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MACHINE FOR MILLING AND SANDING HEELS

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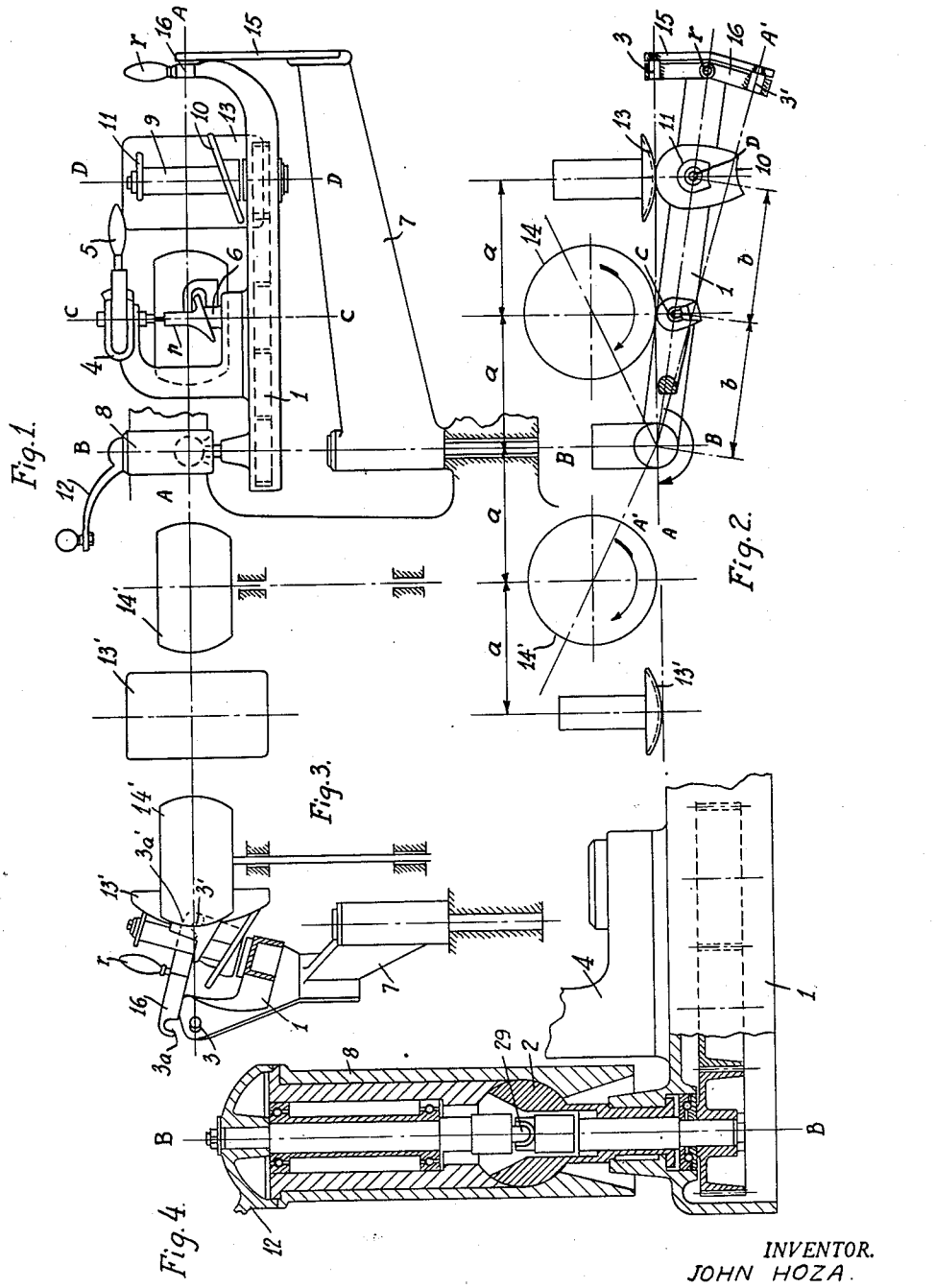


Fig. 1.

Fig. 2.

Fig. 3.

Fig. 4.

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MACHINE FOR MILLING AND SANDING HEELS

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4 Claims. (Cl. 12—42)

This invention relates to a machine for milling and sanding (or treating with emery paper or the like) formed wooden sections, in particular heels. By means of this machine more rapid and efficient work may be accomplished, and a better product is obtained.

Heretofore, it was possible on known milling machines to make heels shaped to choice, so that heels made on known copying lathes by means of templets made by trial method were sanded or cleaned by the hand on a special device. Thereby it was not possible to obtain an exact profile of the heel, as desired. Moreover, the output obtained by such processes was very poor.

The machine according to my invention removes all the difficulties of the former processes, and includes milling of the periphery of the heel with a rotating form cutter so that the heel during its rotation is adapted to swing around a horizontal axis, and around a vertical axis, which movements are limited by rotating templets abutting against a guide surface.

The shapes of the two templets correspond to the shapes of the lower and upper surfaces of the finished heel and are correspondingly and proportionally enlarged relatively to the said surfaces, for example in the ratio of 2:1.

In the accompanying drawing, an embodiment of the invention is shown by way of example, in which drawing:

Fig. 1 is a front view of the machine,

Fig. 2 shows the machine as seen from above;

Fig. 3 is a side view and

Fig. 4 is a detail partly in section of the machine.

The machine comprises the profiling arm 1 adapted to turn around the horizontal axis A—A. Such arrangement of arm 1 is obtained due to the fact that arm 1 on one side is provided with a ball-joint 2 and on the other side with a bolt 3, the axis of which lies in the horizontal axis A—A. On arm 1 is fixed a holder 4, on which the heel is fastened. The heel *p* to be treated is fastened to its support 6 by means of a press lever 5. The said support 6 with the heel set in is adapted to be turned around the axis C—C and relatively to arm 1. Arm 1 together with arm 7 is adapted to swing, around the axis B—B, which is arranged to be vertical to axis A—A. Thus, the heel is adapted to be simultaneously moved in three ways, namely:

1. Oscillation around the axis B—B;
2. Oscillation around the horizontal axis A—A;
3. Revolution around the axis C—C.

To arm 1 is connected a tube 9, on which are fastened two profiling templets 10 and 11, which are similar to the upper and lower peripheries of the heel. Such two templets are made of relatively thin sheet metal and rounded off at their edges. Tube 9 with its templets 10 and 11 fixed thereto is adapted to turn around the axis D—D, which is parallel to axis C—C. By means of a crank 12 and a ball-joint 2, the support 6 of the heel and tube 9, to which are fastened the templets 10 and 11, are driven through toothed wheels in a manner so that the crank, the heel and the templets will turn synchronously. Ratio of transmission is preferably 1:1:1, so that by turning the crank 12, a simultaneous revolution of the heel and the templets in the same direction and same angle is obtained.

The operation of the machine may be realized by the following: arm 1 with handle *r* is swingable in bearing 2 (Fig. 4) about axis A—A and further handle *r* with lever 16 may be swung either about bolt 3' or about bolt 3, as the case may be. Lever 16 has a hook or eye 3*a* which is adapted to engage bolt 3 and has a further hook or eye 3*a'*. The lever 16 may thus be swung by means of handle *r* either about bolt 3 or bolt 3'; in the first instance the hook 3*a'* being disengaged from the bolt 3' whereas 3*a* is in engagement with bolt 3 whose head is then tightened against hook 3*a*, bolt 3 being then employed with a pivot about which the lever 16 with handle *r* may be swung or vice-versa, as shown in the drawing Fig. 3; hook 3*a'* is in engagement with bolt 3', and hook 3*a* is disengaged from bolt 3 in which case lever 16 may be swung about pivot bolt 3'. Thus, lever 1 may be swung at ball bearing 2 about axis A—A and further about bolt 3 or bolt 3' as the case may be. Heel *p* may be rotated or turned about axis C—C and fixed in position thereat by operation of fixing or locking lever 5. Since support 4 on which the heel *p* is positioned, is fixed to lever 1 (Fig. 4) the heel may be brought into various positions and also with respect to lever 1.

In frame 8 of the machine is arranged a mill 14, the shape of the working surface of which is arcuate. The working surface of said mill intersects an axis perpendicular to and passing through axis B—B and axis of bolt 3 (Fig. 2). At the same time, this perpendicular axis will also intersect the guide surface 13 which is in the form of a section of a rotary member, which corresponds to the profile of the mill. After the milling operation for the heel is accomplished the device may be swung about axis B—B for the sanding operation with the tools 13' and

14'. Thus the device according to the invention may be employed to successively form and sand the heel by simple operation of the aforesaid device.

Sanding takes place through the action of a turning pulley, which has the same profile as the said mill, and on the periphery of which a cleaning sheet of paper, say, emery paper, is set. Compared to the former processes, the advantage of the present invention is that an exact profile of the heel is obtained not only in the milling operation but also in the sanding operation, the heel being carried by guide templets in the same manner as in the milling operation. With the machine according to the present invention the shape of the heel may be altered by a simple exchange of the templet used.

Another advantage of this device consists in that the side profiles of the heel and such profile as corresponds to the vertical section of the longitudinal axis of the shoe may be altered without having to exchange the mill or the templets and that by simply adjusting the setting, that is, the position of the heel, that is, upper or lower position of the heel or turning the heel in a certain angle relatively to the vertical axis C—C, or altering the angle between the axis of arm 1 and axis A—A, without having to exchange the mill or the templets.

By sanding is meant an operation or operations performed by abrasing, polishing, smoothing, or scouring.

What I claim is:

1. In a machine for milling and sanding heels made from a piece of wood or other suitable material, the combination of means for rotating said piece about a vertical axis, and means for swinging said piece simultaneously about a horizontal axis and a vertical axis, a stop, and templet means rotatable about a vertical axis positioned remote from the vertical axis of said means for rotating said piece and adapted to abut against said stop for controlling the swinging movements around the said horizontal and vertical axes.

2. In a machine for milling and sanding heels made from a piece of wood or other suitable material, the combination of means for rotating said piece about a vertical axis, and means for swinging said piece simultaneously about a horizontal axis and a vertical axis, stop means, and templet means corresponding to the upper and lower periphery of said heel rotatable about a vertical axis positioned remote from the vertical axis of said means for rotating said piece and adapted to abut against said stop means for controlling the swinging movements around the said horizontal and vertical axes, said templet means turning synchronously with said piece.

3. In a machine for milling and sanding heels made from a piece of wood or other suitable material, the combination of means for rotating said piece about a vertical axis, and means for swinging said piece simultaneously about a horizontal axis and a vertical axis, stop means, templet means corresponding to the upper and lower periphery of said heel rotatable about a vertical axis positioned remote from the vertical axis of said means for rotating said piece and adapted to abut against said stop means for controlling the swinging movements around the said horizontal and vertical axes, said templets turning synchronously with said piece, said device comprising an arm and a lever, said piece and said templet means being mounted on said arm, said arm and said lever being adapted to be swung from one position to another position for said milling and said sanding operations, respectively.

4. In a machine for milling and sanding heels made from a piece of wood or other suitable material, the combination of means for rotating said piece about a vertical axis, and means for swinging said piece simultaneously about a horizontal axis and a vertical axis, stop means in the form of arcuate surfaces, templet means corresponding to the upper and lower periphery of said heel rotatable about a vertical axis positioned remote from the vertical axis of said means for rotating said piece and adapted to abut against one of said surfaces for controlling the swinging movements around the said horizontal and vertical axes, said templet means turning synchronously with said piece.

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