel-trimming machines, and is particularly adaptable for use in shaping wooden heels.

Reference is made to the accompanying drawings in explaining the nature of our invention, in which Figure 1 is a plan of our machine; Fig. 2, a front elevation thereof; Fig. 3, a perspective of a block from which a wooden heel is molded. It also represents the perspective of a complete heel. Fig. 4 is an enlarged view of the heel-holding devices; Fig. 5, a vertical section; and Fig. 6, a cross-section on the line *x x*, Fig. 4.

It is important in shaping wooden heels to mold them with the grain of the wood, as fewer heels will be chipped or fractured by the action of the cutters, a fairer and more uniform result obtained, and the work of the cutters made easier than by any other method of removing the stock; and we are informed that all machines for doing this work now in use cut one side of the heel at least against the grain of the wood.

In order to shape the heel with the grain it is desirable to employ two cutters arranged to revolve in opposite direction, each of which completely shapes one side of the heel, commencing with the front corner and extending backward to the center of the back part of the heel.

It is necessary that the block from which the heel is made should be so presented to each cutter that the block may be partially rotated in relation to the cutter, and at the same time have a vertical movement in relation thereto, if desired—that is, the heel-block must be partially revolved on a curve corresponding to that of the finished heel, and at the same time it must be provided with a vertical movement, which continues during the partial revolution necessary in turning the heel from the edge which is first brought in

contact with the cutter to a point a little beyond the center of the back part.

Upon the completion of one side and a portion of the back of the heel by the action of one of the two cutters, the heel-block must be easily and rapidly transferred to a position in relation to the other cutter similar to that occupied in connection with the first cutter, and the same motions must be gone through with, but in a reverse direction, as with the said first cutter, in order that the other side of the heel may be molded.

Our invention, therefore, embraces, first, two cutter-heads arranged to rotate in opposite directions; second, means for holding the heel-block and for presenting it to the cutters; third, means for rotating the holding mechanism, and for providing it with any other desirable movement in relation to the cutter during its rotation; fourth, means for transferring the heel-holding device from one cutter to the other; fifth, suitable guides or tracks for directing the movement of the heel-holding device in relation to the cutters, and for supporting the same during the transfer.

A A' represent the two cutter-heads, each of which is provided with knives *a*, whose cutting-edge is shaped to approach an ogee curve. The knives are fastened to the heads in any desirable manner, and are rotated by any suitable mechanism in opposite directions. The heel-holding device consists in the supporting bed or plate B, carried by the block B', which is pivoted at *b* to the brackets *b'*, projecting upwardly from the plate *b''*. This plate is provided with the long pivot *b''*, projecting downwardly therefrom into the socket *b''* in the end of the frame *b''*, and is provided with a vertical movement therein. The crane is attached to any suitable support in any desirable manner, and preferably should be provided with a slight vertical movement on the bolt B², securing it in position.

The block B' is provided with the projection or handle *b''*, also with a tongue, *b''*, which extends downwardly therefrom into a slot or recess, *b''*, in the plate *b''*, which, in connection with the tongue, serves to prevent the holder B from being tipped as it is moved vertically in relation to the cutters. The set-screws *b''*

may be employed in locking the block B' to the plate b^2 when necessary.

Projecting upwardly from the block B' are the brackets C, which are adjustably fastened by the slots c and set-screws c' to the block. At the upper end of the bracket is pivoted, at c^2 , a jaw, c^3 , which is provided with a movement to and from the bed supporting the heel, and is arranged to be closed upon the surface of the inverted heel by means of the hand-screw c^5 , which passes through a nut, c^6 , in the arm c^4 , and bears upon the extending portion c^8 of the block B'.

The jaw is further provided with a handle, c^9 . The lower end of the pivot b^3 is provided with an arm, D, which is secured thereto by a set-screw, d , or in any other suitable way. This arm is arranged to project outwardly from the end of the pivot, and rests upon the guide or track G'.

The heel-supporting bed may be provided with short spurs or a roughened surface, and is supplied with a gage, E, which, by means of the set-screw e and slot e' , is adjustable to and from the front edge of the bed.

The edge F of the table b^2 serves as a guide in connection with a guide or pattern, F', upon each shaft carrying a cutter-head, and below it. These two patterns regulate the size of the heel-seat. The guide F' is provided with arms f , which are secured to the frame F² by screws f' . This construction allows the guide F' to be easily removed.

The conformation of the heel from the top downwardly is governed by the movement given the heel-block while it is being presented to the cutters, and, to a certain extent, upon the shape of the cutting-knives.

The guides or tracks G G' describe upon the portions g an arc of a circle, of which the pivot b^3 is the center, and they are inclined from their juncture with the portion g' of the two frames.

The two frames or tracks are supported upon their respective standards g^2 g^3 , each of which is provided with vertical adjustment upon the posts or uprights g^4 by means of the slots g^5 and set-screws g^6 in one instance, and the slots g^7 and the set-screws g^8 in the other.

In operation, the heel-holding mechanism is moved to a position midway between the two cutter-heads. The inverted heel-block is then placed upon its bed, the jaw c^3 locked upon it by means of the screw c^5 , and the operator, taking hold of the handles c^9 and b^7 , swings the heel-holding mechanism upon the guides or tracks G G' to such a position in relation to one of the cutter-heads that it shall commence to cut at the front edge of the heel. This position, of necessity, must be the lowest portion of the guides, and is, therefore, at their extreme end either to the right or to the left. The heel-holding mechanism is then partially revolved upon the pivot b^3 , the heel-supporting bed being lifted slightly during this movement by means of the

track or guide G' and the arm D. At the same time the bed may be slightly inclined in relation to the cutters by the track or guide G and the handle b^7 . This upward movement of the heel-block changes the shape of the vertical curvature of the heel from that shown at r at the commencement of the turning to that shown at r' at the center of the back of the heel at the end of the turning. The shaping of one side of the heel and a portion of the back of the heel is thus completed. The heel-holding mechanism is then swung round upon the center x , by the movement of the crane thereon, to a position at the other end of the guides or tracks G G'. This brings the front uncut portion of the heel-block in a position to be operated upon by the other cutter. The heel-holding mechanism is then partially revolved in relation to the cutter, the arm D, rising on the track G', and the handle b^7 on the track G, as before stated, but in a reversed direction. This completes the other side of the heel. The heel-holding mechanism is then moved to its original position and the heel removed.

The shape given the heel depends upon the position and movement which the heel-supporting bed has in relation to the revolving knives, and upon the shape of the knives, and in heels having their upper surface of the same size, the change can be produced without always changing the knives, by simply varying the extent of inclination of the heel-supporting bed in relation to the cutter. This is obtained by raising or lowering the tracks or guides G G'. If a heel of larger size is being shaped, the pattern F' is removed and a larger pattern inserted in lieu thereof. If more of an offset is desired, the knives may be changed, and the extent of the inclination and vertical movement of the heel-supporting beds varied by changing the level of the tracks or guides in relation to the cutters. Therefore, among the adjustments which it is necessary to give this machine in order to enable it to embrace all sizes and curvatures of heels, may be mentioned, first, that which embraces a change in the shape of the cutting-edge of the knives; second, that which relates to a change in the inclination of the heel-supporting bed, and to a change in its movement in relation to the cutter; third, that which involves a change of the pattern F'; fourth, that which demands the adjustment of the gage E.

The heel-holding mechanism, it will be observed, must have these movements in relation to the cutter: first, it must present the heel to each cutter-head with like facility; second, it must be capable of being so operated that while the heel-supporting bed is revolving it is also lifted vertically in relation to the cutter-head. It may be provided with a movement inclining the bed in relation to the cutter during said revolving and lifting movements, if desirable.

If necessary, we can do away with the up-

per guide, G, in which case we depend upon the lower guide, G', for the necessary vertical movement of the heel-supporting bed.

It will be observed that when the heel-supporting bed is provided additionally with a movement changing its degree of inclination in relation to the cutters, the said movement commences with the upward movement and continues with it until about two-thirds of one side of the heel is finished, and that it then ceases, the upward and revolving movements only continuing.

Having thus fully described our invention, we claim and desire to secure by Letters Patent of the United States—

1. In a heel-trimming machine, the combination of two revolving cutters, adapted to rotate in opposite directions, with the guides or tracks G G' and mechanism for holding and presenting the heel-block to the cutter-heads, and for transferring it from one cutter to the other without removing it from the holding device, substantially as described.

2. In a heel-trimming machine, the combination of two cutters revolving in opposite directions, mechanism for holding the heel for presenting it to either of the said cutters, and for providing it with the necessary movements in relation thereto, comprising a rotating movement and a lifting movement of the heel-supporting bed, all arranged and combined to operate substantially as described.

3. In a heel-trimming machine, the combination of two revolving cutters arranged to rotate in opposite directions, the heel holding and presenting mechanism, and the crane l^5 arranged to transfer the heel-holding mechanism from one cutter to the other, substantially as and for the purpose described.

4. In a heel-trimming machine, the combination of two oppositely-revolving cutter-heads, the crane b^5 , the tracks or guides G G', the arm D, and handle b^7 , all arranged to op-

erate substantially as and for the purpose described.

5. In a heel-trimming machine, as a means for presenting the heel-holding device to two oppositely-revolving cutter-heads successively, the crane b^5 , the track G', and the arm D, substantially as described.

6. The combination, in a heel-trimming machine, of a revolving cutter-head, the transferring-crane b^5 , the heel-holding mechanism, the arm D, and the track G', all substantially as and for the purposes described.

7. In a heel-trimming machine, a vertically-adjustable track or guide for providing the heel holding and presenting mechanism with a vertical movement in relation to cutter-heads rotated in opposite directions, while the said mechanism is being rotated in relation thereto, substantially as described.

8. In a heel-trimming machine, as a means for adjusting the jaw c^3 , the supports c^2 , provided with vertical adjustments on the block B', substantially as described.

9. In a heel-trimming machine, the combination of the plate b^2 , provided with the brackets b' , and the recess b^3 , with the block B', supporting the heel-plate B, pivoted at b to the brackets b' and the tongue b^3 , substantially as described.

10. In a heel-trimming machine, the combination of block B' with the screw b^{10} , or other device for locking it to the plate b^2 , all substantially as described.

11. In a heel-trimming machine, the removable patterns F', provided with the arms f , and adapted to be fastened to the frame F² by the screw f' , all substantially as described.

HENRY A. HENDERSON.
HOLLIS C. PAINE.

Witnesses:

F. F. RAYMOND, 2d,
GEO. F. WALKER.