Nov. 20, 1923. 1,474,349

E. ERICKSON

SHOE TURNING MACHINE

Filed April 13, 1920

Fig. 1

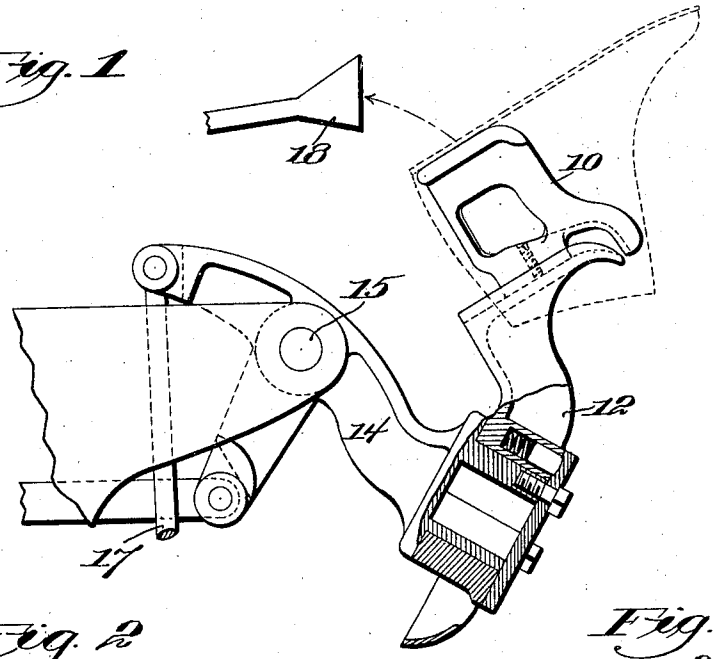


Fig. 2

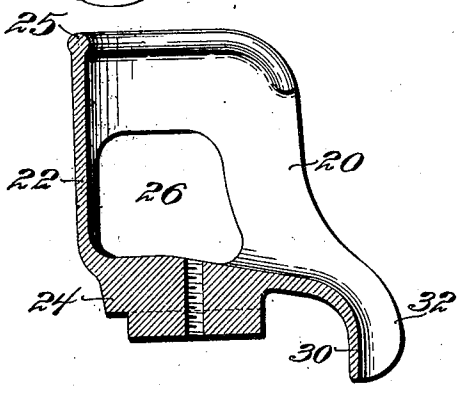


Fig. 3

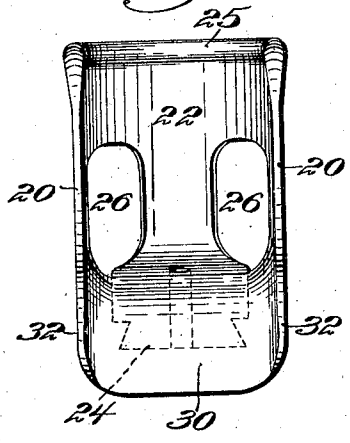
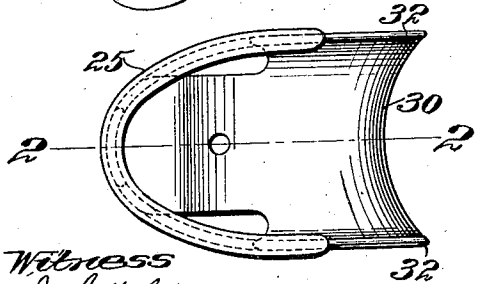


Fig. 4



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UNITED STATES PATENT OFFICE.

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SHOE-TURNING MACHINE.

Application filed April 13, 1920. Serial No. 373,580.

To all whom it may concern:

Be it known that I, EDWARD ERICKSON, a citizen of the United States, residing at Beverly, in the county of Essex and State of Massachusetts, have invented certain new and useful Improvements in Shoe-Turning Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention such as will enable others skilled in the art to which it appertains to make and use the same.

The present invention relates to certain improvements in shoe turning machines and more particularly to improvements in machines for turning the heel part of a shoe.

It is desirable to provide machines by which the operator shall be relieved so far as possible of the manual effort due to turning the heel and forepart of the shoe. It has been found, however, in the operation of such machines that considerable care must be exercised in order that the shoe shall not be broken or the seams unduly strained during the turning operation. It is accordingly an object of the present invention to provide heel turning mechanism which is capable of successfully turning a wide variety of styles of shoes without breaking or unduly straining the shoe.

It is, furthermore, an object of the present invention to provide heel turning mechanism which shall serve to initiate the shaping of the shoe sole into its final desired form, thus materially aiding subsequent operations upon the shoe. The advantage of such a shaping of the sole will be self-evident when it is considered that the shoe at this time is in a condition of temper in which the sole and upper may be readily shaped. Thereafter, when the shoe dries out the sole will retain the shape which is imparted to it at this time.

With the objects above set forth in view, the invention consists in the several features of a new and improved form of heel cup the advantages of which will be obvious to those skilled in the art from the following description.

In the accompanying drawings illustrating the preferred form of the invention Figure 1 is a detail of a portion of a shoe turning machine with the improved heel cup embodied therein; Fig. 2 is a longitudinal section in elevation of the heel cup, taken on the line 2—2, Fig. 4; Fig. 3 is a front elevation of the heel cup; and Fig. 4 is a top plan view looking down into the heel cup.

The illustrated embodiment of the invention is shown in connection with a machine of the type disclosed in the patent to Erickson, No. 1,310,008, dated July 15, 1919. This machine is designed for turning both the heel and forepart of a shoe, the heel turning mechanism comprising a heel cup and plunger which cooperate to turn the heel part prior to the turning of the forepart. As shown, a plurality of heel cups 10 are mounted upon a turret 12 supported upon the outer end of an arm 14 fulcrumed at 15 upon the machine frame, the opposite end of the arm being connected with the usual treadle through a treadle rod 17. In operation the shoe to be turned is placed over the heel cup in the manner indicated and the treadle is then operated to swing the arm 14 and move the heel portion of the shoe into contact with a turning plunger 18. This plunger engages with the heel portion of the sole and forces it within the heel cup to turn the heel of the shoe in a manner well known to those skilled in the art.

It has been found that the heel cup must be carefully proportioned and designed in order to permit the successful turning of all kinds of shoes. The various features of the heel cup constituting the present invention have been developed as the result of operation on a wide variety of shoes and under all conditions. This heel cup comprises relatively thin side walls 20 and a rear wall 22 all rising from a base portion 24. Formed in the curve joining the rear and side walls and extending forwardly well into the side walls, are a pair of recesses 26. These recesses tend to produce a skeleton cup leaving the rear wall, however, which rises unbroken from the middle of the base portion. The formation of the recesses in this manner in conjunction with the rear and side walls prevents the back seam from becoming caught and unduly strained but at the same time affords the necessary clearance for the several parts of the shoe within and without the heel cup during the turning operation. The heel portion of the upper is further relieved from binding by the provision of a clearance rib 25 which extends completely around the top edge of the heel cup and projects beyond opposite faces of the side and rear walls, as shown clearly in

the drawing. This clearance rib, so called, not only removes the shoe upper from the opposite sides of the heel cup but affords a rounded surface not too abrupt over which the upper is drawn during the turning operation. Considerable difficulty has been experienced in turning the heel portion of a shoe in that the strain initially comes upon the back seam and frequently breaks this seam before the turning operation is fairly started. In the present form of heel cup the front corners of the side walls are located at the level of the entire top edge which is carried well forward to these corners and the rib 25 is extended forwardly and downwardly to completely enclose the front corners as well as the remainder of the top edge. It will be seen that the plane of the top edge in the present form of heel cup is substantially at right angles to the longitudinal median section of the rear wall. With this construction, when the turning plunger first engages with the shoe sole to force the latter into the heel cup the initial turning strain comes at the front corners of the upper edge rather than at the back seam and as the relative movement of the plunger and heel cup continues, the turning operation is distributed over the entire heel portion of the shoe. The result is that with the present form of heel cup it has been possible to turn the heel portion of shoes which could not previously be turned without liability of seriously straining or damaging the back seam of the shoe.

It is quite desirable that the shoe sole shall be shaped during the turning operation into substantial conformity with the finally desired shape to be given it. This is accomplished by providing a forwardly and downwardly extending apron 30 which has a decided transverse curvature, as indicated in Figs. 2 to 4 inclusive of the drawings, the side walls 20 being conveniently extended, as shown, to form the side walls 32 of the apron. This apron is designed to receive and support the shank portion of the shoe sole and shape this portion of the sole into approximately the desired form, which can be readily accomplished at this time owing to the fact that the shoe as a whole, including the sole, is in an exceedingly flexible condition. It has been found that the curvature actually imparted to the shank portion of the sole with this form of heel cup materially aids in the subsequent shaping and finishing operations upon the sole and shoe as a whole.

While it is preferred to employ the specific construction and arrangement of parts shown and described, it will be understood that this construction and arrangement is not essential except so far as specified in the claims, and may be changed or modified without departing from the broader features of the invention.

The invention having been described, what is claimed is:

1. A shoe turning machine comprising a turning plunger, and a cooperating heel cup having a base portion, upstanding rear and side walls of substantially U-shaped contour, recesses formed in the curve joining the rear and side walls and extending forwardly into the side walls, leaving the rear wall unbroken from the base portion to the upper edge, and a clearance rib extending completely about the top edge of the walls to remove the shoe upper from the faces of the walls during the turning operation.

2. A shoe turning machine comprising a turning plunger, and a cooperating heel cup having a base portion, upstanding rear and side walls terminating in a rounded top edge, and recesses formed in the curve joining the rear and side walls and extending forwardly into the side walls leaving the rear wall unbroken from the base portion to a point adjacent to the rounded top edge of the heel cup, the top edge portions of the walls being thicker than the lower portions thereof and arranged relatively to the latter so as to remove the shoe upper from both the inner and outer faces of the walls during the turning operation.

3. A shoe turning machine comprising a turning plunger and a cooperating heel cup having a base portion, side and rear walls rising therefrom, a curved apron extending forwardly and downwardly from the base portion, and extensions of the side walls forming in conjunction with the apron a transversely curved surface for the reception of the shank portion of the sole.

EDWARD ERICKSON.