

J. S. TURNER.
LAST.

No. 421,992.

Patented Feb. 25, 1890.

Fig: 1.

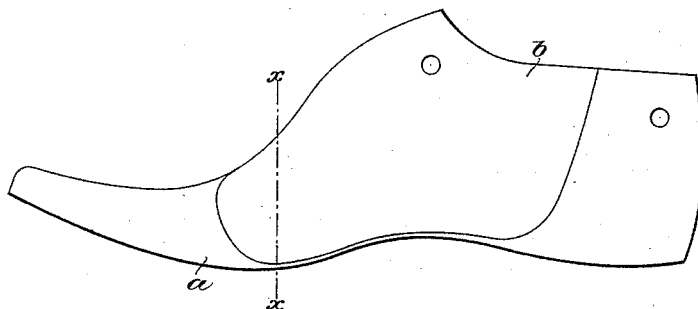


Fig: 3.

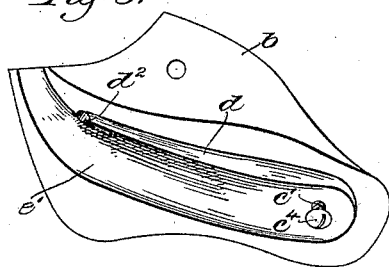


Fig: 2.

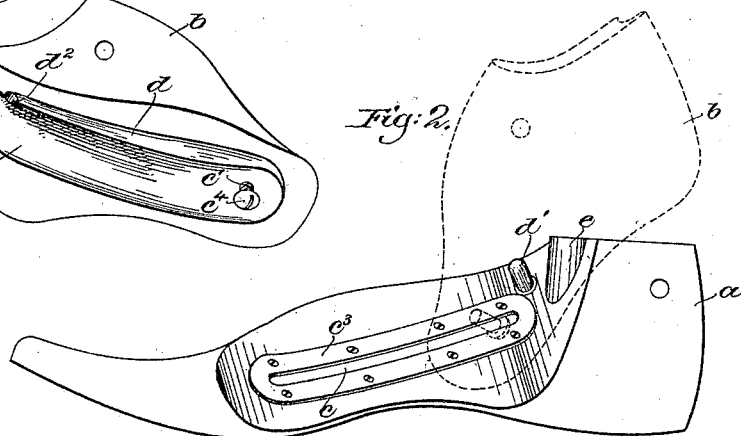


Fig: 4.

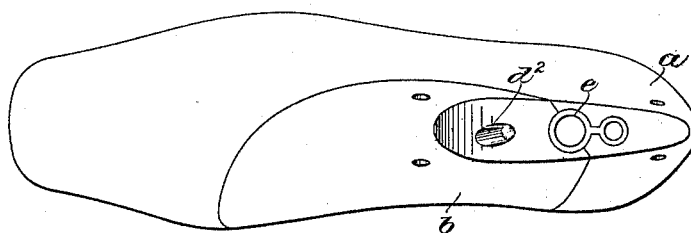
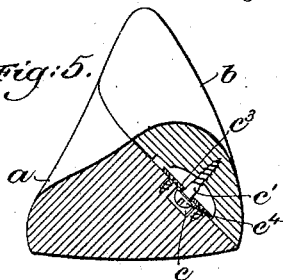


Fig: 5.



Witnesses.
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Howard F. Eaton.

Inventor.
Joseph S. Turner,
by Henry H. Ewing,
att'y.

(No Model.)

2 Sheets—Sheet 2.

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Fig. 6.

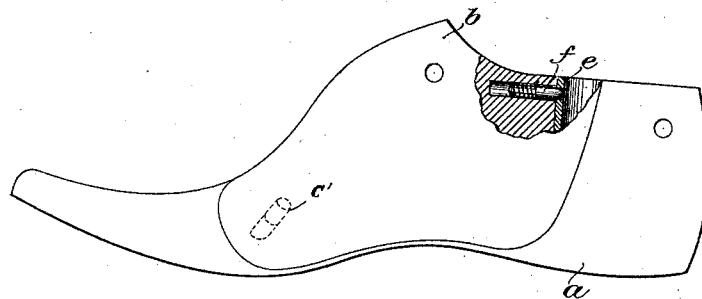


Fig. 7.

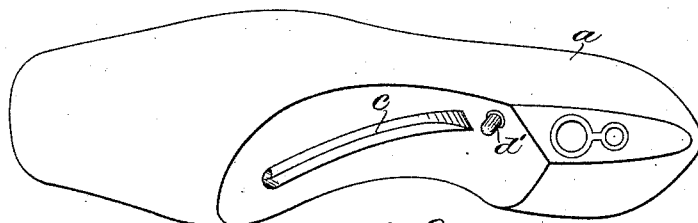
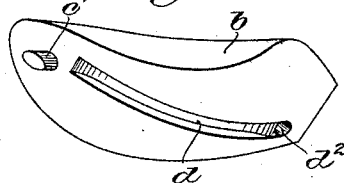


Fig. 8.



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UNITED STATES PATENT OFFICE.

JOSEPH S. TURNER, OF ROCKLAND, MASSACHUSETTS.

LAST.

SPECIFICATION forming part of Letters Patent No. 421,992, dated February 25, 1890.

Application filed February 8, 1889. Serial No. 299,147. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH S. TURNER, of Rockland, county of Plymouth, State of Massachusetts, have invented an Improvement in Lasts, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

In the manufacture of boots and shoes it is frequently necessary to partially or wholly withdraw the last-block and to thereafter return it to its normal position, and in the accomplishment of this result much difficulty has frequently been experienced; also, with some classes of work the last-block is liable to become displaced.

This invention has for its object to provide means for guiding the movement of the last-block and for locking or holding the last-block against lateral and longitudinal displacement.

The last which I have herein shown, and to which my improvements are more especially applicable, is substantially such as represented in United States Patent No. 382,339, granted to me May 8, 1888; but it will be obvious that the several improvements are applicable to lasts of other constructions. In the patent referred to the last-block is removed from the last-body mainly on the long shank side, and for simplicity by a continuous saw-cut, and the block being thus normally inclined the improvements herein to be described are particularly applicable. A guide is employed for the last-block, which consists of a pin or stud and a groove, the pin or stud being preferably arranged upon the contacting side or face of the last-block and the groove being preferably cut or formed in the last-body. The groove may be made dovetailed or formed to present a chamber to receive the head which is formed on the end of the pin or stud, so that the block cannot become wholly detached from the last-body. The groove in the last-body terminates at such a point as to check the forward movement of the last at the proper time, or when it has arrived in correct position. I also provide another groove and pin or stud as a guide for the last-block, the groove being formed upon the contacting face of the last-block,

and the pin or stud arranged upon the last-body. The pin or stud arranged upon the last-body will preferably be spring-controlled and movable by means of the usual last-hook. A vertical rib is arranged in the last-body to project into the space normally occupied by the last-block, and the last-block has another groove in its contacting face, or it may be the groove above referred to which shall receive the said projecting rib, the purpose of which is to prevent not only lateral but longitudinal displacement of the last-block. The said rib is herein shown as formed by allowing the tube which is placed in the pin or tool receiving hole in the last to project partially into the aforesaid space; but it is obvious that the said rib may be otherwise formed.

Figure 1 shows in side elevation the last, the block of which is in its normal position; Fig. 2, a side elevation of the last, the block being withdrawn and shown on dotted lines; Fig. 3, an under side perspective view of the last-block; Fig. 4, a top view of the last shown in Fig. 1; Fig. 5, a cross-section of the last shown in Fig. 1, taken on the dotted line *x x*; and Figs. 6, 7, and 8, modifications to be referred to.

The last-body *a* and block *b* are substantially as described and shown in United States Patent No. 382,339 aforesaid; but the improvements herein to be described may be applied to any other well-known form of last. A groove *c*, Figs. 2 and 7, is formed in the last-body *a* and so arranged as to receive a pin *c'*, projecting from the forward end of the contacting face of the last-block *b*.

In Fig. 2 a metallic plate *c''* is shown as secured to the last-body *a* over the groove *c*, said plate having an opening through it longitudinally, registering with the groove, but being somewhat narrower than the groove, so as to present the equivalent of a dovetailed recess or groove, and the stud *c'* will in this instance have a head *c''*, which follows in the groove. The groove *c* terminates at the forward end of the last-body *a* at such a point as to prevent forward movement of the last-block *b* beyond its normal position, as represented in Figs. 1, 4, and 6, and terminates at the upper end, so as to prevent the block being detached from the last-body. It will thus

be seen that the last-block, by means of this groove *c*, will be guided into its correct position, and, as shown in Fig. 2, cannot be detached from the last-body.

5 To prevent the last-block turning on the stud *c'* as a pivot, or, in other words, to guide the heel or rear end of the last-block, I have grooved the contacting face of said block, as shown at *d*, Figs. 3 and 8, and have provided
10 the last-body with a pin *d'*, which is designed to enter and follow in the groove *d* of the last-block as the stud *c'* moves in the groove *c*, and when said block has arrived in its correct position it enters a hole *d²*, which passes
15 through the said block. The pin *d'* is spring-controlled and of usual construction, and may be moved out of engagement with the last-block by means of a last-hook passing through the hole *d²*.

20 Ordinarily the grooved last-body and the pin or stud in the last-block, in co-operation with the grooved last-block and the pin or stud in the last-body, will be sufficient to guide the last-block from, say, for instance, the dotted-line position shown in Fig. 2 into its correct normal position (shown in Fig. 1) and to withdraw the block and to also lock the block
25 against ordinary displacement; but I preferably provide a vertical rib (shown at *e*, Fig. 3) which projects into the space occupied by the last-block, and I groove the contacting face and rear side of the block *b*, as shown at
30 *e'*, Fig. 3, said groove *e'* receiving the projecting rib *e*, and serving the purpose of not only an additional guide, or it may be the only
35 guide if the pin *d'* is omitted, for the heel or rear end of the block, but also as a stop, projection, or abutment, preventing both lateral and longitudinal displacement of the block.

40 If both the projecting rib *e* and pin *d'* are used, as shown in Fig. 2, the grooves *d* *e'* may be made as a single groove properly formed.

45 The projection or rib *e* is herein shown as formed by allowing the metallic tube which is fitted into the pin or tool receiving hole to project into the space normally occupied by

the last-block; but I may, if desired, use an independent block or piece for this purpose.

In lieu of the spring-controlled pin *d'*, arranged in the last-body *a*, a spring-controlled
50 pin, as *f*, Fig. 6, may be arranged horizontally in the last-block and made to engage with the vertical rib *e*.

I do not desire to limit my invention to any particular shape or dimensions of the
55 respective parts, and it is obvious that some of the improvements may be omitted and yet the substantial improvements provided.

I claim—

1. The last-body *a*, having the vertical rib
60 *e* rigidly attached thereto and projecting into the space occupied by the last-block, combined with the last-block *b*, grooved in its contacting face and rear side to receive the said rib to form a guide and stop for the block,
65 substantially as and for the purposes set forth.

2. The last-body *a*, grooved as at *c*, combined with the last-block having a pin projecting from its contact-face near the forward
70 end to enter said groove, and a pin *d'* in the last-body to enter groove *d* in the last-block to thereby guide the rear end of the last-block, substantially as described.

3. The last-body *a*, having a pin *d'* projecting into the space normally occupied by the
75 block, combined with the block grooved upon its contact-face to co-operate with said pin, and having a hole *d²* at the rear end of said groove, into which the pin *d'* enters to lock
80 the parts, substantially as described.

4. The last-body *a*, having the vertical guide-rib *e* and last-block grooved in its contacting face to receive said rib, combined with
85 a locking device for the upper end of the block, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOSEPH S. TURNER.

Witnesses:

BERNICE J. NOYES,
HOWARD F. EATON.