

J. E. LEAVITT.
EXPANSIBLE FOOT LAST.
APPLICATION FILED MAR. 9, 1906..

957,975.

Patented May 17, 1910.

Fig. 1

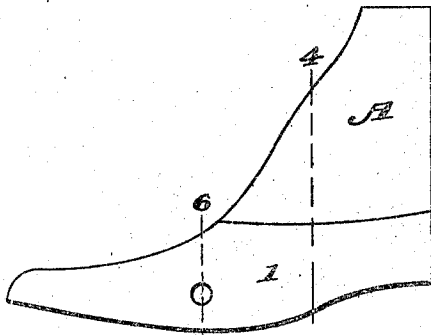


Fig. 2

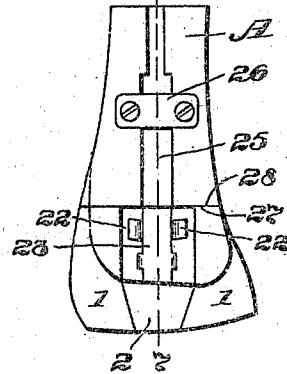


Fig. 3

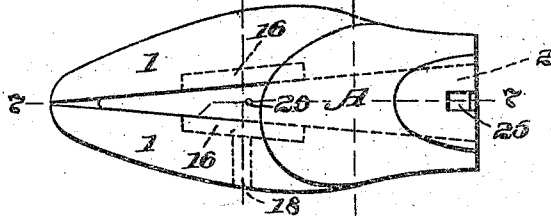


Fig. 4

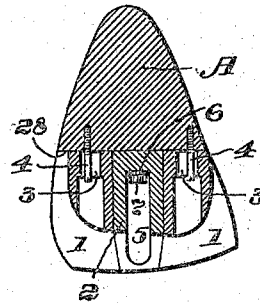


Fig. 5

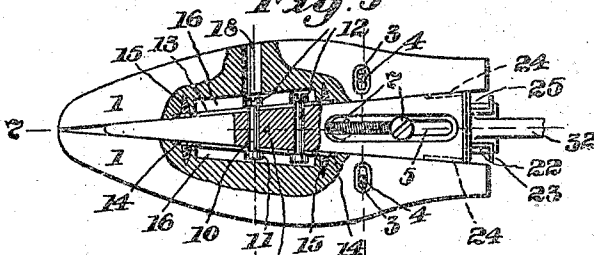


Fig. 6

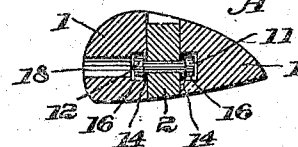


Fig. 8

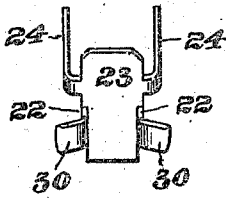


Fig. 7

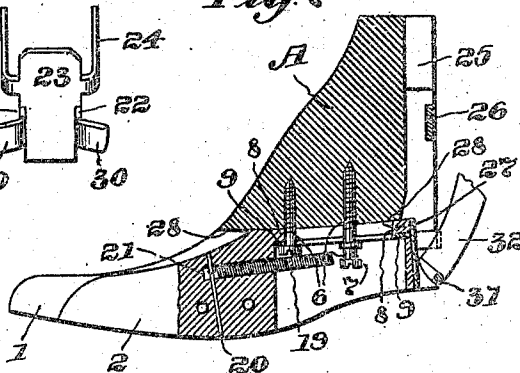
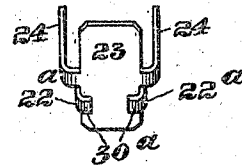


Fig. 9



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UNITED STATES PATENT OFFICE.

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EXPANSIBLE FOOT-LAST.

957,975.

Specification of Letters Patent.

Patented May 17, 1910.

Application filed March 9, 1906. Serial No. 305,066.

To all whom it may concern:

Be it known that I, JOHN E. LEAVITT, a citizen of the United States, residing at Boston, in the county of Suffolk, Commonwealth of Massachusetts, have invented an Improvement in Expansible Foot-Lasts, of which the following description, in connection with the accompanying drawings, is a specification, like characters on the drawings representing like parts.

My invention relates to split foot lasts for boots and shoes, more particularly to an expansible type adapted for use on boot and shoe treeing machines.

The object of my invention will be best understood and appreciated by reference to the following description when taken in connection with the accompanying drawings of one embodiment of my invention selected for purposes of illustration, while its scope will be more particularly pointed out in the appended claims.

Referring to the drawings,—Figure 1 is an elevation of the split foot last; Fig. 2 an elevation of the heel or rear end thereof; Fig. 3, a plan view; Fig. 4, a vertical section on line 4—4, Figs. 1, 3, and 5; Fig. 5, a plan and partial section of the bottom looking up; Fig. 6, a vertical section on line 6—6, Figs. 1, 3, and 5; Fig. 7, a similar section on line 7—7, Figs. 1, 2, 3, and 5; Fig. 8, a detail showing the retracting clasp secured to the base of the wedge, and Fig. 9, a modified form thereof.

In the embodiment of my invention herein illustrated, the expansible split foot last comprises an instep portion A, having slidably connected with its bottom face a plurality of movable parts, the movements of which cause the foot to be spread out laterally to expand or stretch a boot or shoe mounted on said last. These movable parts comprise the side pieces 1, and the intermediate wedge 2, suitably connected together to enable the wedge to slide toward the toe portion, and move the sides outwardly or laterally. In order to connect the sides to said instep portion A, (Figs. 4 and 5) so that they may slide thereon, each of them, adjacent its rear portion, is shown provided with a suitable transverse recess or slot 3, for a depending guide pin 4, tapped into said instep portion A, said slots 3, permitting said side pieces 1, to be moved laterally to ex-

pand or contract the foot. The wedge 2, is arranged between said sides and is slidably mounted upon the instep portion A, to permit its being moved longitudinally between the sides and upon the bottom of said instep portion; forward movement of said wedge spreading the sides to expand the foot and rearward movement contracting it.

To provide for the sliding movement of the wedge, it has, as shown in Figs. 4, 5 and 7, a longitudinally vertical recess or slot 5, to receive a pair of holding and guiding pins 6, depending from said instep portion, their heads 7, overlapping a ledge 8, formed in the sides of said slot 5, adjacent said instep portion, the guide pins 6, being longitudinally arranged in said slot and acting to guide the wedge in its reciprocations. The ledge 8, is provided with a wear plate 9, upon which the upper faces of the screw heads bear, thereby holding the upper face 27, of said wedge 2 against the bottom face 28, of the instep portion A. These guide pins prevent other than longitudinal movement of said wedge between the sides 2, and the bearing faces of the instep portion A, and the top of the wedge being held together by said pins, act to prevent vertical displacement of said wedge.

For controlling the movements of the sides, 1, permitting their separation as the wedge moves forwardly, and compelling them to slide inwardly or approach one another to contract the foot when the wedge is retracted or moved rearwardly into what may be denominated its normal position, and in order that said side pieces and the wedge may be mutually supported and guided in their movements, they are preferably slidably connected with each other. Such connections in the present instance is provided by means of a pair of headed horizontal guide pins or screws 10, (Figs. 5 and 7) carried by said wedge, and projecting laterally therefrom into and through longitudinal slots 13, of vertical bearing and holding plates 14, the heads 11, and nuts 12, of said screws having a bearing behind said slotted plates 14, thereby to confine said sides always in suitable relation to said wedge. These plates 14, are secured by screws within longitudinal recesses 16, formed in the inner faces of the sides.

In order to fasten or secure the pins or

screws 10, in place or to remove them, one of said sides 1, is provided with a transverse opening or recess 18, (Figs. 5 and 6) alined with the nut 12 on one of said screws 10 when the wedge is in either its normal or its forward position. A screw driver or other means may then be inserted through said opening 18, and said nuts unscrewed or tightened as desired. In what I have called the normal position referred to, the wedge is carried with its head or base in its rear-most position so that the sides are as near together as possible and the foot consequently unexpanded or contracted. For holding the wedge in said normal position, or to retract it after spreading the foot, it is controlled by means of a coil spring 19, which is secured at its front end by a cross pin 20 in the bottom of a longitudinal circular recess 21 formed in the front portion of the wedge (Fig. 8), its inner or opposite end being secured to one of the screw heads 7. By means of this construction the wedge is permitted to reciprocate back and forth between the sides of the last, the spring, however, always acting to retract or move the wedge back into its normal position.

As herein shown (Figs. 5 and 8), the foot last is adapted for use in connection with boot and shoe treeing machines, the back of the wedge being provided with a clasp for taking hold of or engaging the actuating device carried by said machine or a boot tree on which the split foot last is to be mounted. This clasp is provided with a pair of clips 22, (Fig. 8) projecting rearwardly from the face of a wear plate 23, secured by its horizontal arms 24 to the sides of the back of said wedge, the transversely bent ends 30, of said clips engaging or grasping the head 31 of the actuating lever 32, of the boot tree and causing the wedge to be positively retracted by the rearward motion of said head, without relying upon the action of the wedge retracting spring 19.

Obviously, when the clasp is omitted, reliance may be placed upon said spring to retract the wedge and contract the foot and the spring 19 may be omitted if desired, the clasp and its clips 22 grasping the slit head of the actuating lever causing the wedge to be reciprocated forward or back therewith to expand or contract the foot by its action upon the separable sides.

The form of clasp shown in Fig. 9, is constructed to engage or grasp an actuating lever formed with a solid head, the forks embracing the clips 22^a and being held thereon by the outwardly or transversely bent ends 30^a of said clips, the forks and clips interlocking as the last is secured to the boot tree.

To provide for attaching the foot last to a boot and shoe treeing machine, the instep

portion has at its heel end (Figs. 2 and 7) the vertical groove 25, bridged by a cross bar or plate, 26, common to feet or lasts of this type, on boot and shoe treeing machines.

In operation the last being contracted or unexpanded, a boot or shoe is placed thereon, the clasp by means of its clips 22 at the back of the wedge 2, having already been caused to engage or grasp the head of its operating lever in attaching the last to the boot tree. The actuation of said operating lever causes the wedge to slide toward the toe upon the instep portion A, and separate the sides, 1, laterally as the wedge is moved forward and forcibly spreading or expanding the foot, the rearward motion of the operating lever head carrying the wedge with it into retracted or normal position, pulling in the sides and contracting the foot.

While in its expanded condition the boot or shoe mounted thereon may be suitably dressed or otherwise finished and allowed to remain until dry. When the wedge is retracted and the last necessarily contracted or in normal position the boot or shoe may be easily removed without stretching its normal measurements.

The boot or shoe is applied to the last when it is in its unexpanded or contracted condition thereby permitting the foot of said last to be freely introduced to the shoe opening and into the toe of the shoe without any tendency to stretch or distort the normal reduced waist measure of the shoe. In applying a shoe to expansible foot lasts as hitherto constructed, the introduction of the last foot into the shoe has caused unnecessary strain upon said waist measure tending toward distortion of the upper as stated, and it is obvious that my invention overcomes this objection and that, since the shoe is both applied and withdrawn when the last is contracted, the least possible distortion of the normal measurements of the upper or shoe is produced.

It will be observed that the expanding means, viz; the separable sides 1, have no motion longitudinally of or relative to the shoe upper, the last, or to a fixed member thereof such as the instep portion A, and that consequently there is little or no tendency to rumple said shoe upper in applying, expanding, contracting the last, or removing the shoe therefrom.

Expansible foot lasts as hitherto constructed are not productive of the best results attainable in that the application of a shoe or boot thereto, its removal therefrom, or in causing the expansion of the last or its contraction, the shoe upper is liable to be unnecessarily stretched or the finished surface wrinkled or otherwise distorted and injured. Obviously the construction of my expansible foot last and the manner of operating it, 130

avoids these deleterious effects by permitting the shoe to be applied or removed with the last in its contracted condition and by at all times preventing longitudinal motion of any part of the last upon and relative to the surface of the shoe upper, the only motion of the expanding sides being an in and out motion, the former expanding the shoe the latter withdrawing the sides from contact with the surface of the stretched upper and permitting easy removal of the shoe from the last.

A further advantage apparent in the construction of my last, is in the provision of the clasp to engage with the actuating lever of the boot and shoe treeing machine or boot tree. These clasps are simple in construction and of little cost and are provided in uniform size for all the different sizes of lasts.

While I have described the operation of the last in connection with a boot tree or treeing machine, obviously the last may be used quite independently thereof, the clasp or wedge being moved by any suitable device to produce the desired expansion.

Claims.

1. An expansible foot last comprising an instep portion, laterally separable side pieces extending to the tip of the toe, pin and transverse slot connections between the side pieces and instep portion permitting lateral and restraining longitudinal movement of said side pieces, a longitudinally movable wedge actuator therefor independent of and having a longitudinal slot and pin connection with the body portion of the last for moving said side pieces laterally relative to the instep portion, and means acting normally to move the wedge in one direction.

2. An expansible foot last comprising an instep portion, side pieces extending to the tip of the toe and having the transverse slot and pin connection 3, 4 with said instep

portion to permit lateral separation and prevent longitudinal movement of said side pieces with relation to the instep portion, a wedge 2 having a longitudinal slot at its upper portion, guide pins secured to the instep portion and engaging said slot, and means acting normally to retract the wedge and cause lateral contraction of the side pieces.

3. An expansible foot last comprising an instep portion bodily movable side pieces, an intermediate wedge piece and slot and pin connections 16 and 10 between said side pieces and intermediate wedge piece to permit said intermediate wedge piece to be moved back and forth longitudinally relatively to the body portion of the foot last to cause a lateral separation and approach of said sides to expand or contract the last, said wedge piece having pin and slot connections 5, 6 with the instep portion, and a spring acting normally to retract the wedge piece.

4. An expansible foot last comprising bodily movable side pieces longitudinally immovable relatively to the body portion of the foot last, and an operating sliding wedge connected therewith provided with means tending to restore said operating wedge into normal and thereby move said side pieces into unexpanded position.

5. A foot last having an instep portion, side pieces extending to the tip of the toe and longitudinally immovable relative to the instep portion, a wedge independent of the instep portion and connected to the instep portion, and side pieces to move relative thereto in expanding and contracting the side pieces.

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

JOHN E. LEAVITT.

Witnesses:

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SIDNEY F. SMITH.