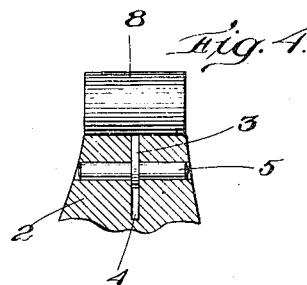
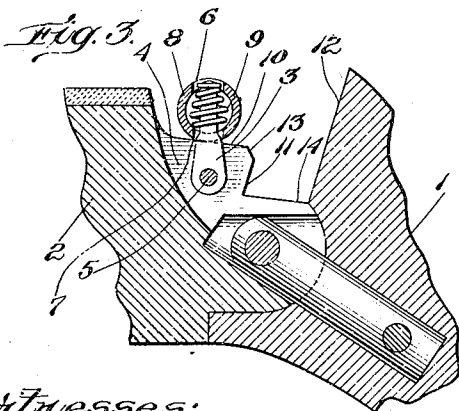
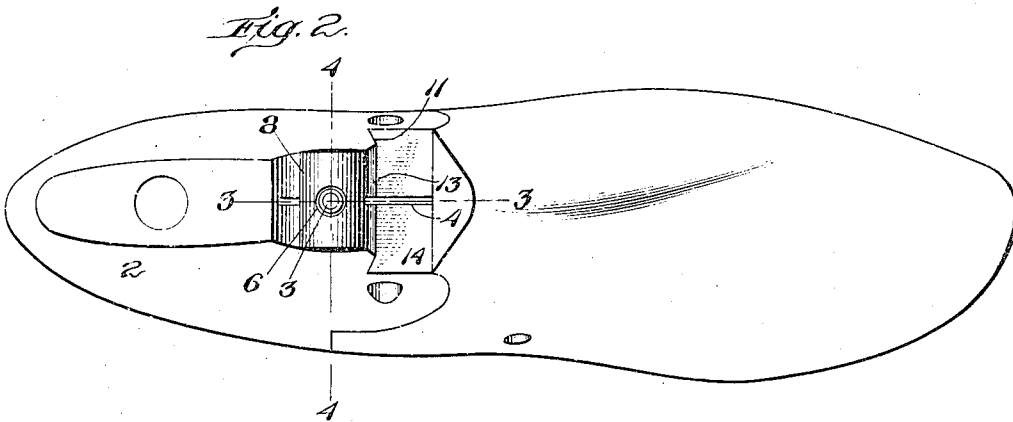
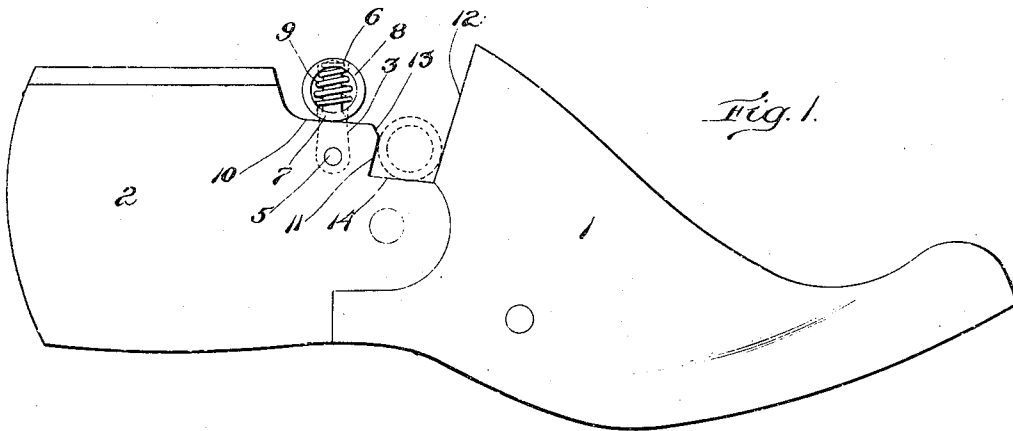


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LAST.
APPLICATION FILED FEB. 26, 1912.

1,060,462.

Patented Apr. 29, 1913.



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UNITED STATES PATENT OFFICE.

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LAST.

1,060,462.

Specification of Letters Patent.

Patented Apr. 29, 1913.

Application filed February 26, 1912. Serial No. 680,012.

To all whom it may concern:

Be it known that I, WALTER A. KRENTLER, a citizen of the United States, and resident of Detroit, county of Wayne, State of Michigan, 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.

My invention relates to lasts for use in the manufacture of boots and shoes, and more particularly to the well known type of two-part or hinged lasts.

In the manufacture of boots and shoes the use of hinged lasts has been found desirable but in shoe factories wherein modern high speed machinery is employed it has become necessary to utilize a locking device with such two-part lasts, in order to prevent such lasts from flexing during the operation of the lasting, heeling and leveling machines. Heretofore such locking devices have usually comprised a movable bar or member arranged to engage the forepart and heel part at a single point only, or comprised devices requiring the cutting away of the wood of the last, or devices acting to lock the hinge uniting the forepart and heel part. All of such locking devices have proven unsatisfactory under present conditions in shoe factories, especially because of the great torsional strains transmitted through the locking device during the operation of the machines above mentioned, and such locking devices were expensive to incorporate in a last and were more or less difficult to throw into operative or inoperative position.

To obviate the foregoing difficulties, it is an object of this invention to provide a locking device which shall be economical to construct, easy to affix without cutting away or weakening either the forepart or heel part of the last, and which may be quickly moved into operative or inoperative position, and when in operative position will act to hold the last locked with absolute rigidity.

It is a further object of the invention to provide a locking device which will engage the adjacent faces of the forepart and the heel part throughout their entire width where the locking device contacts with them. This construction serves to hold the forepart and heel part with substantially as

wide a bearing surface as if the last were solid.

It is a still further object of the invention to provide a locking device which will automatically seat itself into operative position whereby the two parts of the last are locked; or to automatically seat itself into inoperative position so that the two parts of the last may be readily flexed, by simply being started toward either position by the operator. This construction is of great advantage, permitting the operator to move the locking device a short distance only toward the desired position without requiring manual movement of the device into its final position as my construction automatically completes such movement.

It is also an object of the invention to provide a locking device of great strength which may be readily applied to existing lasts without cutting or materially changing such lasts, and without affecting the hinge uniting the forepart and heel part.

An additional object is to have a locking device which cannot be displaced when in operative position by any hammering operation to which the last is subjected, and which cannot be accidentally moved from the position to which the operator has set it.

A further important object of the invention is to provide such a device equally applicable to lasts having a narrow cone or having a broad wide top, and also to relieve the hinge of a last from the twisting strains apt to be brought upon it during the operation of boot and shoe making machines.

My invention may be conveniently embodied in a last of the type shown in U. S. Patent No. 936,138 and accordingly, the invention is herein illustrated as applied to a last of that type.

Further advantageous details of construction and combinations of parts will be hereafter more distinctly pointed out and claimed.

In the drawings showing my present preferred form. Figure 1 represents a side elevation of a last constructed according to my invention, showing the locking device in inoperative position, and showing in dotted lines said device in its operative position; Fig. 2 is a plan view thereof; Fig. 3 is a cross section on line 3—3 of Fig. 2; and Fig. 4 is a side view of the locking device ap-

proximately on the line 4—4 in Fig. 2, a portion of the last being shown in section.

In the hinged last herein illustrated, 1 indicates the forepart and 2 the heel part which are united by a hinge as is shown in the patent above referred to. The locking device comprises a bar 3, arranged to fit in a saw cut or kerf 4 which is made in the heel part 2, and passing loosely through this bar at its lower end and into the wood on each side of the kerf is a pivot pin 5 on which said bar may turn. In types of lasts, such as shown in U. S. Patent No. 888,261, where a cut is made similar to the kerf 4 in order to affix the hinge to the heel part, the bar 3 may be inserted therein without any additional saw cut. To the outer end of the bar 3 is affixed the locking member or block which may be a piece of metal tubing. The outer end of bar 3 is arranged to pass through two diametrically opposite holes 6 and 7 approximately midway of the length of the piece of metal tubing 8, and affixed to the outer end of the bar 3 is one end of a coiled spring 9, the other end of this spring being arranged to bear against the inner surface of the tubing 8 as indicated in Figs. 1 and 3. The holes 6 and 7 are of sufficiently larger diameter than that portion of the bar 3, which passes through them, so as to allow for considerable play or leeway in all directions between the bar 3 and the member 8. This arrangement, whereby the member 8 is yieldingly held pressed downwardly by the spring 9, permits of lateral, longitudinal, and oscillatory movement of the member relatively to the bar 3. The heel part 2 is preferably formed with a substantially horizontal surface 10 on which the member 8 is normally held in yielding contact by the spring 9 when in inoperative position, as will be readily understood by reference to Fig. 1. The heel part is also preferably formed with a short undercut face 11, of slightly greater length than one-half the diameter of said member 8, which face is formed parallel with the face 12 of the forepart 1, and intermediate the faces 10 and 11 is a short, preferably flat, section 13 over which the tube 8 is moved in passing from operative to inoperative position and vice versa. The location of the pivot 5 relatively to the faces 10 and 11 is such that the spring 9 normally tends to force or slide the member 8 backwardly along the face 10, or downwardly along the face 11, as will be readily understood from the drawings, and so that movement of the member 8 from either operative or inoperative position at once compresses said spring. Therefore, in moving the member 8 from inoperative to operative position, the spring 9 is compressed until said member passes over the intermediate face 13 and as soon as the lower surface of the tube reaches the junction of

the two faces 13 and 11 the tension of the spring 9 acts to automatically seat said tube firmly in the lower recess between the surfaces 11 and 12, pulling it down on to the top of the knuckle joint at 14. Similarly, when the member 8 is moved from operative to inoperative position it will be automatically seated at the rear of the surface 10 as soon as the operator gives it a slight impetus to move it off the upper edge of the intermediate face 13. It will be noted that the member 8 can be of a length substantially equal to the width of the last at the top of the knuckle joint 14. This construction holds the last in locked position, practically with as great strength and rigidity as if the last were solid, owing to the long bearing surfaces of the member 8 against the forepart and heel part. Therefore, all twisting strains upon the last are rigidly met and resisted by this locking device. The length of the member 8 is readily proportioned for any width of last, and the locking device is equally adaptable to men's or women's lasts, and to lasts having a very narrow cone, or having a broad wide top. An important advantage of this locking device is that it is capable of rapid movement into operative or inoperative position, such movement simply comprising a slight swinging action initiated by the operator to move the tube 8 across the short width of the face 13 on the heel part and the device will then automatically continue its movement into its final seating position.

It is not intended to limit the invention to the specific construction herein shown, as any block similar to the tube 8, which block is of a length preferably equal to the width of the last at the locking faces thereof and which may be yieldingly held to either heel part or forepart and having provision for moving into and out of operative position, is within the scope of my invention. Also the faces 11 and 12 may be wedge shaped and hence the diameter of the member 8 could be much smaller than as shown herein, but preferably such member is of an appropriate diameter to snugly fit between the parallel faces 11 and 12 as stated. One of the advantages in using a metallic tube for the locking member is that its diameter may be quickly made to fit the space between the faces 11 and 12 by simply flattening the tube in the desired direction by the blow of a hammer.

Another feature of very great practical advantage in the yielding connection between the member 8 and bar 3, is that said member will automatically seat itself on the faces 10 and 14, whether said faces are in parallel planes or not, and whether said faces are at a right angle to the line of movement of the bar 3 or not. A further feature is that the strains on the locking

member 8 are transmitted directly from one part of the last to the other without involving the bar 3 or pivot pin 5 or the spring 9.

Having described my invention, what I claim as new and desire to secure by Letters Patent is:

1. A hinged last, comprising a forepart, a heel-part, and a hinge connecting said parts, said forepart and heel-part being formed with adjacent normally separated faces, a bar pivoted near one end to one part and carrying near its other end a locking member arranged to engage, removably, both said faces to lock the last in extended position.

2. A hinged last, comprising a forepart, a heel-part, and a hinge connecting said parts, said forepart and heel-part being formed with adjacent parallel faces, a bar pivoted near one end to one part, said bar carrying near its other end a locking member yieldingly connected thereto, which member is arranged to engage both said parallel faces.

3. A hinged last, comprising a forepart, a heel-part, a bar pivoted to the heel-part, and a hinge connecting said parts, in combination with locking means comprising a locking member yieldingly connected to said bar and arranged to be moved into locking engagement with the forepart and heel-part.

4. A hinged last, comprising a forepart, a heel-part, and a hinge connecting said parts, in combination with movable locking means, the heel-part having a recess to receive said means in inoperative position and a face to engage said means in its locking position, and an intermediate portion over which said locking means must move in passing from operative to inoperative position, said locking means comprising a pivoted bar and a locking member yieldingly connected thereto.

5. A hinged last, comprising a forepart, a heel-part, and a hinge connecting said parts,

one of said parts having three angularly disposed surfaces, in combination with a locking device movable in one direction over the intermediate of said three surfaces to an adjacent one of the three surfaces to lock the last in extended position or in an opposite direction to the third of the three surfaces where the lock is inoperative, and means to move said device automatically along either of the separated surfaces beyond the intermediate surface to final position.

6. A hinged last, comprising a forepart and a heel-part each having adjacent parallel faces spaced apart, a bar pivoted to the heel-part, and a member adapted to engage both said faces and to transmit strains directly from one part to the other, said member being yieldingly connected to the bar, which bar is arranged to move said member from locking position to inoperative position remote from said parallel faces.

7. A hinged last having a fore-part and a heel part hinged together and having surfaces at their hinged ends spaced apart to cooperate with a locking tube, and locking means comprising a tube arranged transversely of the last and movable into position to contact with the rear surface of the forepart and the forward surface of the heel part simultaneously to hold a last locked in extended position, a coiled spring within said tube, and means attached to one of said last parts, passing through said tube and connected to one end of the coiled spring therein, whereby the tube is yieldingly connected to one of the last parts.

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

WALTER A. KRENTLER.

Witnesses:

MINNIE R. HOEFT,
ANNA M. HOEFT.