D. A. SUTHERLAND.

Apparatus for Shaping Wooden Heels.

No. 230,157. Patented July 20, 1880.

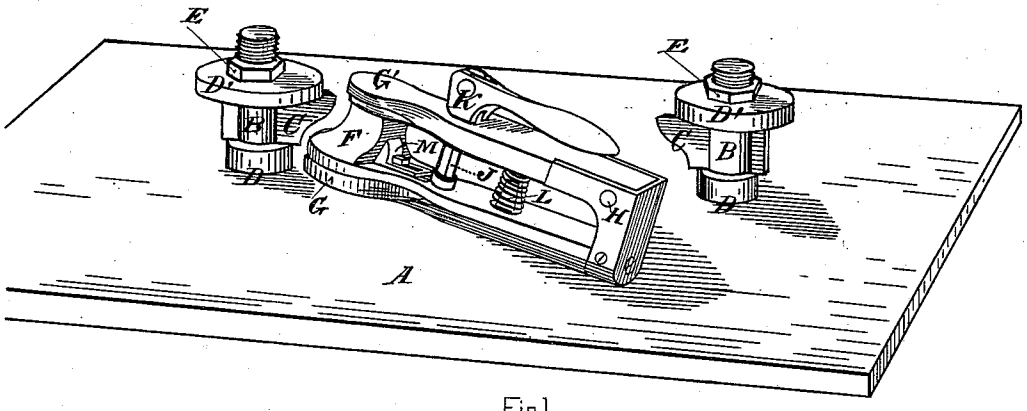


Fig. 1.

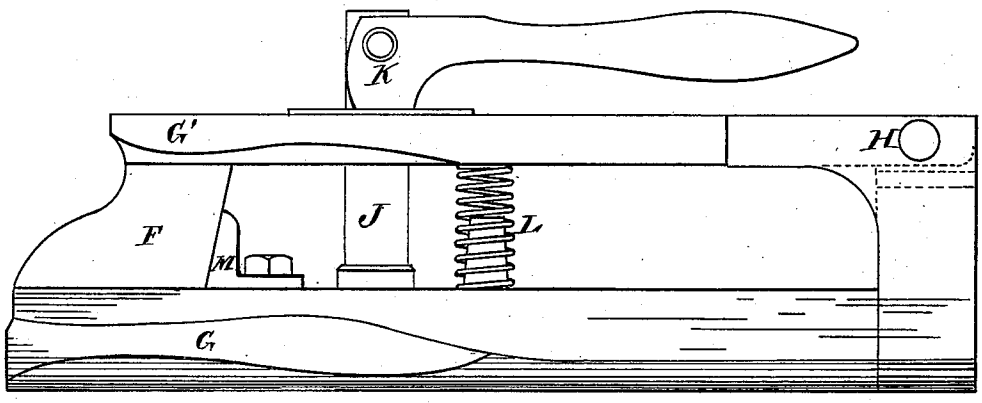
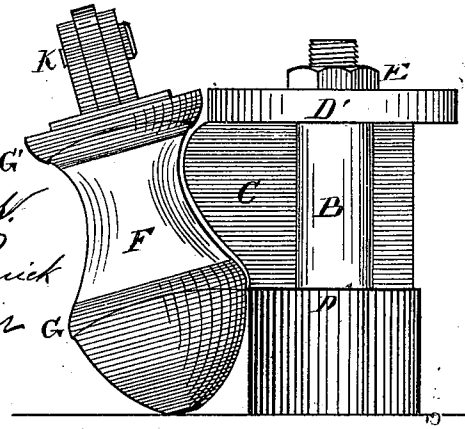


Fig. 2.



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Fig. 3.

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UNITED STATES PATENT OFFICE.

DANIEL A. SUTHERLAND, OF LYNN, MASSACHUSETTS, ASSIGNOR OF ONE-HALF OF HIS RIGHT TO JOSEPH N. SMITH, OF SAME PLACE.

APPARATUS FOR SHAPING WOODEN HEELS.

SPECIFICATION forming part of Letters Patent No. 230,157, dated July 20, 1880.

Application filed February 11, 1880.

To all whom it may concern:

Be it known that I, DANIEL A. SUTHERLAND, of Lynn, Massachusetts, have invented certain new and useful Improvements in Apparatus for Shaping Wooden Heels; and I hereby declare that the same are fully described in the following specification, and illustrated in the accompanying drawings, which represent the best form in which I have contemplated applying my invention.

The object of my improvement is to simplify, cheapen, and perfect heel-turning appliances, to greatly increase the speed of production, and to adapt the ordinary molding-machine to this work without expensive alterations.

My invention embraces two specific features; first, a clamping-former in two parts, between which the heel-blank to be operated upon is placed, the parts serving as a guide or templet to determine the shape of the heel or other article being formed; and, second, two circular collars on the vertical cutter-shaft, one above and one below the knives, and adapted, in connection with the two-part former, to regulate the extent of cut of the tool when such former, holding the blank, is pressed by the operator against the collars.

My invention consists in the devices and combinations of devices set forth in the appended claims.

In the drawings, Figure 1 is a perspective view of the table-top of a molding-machine provided with my improvements. Fig. 2 shows, on a larger scale, the clamping guide or former which co-operates with the two collars on each cutter-head. Fig. 3 is a front-end view of same, showing position of parts while shaping the side of a heel.

A is the table of the machine, B B the spindles, and C C the cutters, revolving at high speed in opposite directions, in a manner well known in molding-machines. Above and below the cutters are collars D D′, surrounding, but not necessarily revolving with, the spindles. These collars serve to keep the former and the blank held by it at a given distance from the cutters, and are held in pla e by nuts E on the spindle.

F represents the heel or blank g operated upon. It is securely held by its two flat faces between two clamping-arms, G G′, hinged at H, or otherwise united, so as to have a movement toward and from each other, to hold and to release the blank. The drawings show a clamping means, consisting of a stud, J, secured to the lower arm, and a cam, K, pivoted in said stud and bearing upon the upper arm, G′, depressing it against the resistance of a spring, L. The stud passes through a slot in the upper arm, G′, and serves to stiffen it or prevent any lateral movement of that arm without a corresponding movement of the other. The flanges each side of the arm G′, extending forward from the hinge, serve the same end.

The clamping-face of each arm may be somewhat roughened or barbed, to hold the blank more securely. A gage-block, M, adjustable by a set-screw on the arm G, indicates the proper position of the blank and aids in holding it there.

The bottom of the clamp is rounded or tapered toward its longitudinal center, so as to permit it to be presented at an angle before the cutters, and so that the angle may be varied as the cutting proceeds. This is necessary when shaping elongated heels, in which the vertical curve at the rear, where the heel is highest, differs from that at the sides. In order to shape both with the same cutters the clamp holding the blank and resting on the table is tipped so as to carry its upper part away from the spindle at the commencement of the operation, and as it is drawn past the cutters it is gradually brought to a vertical position. These changes of position follow pressure of the formers G G′ against the two collars, since the upper collar is much larger than the lower one, while the width of the guides G G′ is about equal. The upper guide is, however, sufficiently shorter than the other to compensate for the excess of diameter of collar D′, and hence the clamp may stand vertical, with both guides in contact with their respective collars, when the rear part of the heel is being shaped, and the ends of the arms G G′ are the guides.

The guides G G′ are shaped, respectively, to correspond with the curved contour of the top and bottom of the heel to be formed. They give form to the blank, since, when pressed by

the operator against the collars D D′ the movement of the blank toward the spindle is checked, and the extent to which the cutters C C may act is determined. In other words, the curves of the heel in its horizontal section are defined by the shape of these guides or formers, which come into contact with the collars D D′. The outline of the heel from bottom to top depends on the shape of the cutting-edge of the knives C C and upon the angle at which the blank is presented, as already explained.

The breast of the heel, adjacent to the shank of the boot, is sawed at the required angle before the blank is shaped by the apparatus described. The cutters C C do not come in contact with this vertical face; hence no guide or former is necessary to correspond with such face, and no rotation of the blank occurs during its treatment. In these respects my mechanism and mode of operation differ widely from prior devices.

In practice, the operator first prepares, from stock of proper thickness, long strips of wood, of suitable width to form a heel, and saws the same into heel-blanks having one face cut at the desired angle to the base to form the breast of the heel. Each of these blanks is successively placed between the shaped ends G G′ of the clamping-arms, as described, the clamp moving freely on the table-top, and being drawn by the workman first with one side and then the outer end of the guides G G′ in close contact with the collars D D′, so as to expose the corresponding part of the heel-blank F to the action of the revolving cutters. The clamp holding the blank is then presented in like manner to the other cutter, and moved by the operator so as to cut away the wood from front to rear of the blank with the grain and complete the curves of the heel. The spindle will serve as the lower collar, D, if large enough to coact with the guide G.

From the above description it will be obvious that there is no automatic movement to the blank, but instead, that it is presented to the action of the knives, and the parts of the former are pressed against the collars by the power and at the will of the operator only. The motion of the blank is not rotation upon an axis, but a sliding movement past one revolving cutter to shape from one front corner to the middle of the back of the heel; then a similar movement before the other cutter, beginning at the other corner and terminating at the rear of the heel, the change from one cutter to the other being to accommodate the machine to the grain of the wood, as is well understood.

I claim as of my invention—

1. A two-part clamp adapted to seize and hold the blank and shaped at its extremities to the desired horizontal curvature of the lower and upper parts of the heel, and having its lower member rounded, as described, in combination with two collars on the cutter-spindle, as described, whereby the curves of the heel are determined, substantially as set forth.

2. The combination of the clamping-templets G G′, united by a hinge or spring, with an adjustable support and gage-block and suitable clamping means, substantially as set forth.

3. The spindles B B, cutters C C, and collars D D′, in combination with a clamp having its two members shaped at their extremities as templets or guides for cutting the blank which they grasp, and the lower member shaped to give a rocking movement to the clamp at the will of the operator, substantially as set forth.

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