(No Model.)

# I. HALL.

## LASTING JACK.

No. 267,076. Patented Nov. 7, 1882.

Fig. 1.

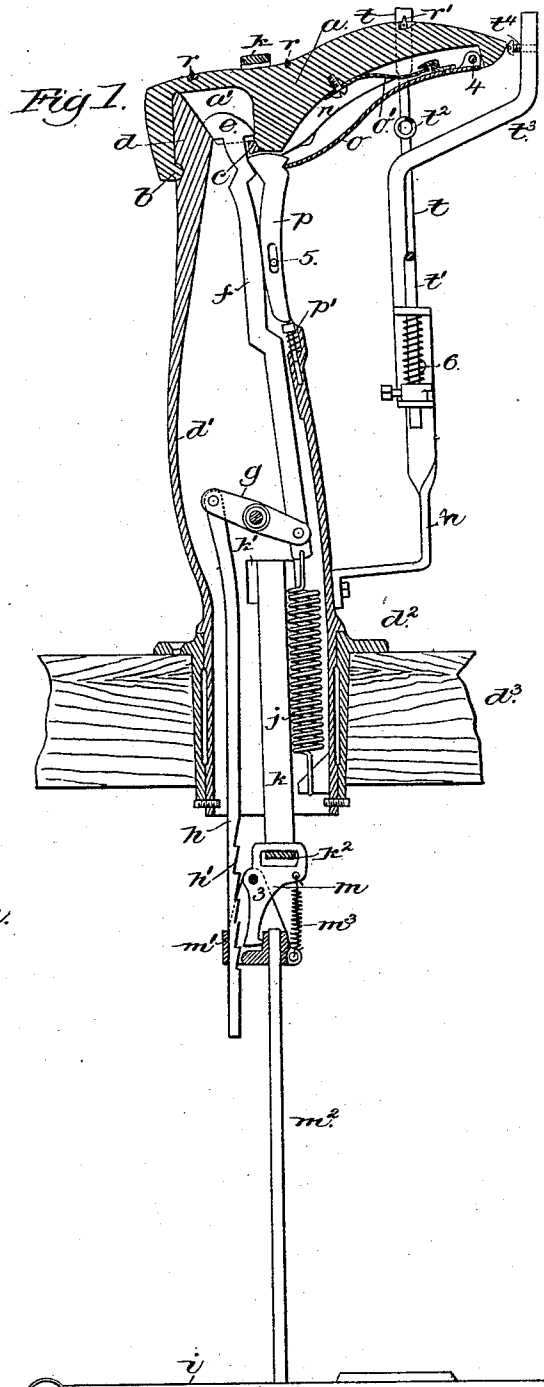
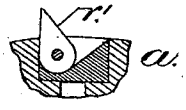


Fig. 2.



Witnesses.
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# UNITED STATES PATENT OFFICE.

ISAAC HALL, OF BOSTON, MASSACHUSETTS.

## LASTING-JACK.

SPECIFICATION forming part of Letters Patent No. 267,076, dated November 7, 1882.

Application filed September 18, 1882. (No model.)

*To all whom it may concern:*

Be it known that I, ISAAC HALL, of Boston, county of Suffolk, State of Massachusetts, have invented an Improvement in Lasting-Jacks, of which the following description, in connection with the accompanying drawings, is a specification.

My invention, relating to a jack for supporting boots and shoes while having their uppers attached to the soles or being otherwise operated upon, is intended as an improvement on the apparatus for which Letters Patent No. 251,714 were granted to me January 3, 1882, the said apparatus comprising a metal last mounted on a standard or upright provided with a locking device for retaining the last in place on the said standard, the same device also operating as an ejector to detach or remove the last from the standard when desired.

The present invention consists, partly, in the combination, with the last, of a series of sole-holding projections or studs upon the bottom thereof, for holding an insole in place until properly connected with the upper and outsole, one or more of the said studs being pivoted as hereinafter described, to enable the finished boot or shoe to be easily removed.

The invention consists, also, in the employment of a pivoted instep piece or block adapted to swing or close down into a recess in the last, to enable the boot or shoe to be easily removed therefrom, the dropping of the instep-block taking the place of the usual operation of drawing the block prior to removing the last from the boot.

The invention also consists in the novel construction of the joint between the last and standard and the means for operating the locking and ejecting device therefor, and in a block-operating device for causing the instep-block to drop when required, and also in means for enabling a single treadle to be employed for operating either the said locking, ejecting, and block-operating devices, or of independently operating the usual sole-holding strap, an engaging device controlled by the tension of the strap, causing the said treadle to engage and actuate the said last locking and ejecting device when the said strap is loose and inoperative.

The invention also consists in a gage for placing the soles in the proper position on the last.

Figure 1 is a vertical section of a jack embodying this invention, and Fig. 2 a detail showing the pivoted sole-holding projection.

The last *a* is provided with a socket, *a'*, located in its heel portion, the said socket having at its rear side and near its mouth a semi-cylindrical projection, *b*, while at its front side it has an inclined seat portion, *c*, the said socket being fitted to the last-holding projection *d* at the upper end of the standard *d'*, mounted to rotate or swivel in a socket, $d^2$, upon the bench $d^3$. The semi-cylindrical shoulder *b*, in co-operation with the corresponding recess in the standard and the inclined seat portion *c*, causes the last to wedge firmly on the socket and enable it to be securely held thereon when pressure or blows are brought to bear upon the toe portion of the last. By making the shoulder *b* cylindrical it serves partly as a hinge in throwing off the last, which is removed by raising the toe portion first a sufficient distance to permit the shoulder *b* to be disengaged from its recess. The last is locked in place upon and ejected from the standard by a locking and ejecting device, *e*, operating substantially the same as in my former patent referred to, the shape of the block, however, being considerably varied, owing to the difference in the last-socket previously described. The said locking device *e* is mounted on a bar, *f*, connected at its lower end with one arm of a lever, *g*, the other arm of which is connected with an actuating-bar, *h*, adapted to be operated, as hereinafter described, by a treadle, *i*. It will be seen that a downward movement of the bar *h* produces the upward movement of the device *e* that is required for releasing and throwing off the last, and the bar *f* is acted upon by a spring, *j*, tending to produce a downward movement of the said device *e*, to lock the last in place except when it is positively thrown up by the action of the treadle *i*.

The apparatus is provided with the endless strap *k*, shown as passing through openings *k'* in the sides of the standard *d'* and passing through an eye, $k^2$, in an engaging device, *m*, pivoted at 3 upon a support, *m'*, mounted upon a rod, $m^2$, connected with the treadle *i*. The

actuating-bar *h* for the last locking and ejecting device is shown as passing through a passage in the piece *m'* and provided with a series of teeth, *h'*. The action of the strap *k* upon the engaging device *m* is such that when tension is applied to the said strap—as when it is acting upon the material on the bottom of the last—it retains the end of the engaging device *m* disengaged from the teeth *h'* of the bar *h*, and that consequently while the treadle is employed for operating the said strap *k* the bar *h* remains disengaged, and the last-locking device and other mechanism connected therewith are not affected by the movements of the treadle *i*. As soon, however, as the tension upon the strap *k* is diminished—as when it is thrown off from the last and hangs loosely—the said engaging device *m* is thrown by the spring $m^3$ into engagement with the nearest one of the teeth of the bar *h*, and, in the subsequent movement of the treadle *i*, the said bar *h* and connected parts will be actuated thereby, the strap in the meantime being inoperative.

The last *a* has in its instep portion a recess, *n*, such as is usually occupied by the removable last-block which fills the space between the recessed portion of the last and the upper of the boot, the said block having to be first removed in order to permit the remainder of the last to be withdrawn from the finished boot. Instead of the said removable last-block, a supporting frame-work or block, *o*, is employed, it being pivoted at 4, near the toe of the last, and acted upon by a spring, *o'*, so as to draw it down into the recess *n* a sufficient distance to enable the last to be removed from the boot. The said block *o* is operated by a block-supporting device, *p*, pivoted at 5 upon the standard *d'*. The pivot-socket of the said device *p* is elongated, as shown, and it rests at its lower end on a spring, *p'*, to thus enable it to yield slightly, according to the thickness of the portion of the last which rests upon it. The upper end of the block-operating device *p* is thus inserted between the block and last, and thus determines the position of the said block relative to the last rather than its position relative to the standard, as might be the case if the said device *p* were rigidly connected with the standard. The block-operating device *p* is itself actuated by the bar *f*, which carries the last-locking device *e*. The said bar *f*, as it moves upward, has a backward movement, owing to the inclination of the engaging-surfaces of the block *e* and end of the standard, and a slight upward movement thus permits a sufficient backward movement of the block-operating device *p*, which rests against the said bar, as shown, to release the block *o* and permit it to be drawn by the spring *o'* into the recess *n*, this movement taking place before the device *e* has engaged the last to eject it from the standard. When desired to remove the boot or shoe from the last the block *o* may be thus dropped, and in some cases the boot or shoe may be removed from the last *a* without detaching the said last from the standard, thus reducing somewhat the amount of handling of the heavy lasts, as has to be done when the usual solid instep-block is employed.

The last *a* is provided with a series of sole-holding projections, *r r'*, upon which an insole can be forced to hold it in place instead of by the usual tacking.

In order to enable the boot or shoe to be removed from the last with its holding-projections without injury to the insole, the projection *r'* near the toe of the last is loosely connected therewith, it being shown in Fig. 2 as pivoted in such a manner as to enable it to rotate in a forward direction down to the level of the bottom of the last, its rotation in a rear direction, or toward the heel, being stopped when it stands at about right angles to the bottom of the last.

In applying the sole it is first struck on the projection *r'*, then drawn toward the heel and forced onto the projections *r* near the instep and heel, this operation drawing the sole backward, and not tending to release it from the projection *r'*.

When the boot is removed it is raised upward from the instep and heel portions of the last, thus readily disengaging the inner sole from the projections *r*, and in the subsequent forward movement of the boot over the toe the projection *r'* merely rotates down to the level of the last-bottom, thus being easily withdrawn from the inner sole without tearing it.

In order to gage the position of the sole relative to the last when applying it thereto, a sole-gage is employed, consisting of side arms, *t t'*, connected by a spring, $t^2$, tending to draw them toward the last and the front arm, $t^3$, the said arms all being provided with adjustable stop $t^4$, which engage the sides and front of the upper upon the last, and thus hold the projecting portions of the said arms at a definite distance from the said last at the front and sides, so that the sole, when placed between the said arms, will be held in the proper position relative to the last-bottom. The entire series of arms *t t' t³*, forming the sole-gage, are pivoted at 6 upon an arm, *n*, mounted on the standard *d'*, so that after the sole is once placed in proper position to the said gage it may be rotated downward from the last, and will be out of the way in the subsequent operation upon the boot.

I claim—

1. The last having a socket provided with a projecting shoulder and inclined seat, as described, combined with the standard having a last-holding projection co-operating with the said socket, and the last locking and ejecting device and its actuating-treadle, substantially as and for the purpose set forth.

2. The combination of the last locking or ejecting device and the sole-holding strap with their actuating-treadle and engaging device, whereby it is caused to operate either the said strap or the said locking device independently, substantially as described.

3. The combination, with a last, of a sole-holding projection loosely connected therewith,

whereby it is permitted to yield when the boot or shoe is removed therefrom, substantially as and for the purpose set forth.

4. The combination, with the last having a recess, of the pivoted block adapted to drop into the said recess, whereby the last may be removed from the boot or shoe without detaching the said block from the last, substantially as described.

5. The recessed last and pivoted block therefor, adapted to drop into the recess of the last, combined with the block-operating device, whereby it is held in proper position to sustain the upper until it is desired to remove the boot or shoe from the said last, substantially as described.

6. The combination of the standard and last mounted thereon with the sole-gage mounted on the said standard, substantially as described.

7. The combination, with the standard and last, of the last-block and its operating device having a yielding connection with the said standard, substantially as and for the purpose described.

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

ISAAC HALL.

Witnesses:
JOS. P. LIVERMORE,
BERNICE J. NOYES.