

UNITED STATES PATENT OFFICE.

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MACHINE FOR MAKING LASTS.

SPECIFICATION forming part of Letters Patent No. 667,934, dated February 12, 1901.

Application filed April 16, 1900. Serial No. 13,123. (No model.)

To all whom it may concern:

Be it known that I, ERNEST A. EASTMAN, a citizen of the United States, residing at Chicago, Cook county, Illinois, have invented certain new and useful Improvements in Machines for Making Lasts, of which the following is a specification.

In an application filed simultaneously herewith, Serial No. 13,121, I have described and claimed as a new article of manufacture a last made up of two separate pieces joined together by suitable means at a line running across the ball of the foot, the purpose of that invention being to permit the replacing of the worn-out or old-fashioned toe of a last by a new one of any desired style or the manufacture of a last from two smaller pieces than could be used for manufacturing it from one single piece. The place at which the old toe is cut off must be determined with accuracy, and the new toe must be cut off from a partially-turned last at exactly the same place, so that the opposed faces of the body and toe parts shall be identically the same size and shape. To properly position the toe and body portions relative to each other, as well as to form a union for them, I cut one or more oppositely-disposed vertical grooves in the opposed faces, and in these grooves I secure a strip which positions the pieces and which may be used to form the union between them. Of course these grooves must be cut in the opposed faces of the body and toe portions with absolute accuracy, and the present invention is concerned with a machine designed to make these cuts.

Referring to the accompanying sheet of drawings, in which the same letters of reference are used to designate identical parts in all the views, Figure 1 is a plan view of the complete machine. Fig. 2 is a side elevation of the same. Fig. 3 is a vertical section of the same, on an enlarged scale, on the line A A of Fig. 1. Fig. 4 is a detail plan view, on the same scale, showing the position of the parts of the last as they are being grooved; and Fig. 5 is a plan view of the last upon which it is designed to operate.

The mechanism is mounted on a table *a*, which has rigidly secured thereon the elongated bed-plate *b*, which has the guide-channel *c* extending the length thereof, with

which the elongated guide-rib *d*, formed on the under side of the sliding frame *e*, coöperates to guide the last squarely upon the one or more circular saws *f*, mounted upon an arbor suitably journaled beneath the table *a*. These saws project upward through the apertures *g* in the table and the slots *h* in the ends of the bed-plate *b*, and the sliding frame *e* is provided with the elongated slots *j*, which register with the saws *f* as the frame is advanced over them. This sliding frame *e* may be provided with the handle *k*, by which it is manipulated, and the table *a* may have the stops *l*, with which the ends of the frame contact to prevent the possibility of its being accidentally moved too far upon the saws.

Referring to Fig. 5, the body portion of the last is separated from the toe portion on the line *m*, and the opposed faces of the two portions are of exactly the same size and shape, as seen by the outlines of the respective portions in place on the frame. Suitably located in a straight line at right angles to the slots *j* are the two guide or gage pins *n*, projecting a short distance above the surface of the sliding frame *e*, to which they are secured at equal distances from the center-line thereof. On one side of the sliding frame *e* I cut a channel *o* in its surface at right angles to the slots *j*, and in this channel I secure the sliding gage-block *p*, by means of a wing-headed screw-bolt *q*, coöperating with a screw-threaded aperture in the frame *e*, located in the center of the channel *o* and passing through an elongated slot *r* in the gage-block *p*, which by means of the screw-bolt *q* can be quickly clamped in any desired position of adjustment relative to the adjacent pin *n*. The proper position of the gage-block *p* in this channel is determined by adjusting its front edge to the proper figure on the scale formed on the edge of the channel, as seen at *o'*. The ends of the pin *n* and the top of the gage-block *p* are preferably in about the same plane. Centrally located between the slots *j* is the sliding stop-bar *t*, which has its inner end provided with the teeth *u* and its rear end with the handle *v* and which is guided by a pin *w*, projecting upward from the central line of the frame *e*, through the elongated slot *x*, and by the set-screw *y*, passing down through the elongated slot *z* into the frame *e*, the pin, set-screw, and

slots cooperating to keep the bar t parallel to the slots j , and the set-screw y also serving to secure the bar t securely in any position in which it may be adjusted.

5 The operation of the device is as follows: The last having been previously cut into the body part and the toe part on the line m , the gage-block p is set for the size of last that is to be operated upon, so that it will be a
10 certain distance from the adjacent pin or stud n . The toe part is now placed with its opposed face downward upon the frame e and with its bottom edge contacting with the gage-pins n and the side of the bottom edge
15 contacting with the gage-block p . In this position, if the gage-block is properly adjusted for that size of last the line of the bottom of the last is substantially perpendicular to the line of movement of the frame as it is
20 advanced upon the saws, so that the channels A , which are cut in the toe of the last, will be perpendicular to the line m and also vertical. Before the frame is advanced to make the cut the bar t is slid forward until
25 the teeth u contact with the last to hold it squarely against the gage-pins n , in which position it is secured by tightening the set-screw y . The toe of the last is then pressed down and the frame e moved forward by the
30 handle k upon the saws f , which cut the grooves or channels A in the toe of the last, the toe being in the position shown by the full lines in Fig. 4. The toe is then removed, and the body portion to which it is to be attached
35 is placed with the opposing face down in front of the pins n , as indicated in dotted lines in Fig. 4, with its bottom edge resting against the pins n and the edge of its side against the gage-block p . In grooving the body portion
40 the bar t is not necessary, as the thrust of the saws f as the last is fed onto them is against the pins n . The foot being held down and the frame being moved forward, the channels B are cut in the body portion, exactly registering with the channels A in the toe portion,
45 so that the pieces can be put together and secured by the strips C , inserted therein, as shown in Fig. 5. In grooving the lasts for the left feet the operation is exactly the same
50 except that the position of the wide and narrow edges of the opposed faces of the portions are reversed.

The gage-pins n are circular in cross-section, and it will be readily seen that by giving them this shape they adapt themselves
55 readily to the varying curves and points of contact of the bottoms of the different sizes and curvatures of the lasts, which cooperate with either the front or rear side thereof. If
60 square edges or knife-edges were used, it will be apparent that they would not adapt themselves so readily to the different sizes and that the edges would not only become worn, but that the last-sections would be marred by
65 contact therewith, neither of which objections can arise with the convexly-curved contact-surfaces employed.

While I have shown my invention as embodied in the form which I at present consider best adapted to carry out its purposes, 70 it will be understood that it is capable of modifications and that I do not desire to be limited in the interpretation of the following claims except as may be necessitated by the state of the art. 75

What I claim as new, and desire to secure by Letters Patent of the United States, is—

1. In a machine for the purpose described, the combination with the stationary bed-plate, of the saw operating adjacent thereto, 80 and the frame mounted to move on said bed-plate and having means thereon for positioning and supporting the last-section as the frame is advanced upon the saw comprising the rigid pins n against which the bottom of 85 the last-section rests and the adjustable gage cooperating with the edge of the last-section on either side of the line between said pins.

2. In a machine for the purpose described, the combination with the stationary bed-plate, of the saw operating through a slot 90 therein, a frame having a longitudinal slot therein mounted to move on said bed-plate, the slot of the frame in its movement registering with the saw, and means on said frame 95 for supporting the last-section as it is advanced upon the saw, said means comprising the rigid pins n against which the bottom of the last-section rests and the gage adjustable to and from said pins along the line substantially parallel to the line between them to co- 100 operate with the edge of the last-section on either side of the line between said pins.

3. In a machine for the purpose described, the combination with the stationary bed-plate having the guiding means therein, of 105 the saw operating adjacent thereto, and the frame having the guiding member cooperating with the guiding means on the bed-plate, and carrying adjustable means thereon for 110 supporting the last-section as the frame is advanced upon the saw, said means comprising the rigid pins n against which the bottom of the last-section rests, and the gage adjustable to and from said pins along a line sub- 115 stantially parallel to the line between them, the vertical surfaces of the pins against which the bottom of the last-sections rest being convexly curved, substantially as and for the purpose described. 120

4. In a machine for the purpose described, the combination with the stationary bed-plate, of the sliding frame mounted to move thereon and having a plane upper surface 125 upon which the last-section rests, the stationary pins on said frame projecting upward from said plane surface, and the gage-block adjustable to and from said pins along a line substantially parallel to the line between 130 them and at right angles to the line of movement of the frame, both pins and gage-block being adapted to cooperate with a last-section to position it on either side of the line between the pins.

5. In a machine for the purpose described, the combination with the stationary bed-plate, of the frame mounted to move on said bed-plate and having a plane upper surface upon which the last-section rests, the stationary pins on said frame projecting upward from said plane surface, and an adjustable gage consisting of the longitudinally-slotted block movable transversely of the line of movement of the frame in a channel formed therein and having a set-screw for holding it in any desired position of adjustment so as to cooperate with a last-section resting in said plane surface and against said pins on either side of the line connecting said pins.

6. In a machine for the purpose described, the combination with the stationary bed-plate, of the frame mounted to move on said bed-plate and having a plane upper surface upon which the last-section rests, the stationary pins projecting upward from said plane surface and the gage-block adjustable to and from said pin along a line substantially parallel to the line between them and at right angles to the line of movement of the frame, both pins and gage-block being adapted to cooperate with a last-section to position it on either side of the line between the pins, and a sliding bar having its inner end adapted to cooperate with the top of the last-section and provided with means for securing it in any desired position.

7. In a machine for the purpose described, the combination with the stationary bed-plate, of the frame mounted to move on said bed-plate and having a plane upper surface upon which the last-section rests, the stationary pins projecting upward from said plane surface and the gage-block adjustable to and from said pins along a line substantially parallel to the line between them and at right angles to the line of movement of the frame, both pins and gage-block being adapted to cooperate with a last-section to position it on either side of the line between the pins, and a sliding bar having its inner end adapted to cooperate with the top of the last-section and provided with means for securing it in any desired position, said means comprising elongated slots in the bar cooperating with a pin and set-screw on the frame.

8. In a machine for the purpose described, the combination with the stationary bed-plate, of a circular saw mounted beneath said plate and projecting up through a slot therein, a slotted frame mounted to move on said bed-plate, slots in said frame permitting its

movement over the saw, and adjustable means on said frame for supporting and positioning the last-section as the frame is advanced upon the saw, said means comprising the rigid pins against which the bottom of the last-section rests on either side thereof, the vertical surface of the pins against which the bottoms of the last-sections rest being convexly curved for the purpose described, and the gage adjustable to and from said pins along a line substantially parallel to the line between them and at right angles to the line of movement of the frame.

9. In a machine for the purpose described, a last-section holding and gaging device consisting of the frame having a plane upper surface upon which the last-section rests, the stationary pins on said frame projecting upward from said plane surface, and a gaging-block adjustable to and from said pins along the line substantially parallel to the line between them, both pins and gage-block being adapted to cooperate with a last-section to position it on either side of the line between the pins.

10. In a machine for the purpose described, a last-section holding and gaging device consisting of the frame having a plane surface upon which the last-section rests, the stationary pins on said frame projecting from said plane surface, and an adjustable gage consisting of the longitudinally-slotted block movable in a line substantially parallel to the line between said pins in a channel formed in the frame and having a set-screw for holding it in any desired position of adjustment so as to cooperate with a last-section resting on said plane surface and against said pins along either side of the line connecting said pins.

11. In a machine for the purpose described, a last-section holding and gaging device consisting of the frame having the plane upper surface upon which the last-section rests, the stationary pins on said frame projecting upward from said plane surface and having their vertical surface against which the bottom of the last-section rests convexly curved, and a gage-block adjustable to and from said pins along a line substantially parallel to the line between them, both pins and gage-block being adapted to cooperate with the last-section to position it.

ERNEST A. EASTMAN.

Witnesses:

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