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Fig. 3
MACHINE FOR OPERATING UPON SOLES

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This invention relates to machines for operating upon soles and is herein illustrated as embodied in a machine capable of applying an ink mark to a sole.

The machine disclosed herein is of the same general type as the machine disclosed in United States Letters Patent No. 1,113,544, granted October 19, 1914, in the name of Miller Cook, Jr., and, like that machine, comprises a pair of knives for making incisions in an insole at approximately the heel-breast line to terminate definitely the channels which have been formed in the insole, and it comprises also a device for applying a mark to the insole to indicate the locality at which subsequent operations are to be started or ended. In the machine disclosed in the patent to Cook the head which carries the various tools is trunnioned about an axis parallel to a shaft which, through suitable connections, lowers and raises the head to bring the tools into and out of operative engagement with a sole on a work table. The marking device of that machine consists of a tool constructed and arranged to impress a line of indentations upon the surface of the insole. In the manufacture of certain kinds of shoes, however, a more conspicuous mark, such as an ink mark, is considered desirable; but the difficulty of arranging the mechanism necessary for ink marking in a machine of this type, resulting from the presence of other tools and the general organization of the machine itself, has hitherto prevented the inclusion of such mechanism.

It is an object of the present invention to provide a device for applying an ink mark to a sole, which device is adapted to be incorporated in a machine of the type under consideration.

As shown herein, the illustrative machine is provided with an ink mark for engaging a work piece and an ink pad for applying ink to the marker. The ink pad of the illustrative machine is operated through mechanism which derives its movement from a cam on the shaft which operates the head, said mechanism being arranged to bring the ink pad into engagement with the marker and then to get the pad out of the way of the marker to leave the marker free to approach the work support. The ink pad is on a carrier which is movable heightwise to bring the pad against the lower surface of the marker, and means are provided for moving the carrier laterally out of the path of movement of the marker to get the pad out of the way of the marker, the means for causing such lateral movement being also constructed and arranged to move the pad downwardly away from the lower face of the marker. The various members of the ink marking device are so arranged that the lateral movement of the carrier takes place in a direction parallel to the operating shaft, and also parallel to the axis of the trunnions upon which the head is mounted. This arrangement enables the device to be incorporated in a machine of the type under consideration with a minimum of alteration.

In the accompanying drawings,

Fig. 1 is an angular view as seen from the left of a machine embodying the invention;

Fig. 2 is an angular view as seen from the right of the machine;

Fig. 3 is a plan view of the machine;

Fig. 4 is a front elevation of the machine; and

Fig. 5 is an angular view of an insole illustrating the operation performed by the machine.

The supporting structure of the machine consists of a hollow frame or housing 10 adapted to rest upon a work bench and having a flat work table 12. Engageable with the upper surface of a sole on the work table 12 is a marking tool 14. A head 16, which carries the tool 14, is rulrounded upon a pair of trunnion pins 18 and 20 secured in bosses formed on the side walls of the housing 16. The common axis of the trunnion pins 18 and 20 is horizontal and transverse with respect to the machine. The head 16 is rocked about the axis of the trunnion pins 18 and 20 to raise and lower the marking tool 14 by mechanism comprising a shaft 22 (Figs. 1 and 3), an eccentric 24 having a hub 25 on the shaft 22, and a connecting rod 26 driven by the eccentric 24 and communicating its movement to the head 16 through a swivel block 28 trunnioned in the head. The shaft 22, which extends horizontally and transversely of the machine, is journaled in suitable bearings carried by the housing 10 and is driven from a pulley 30 through a one-revolution pin clutch 32. The machine is started for each operation by depressing a treadle (not shown) which causes a link 34 to swing downwardly a clutch arm 36 and thereby trip the clutch.

In addition to the marking tool 14, the head 16 carries a pair of incising knives 38 and 40 having horizontal cutting edges which are in collinear relation. These knives are mounted for heightwise adjustment in blocks 42 which are secured by set screws 43 on the head 16. The blocks 42 have dovetail portions which slide in guide ways in the head 16 to enable the blocks to be adjusted forwardly and rearwardly. Also carried by the head 16 is a presser 44 which operates when the head is lowered to force the under surface of the sole against dies (not shown) which indent a size.
mark and also the manufacturer's identifying mark upon the sole. Another presser 45, mounted on the head 16, forces the under surface of the sole upon a die (not shown) which indents a mark indicating the width of the sole. A slot 47 is provided in the work table 12 for receiving the width mark die.

The sole is gaged lengthwise of the work table 12 by a heel gage 46, which may be adjusted forwardly and rearwardly to accommodate different sizes of soles by mechanism operated through a hand wheel 48. This same mechanism also serves to select the proper size indenting die and move it into operating position.

The sole is gaged laterally on the work table 12 by a pair of yielding side gages 106 which engage the opposite edges of the sole. These side gages are carried by blocks which, in turn, are mounted on parallel rack bars 109 and 110 geared to a common pinion to coordinate the movements of the gages about a common center.

With the exception of the marking tool 14, the machine as thus far described, although differing somewhat in detail, is in many respects in accord with that disclosed in the above-mentioned Letters Patent No. 1,113,544.

The marking tool 14 is secured to a depending lug 150 on the head 16 by a pair of screws 152 extending through the lug and threaded into the shank of the marking tool. The lower end of the marking tool, which in the illustrated machine is shown as rectangular, may be shaped to impress any desired mark upon the work.

Ink is supplied to the flat under surface of the marking tool 14 by a felt pad 50 which is kept saturated by operation of the ink feed 51. The felt pad 50 (Fig. 4) is carried by a bent lever 52 having a forked end 53 which embraces a rod 54 and which is pivotally mounted upon the rod 54 by a fulcrum pin 55.

As indicated in Fig. 4 by a dotted line, the solid portion of the lever 52 ends and the fork begins just slightly above the upper surface of the rod 54. The rod 54, which may be conveniently cylindrical, is slabbled off on opposite sides to provide flat surfaces 56 for bearing engagement with the inner surfaces of the fork of the lever 52. The rod 54 extends horizontally and transversely of the machine, that is, parallel to both the shaft 22 and the axis of the trunnion pins 18 and 20, and it is slidably mounted for longitudinal movement in a guideway formed in the housing 10.

Rigidly mounted upon the rod 54 by a setscrew 68 is a bracket 82 having a cylindrical recess in which is housed a plunger 64. A spring 66, also housed in said recess, urges the plunger 64 toward the left, as seen in Fig. 4, causing the left end of the plunger to bear against an abutment 68 formed on the lever 52. The tendency of the spring-pressed plunger 64 is to urge the ink pad 50 downwardly or away from the marking tool 14. Threaded horizontally through the upright portion of the lever 52 is a screw 70 the left-hand edge of which is adapted to bear against an abutment surface 72 formed on the housing 10. The rod 54 is operated, that is, slid longitudinally in its guideway, by a lever 74 (Fig. 3) connected through a link 76 to the left-hand end of the rod. The lever 74 is fulcrumed upon a vertical pin 78 carried by a bracket 89 mounted upon the left wall of the housing 10. A rearward extension of the lever 74 carries a cam roll 82 which rides upon a cam track 84 formed upon a barrel cam 88. The cam 88 is carried upon the left-hand end of the shaft 22 and rotates with the shaft. Mounted in the lever 74 is a cylindrical casing 88 in which is housed a plunger 90 urged by a spring 92 toward the left vertical wall of the housing 10. The effect of the spring-pressed plunger 90 is to tend to swing the lever 74 in a clockwise direction, as viewed in Fig. 3, that is, to maintain the cam track and to maintain the rod 54 in its normal position toward the left. The spring 92 is strong enough to overcome the opposing tendency of the spring 66 to move the rod 54 to the right.

The movement of the rod toward the left is limited positively by the engagement of the screw 70 with its abutment 72 and by the engagement of the felt pad 50 with the marking tool 14. When the rod 54 is in this position, the shaft 22 is stationary and the depression of the cam track 84 is in register with the cam roll 82. The spring plunger 90 would swing the lever 74 until the cam roll rested upon the cam track but for the fact that the rod 54 is positively held against further movement toward the left.

In order to prevent turning of the rod 54 in its guideway 102 and to provide a pair of spaced depending arms 94 which embrace the rod 54 mounted in the housing 10. The inner surfaces of the arms 94 bear against the slabbed-off sides 97 of the rod 96.

In order to protect the operator from possible injury to his fingers while making adjustments, the machine is provided with a guard 98 carried by a pair of arms 100 which are pivotally mounted upon the trunnion pins 18 and 20 and which bear frictionally against the bosses which support the trunnion pins to hold the guard in up or down position of ink feed pin 102 in the form of a hook which, when the guard is up or in operative position, engages a pin 104 on the clutch trip arm 35 to prevent tripping of the clutch.

To operate the machine, the guard 98 is lowered to its working position. The operator then inserts a sole between the gages 106 as far back as permitted by the heel gage 46. He then treads the machine, causing the shaft 22 to rotate, whereupon the head 16 descends and the inclining knives 38 and 40 make contact with the longitudinal surfaces 102 and 122, as shown on the sole 8 (Fig. 5). The rotation of the shaft 22 operates also to bring the high portion of the cam track 84 against the cam roll 82, swinging the lever 74 in a counterclockwise direction against the force of the spring 92 and thereby moving the rod 54 toward the right. As the screw 70 tends to back away from its abutment surface 72, it is maintained in engagement with the abutment surface by the spring-pressed plunger 64, which thus swings the lever 74 about its fulcrum 55 and lowers the ink pad 50 out of contact with the marking tool 14. Such downward movement of the ink pad is limited by the solid portion of the lever 52, just above the rod 54, striking against the upper surface of the rod 54. Continued movement of the rod 54 toward the right, at 50, laterally out of the path of the marking tool, whereupon the downward movement of the head 16 will bring the marking tool into operative engagement with the upper surface of the sole and print the mark 124 upon the surface of the sole. Such downward movement of the head will, at the same time, cause the other tools carried by the head to perform their functions.

Having described my invention, what I claim as new and desire to secure by Letters Patent of the United States is:
1. In a machine for operating upon soles, a marker, means for moving said marker in a downward path into engagement with a work piece, an ink pad, relatively strong resilient means for holding said pad in ink-applying engagement with the marker, relatively weak resilient means for urging said pad downwardly away from the marker, and mechanism driven by said moving means for positively overcoming said strong resilient means to enable the weaker resilient means to move the pad away from the marker, said mechanism being constructed and arranged also to move the pad out of the path of the marker.

2. In a machine for operating on soles, a marker having a lower face for engaging a work piece, means for moving said marker downwardly to bring said lower face into engagement with the work piece, an ink pad, an arm on which said ink pad is mounted, a slide, a guide in which said slide is movable horizontally, said arm being pivotally mounted on said slide for heightwise movement of the pad, yieldable means for urging the slide in one direction, an abutment, a member on the arm engageable with the abutment to raise the arm and thereby bring the pad up into inkling engagement with the lower surface of the marker on movement of the arm in said direction, means for moving said slide in the opposite direction to get the pad out of the path of movement of the marker, and a relatively weak spring acting on the arm to urge the pad downwardly, said spring becoming effective to lower the pad away from the lower surface of the marker upon movement of the abutment-engageable member on the arm away from the abutment.

3. In a machine for operating upon soles and having a sole support, a tool-carrying head movable toward and from said sole support, a driven shaft, and connections between the shaft and the head for moving the head, a marking device comprising a marking tool on the head, an ink pad, a rod parallel to the shaft, a holder for said ink pad pivotally mounted upon the rod for heightwise movement, a guideway in which the rod is movable longitudinally, an abutment, a member on said holder engageable with said abutment to swing the holder up and bring the pad into ink-applying engagement with the marking tool when the rod is moved in one direction, yieldable means urging the holder downward and effective to lower the pad away from the marking tool when the rod is moved in the opposite direction, and means operated by said shaft for moving the rod in one direction to lower the pad and also move the pad out of the path of the marking tool when the head descends, and for moving the rod in the opposite direction to move the pad under the marking tool and raising the pad into ink-applying engagement with the marking tool when the head rises.

CHARLES E. HOOD.

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