J. E. WEEDEN.

LAST.

APPLICATION FILED JULY 9, 1913.

1,093,665. Patented Apr. 21, 1914.

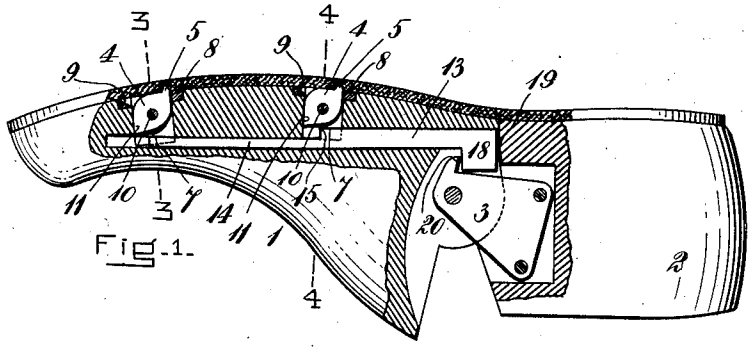

Fig. 1.

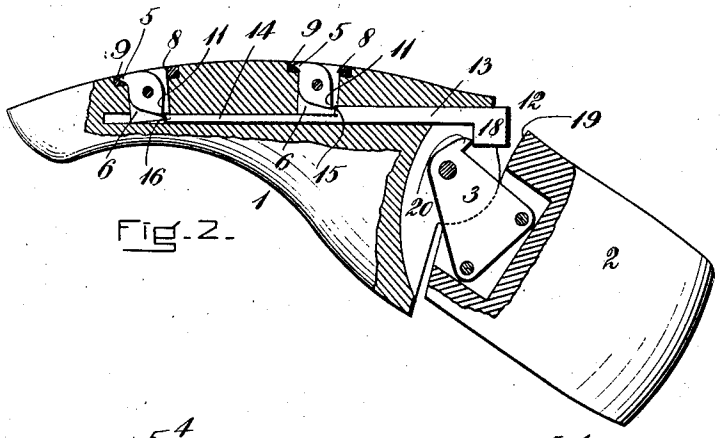

Fig. 2.

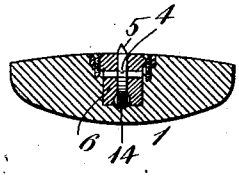

Fig. 3.

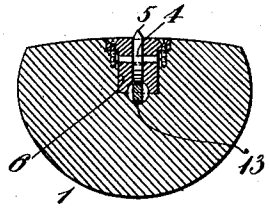

Fig. 4.

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UNITED STATES PATENT OFFICE.

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LAST.

1,093,665. Specification of Letters Patent. Patented Apr. 21, 1914.

Application filed July 9, 1913. Serial No. 778,023.

To all whom it may concern:

Be it known that I, JOHN E. WEEDEN, of Somersworth, in the county of Strafford and State of New Hampshire, a citizen of the United States, have invented a new and useful Improvement in Lasts, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification, in explaining its nature.

My invention relates to lasts that are equipped with means for retaining a sole thereon and thereby dispensing with the ordinary method of tacking the sole to the last during the making of a shoe.

My invention comprises an improved means for retaining the sole.

Among the objects of my invention are to provide a sole retaining means that can be applied to an ordinary last by simple operations and also to provide a means simple in character, of few parts but of positive and efficient operation.

My invention can best be seen and understood by reference to the drawings, in which—

Figure 1 is a view partly in side elevation and partly in section of a hinged last provided with a sole retaining mechanism embodying my invention. Fig. 2 is also a view in side elevation and partly in section of the last when broken and the position then assumed by the operating parts of the mechanism. Fig. 3 is a section on the line 3—3 of Fig. 1, and Fig. 4 is a section on the line 4—4 of Fig. 1.

In the drawings:—1 represents the front or toe portion and 2 the back or heel portion of a conventional form of last.

3 is the hinge connecting the respective portions of the last by which it may assume its normal extended position as shown in Fig. 1 or become broken or collapsed as shown in Fig. 2.

The mountings for the levers 4 each consists of a stud 6 having a flange-forming lower end portion 7. These studs are set into the fore part of the last in a manner whereby the bottom surface of the flange portion 7 of each stud will lie substantially flush with the bottom surface of the last, one stud being set preferably at the ball of the last and the other in longitudinal alinement therewith nearer the toe portion of the last. Each of the studs including the flange portion thereof is preferably made circular in form both for ease in making the stud and for applying it to the last, inasmuch as each stud can be socketed within the last by boring therein a hole of sufficient size to receive the flange portion of the stud and extending this hole by one smaller in diameter for receiving the body of the stud. Each of the studs is slotted to receive the levers 4 journaled to turn therein, the slots in the studs being continued through the lower flange portion of each stud by an elongated opening therein, 8 and 9 forming respectively the respective ends of this opening. The levers 4 are mounted or journaled to turn within the studs by pins 10 secured thereto, the arrangement being such that each of the levers will turn upon an axis transverse the longitudinal line of the last. Each of the levers 4 comprises a cam through which the pins 10 are passed, the form, disposition and arrangement of the parts being such that each of the levers may be turned to occupy an engaging position as shown in Fig. 1 when the point 5 of the lever will extend through the opening in the flange portion of the stud and project outwardly from the bottom of the last whereby it may enter a sole applied thereto, or become turned to have a disengaging position as shown in Fig. 2 when the point of the lever will project forward in the general direction of the toe of the last when it will no longer properly engage the sole for retaining it.

The end 8 of the opening in the flange portion of the stud operates to define the engaging position of the lever by the lever turning against the same, while the end 9 of the opening in the stud acts to define the disengaging position of the lever by the lever or point thereof turning against this end when the lever is occupying its turned disengaging position. Each of the levers 4 is adapted also to be turned by means within the last from a disengaging position as shown in Fig. 2 to an engaging position as shown in Fig. 1, and maintained in such position until released. For this purpose each lever is provided with an edge portion 11 which, when the lever is in a disengaging position, projects as shown in Fig. 2 into the path of a bar 12 socketed to slide longitudinally within the body of the last and adapted to engage the edge portions 11 of the respective levers for turning these levers to an engaging position and maintaining them in such position. The bar 12 is a

straight bar and is contained within a socket extending from the rear end of the body portion of the last beyond the foremost lever. Inasmuch as the respective levers will occupy different relative positions with respect to the sliding bar it becomes necessary in order that the bar may have proper engagement therewith to make the bar for a portion of its length of greater size than the remaining portion thereof. The bar accordingly comprises portions 13 and 14, respectively, of which the portion 13 is of larger size than the portion 14 and terminates in an edge 15 from which the smaller portion 14 of the bar extends and of which 16 represents the end. The relative size and adaptation of the bar is also such that when the bar is in a retracted position with the lever occupying a disengaging position as shown in Fig. 2, the edge 15 and the end 16 of the respective portions of the bar will lie clear of the levers but in position to respectively engage the edge portions 11 thereof as the bar is moved forward for turning the levers and moving them into an engaging position as shown in Fig. 1. The sliding bar further tends to hold the levers in their engaging position by its bearing against the same, the respective portions 7 of the bar continuing their bearing against the levers after they have been turned to an engaging position for holding them in place. In this connection it is to be observed that the edge portion 11 of the respective levers which receives the engagement and continued bearing of the bar lie a variable distance away from the axial center of the levers as is customary in the construction of cams.

The bar 12 is made a straight bar essentially for the reason that a socket can be provided within the body of the last simply by boring straight holes therein, entering from the rear end of the body of the last, the first hole being of sufficient size to receive the larger portion 13 of the bar and this hole extended by a smaller hole of sufficient size to receive the smaller or extended portion 14 of the bar.

The bar is moved forward or retracted automatically as the last is extended or broken. For this purpose the rear end of the bar or that adjacent the heel portion of the last is provided with an angularly-turned or formed end part 18 socketed within the body of the last and bearing against the forward edge 19 of the heel portion thereof when the bar is in an extended position. Engaging the forward edge of the turned portion 18 of the bar is a beak 20 preferably forming an integral part of the hinge 3. The turned end of the bar is accordingly retained between the heel portion of the last and the beak 20 with the effect that as the last is broken the beak 20 bearing against the turned end of the bar will operate to draw the bar into a retracted position and accordingly out of engagement with the respective levers when the levers are permitted to assume a disengaging position. Upon restoring the last to its extended position the bar will be moved forward by the bearing of the heel portion of the last against the end thereof which accordingly operates to turn the levers to their engaging positions and to maintain the same in such positions as aforesaid.

In the use of the last the sole is applied thereto when the last is in its extended position with the levers occupying an engaging position as shown in Fig. 1 when the points thereof will enter the sole and retain the same against displacement. After the application of the upper the last is broken in the usual manner which operates to retrace the bar as aforesaid and release the pointed levers. Such operation, however, does not act to retract the points from the sole, the levers being moved to a disengaging position and the points thereof drawing out of the sole only as the last is withdrawn from the shoe, which adds to the simplicity and effectiveness of the device.

It is apparent of course that the construction shown may be varied in various details without departing from the spirit of my invention.

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

1. A last having a lever presenting a sole retaining point, means for mounting said lever to have an engaging position when the point thereof will project outwardly from the bottom of said last, or become turned to have a disengaging position when the point thereof will project forward in the general direction of the toe of the last, said lever presenting also a portion by which it may be turned to and maintained in said engaging position, and means movable to engage said portion of the lever for turning said lever to said engaging position and maintaining the same in such position or movable into a position of disengagement with said lever when said lever may become turned to occupy its position of disengagement as aforesaid.

2. A last having a lever presenting a sole retaining point, means for mounting said lever to have a defined engaging position when the point thereof will project outwardly from the bottom of the last, or become turned to have a defined disengaging position when the point thereof will project forward in the general direction of the toe of the last, said lever presenting also a portion by which it may be turned to and maintained in said engaging position, and means contained within the last movable to engage said portion of the lever for turning the lever to said defined engaging position and

for maintaining the same in such position, or become moved into a disengaging position with respect thereto, permitting said lever to turn and assume its disengaging position as aforesaid.

3. A last having a lever presenting a sole retaining point, means for mounting said lever to have an engaging position when the point thereof will project outwardly from the bottom of said last, or become turned to have a disengaging position when the point thereof will project forward in the general direction of the toe of the last, said lever presenting also a portion by which it may be turned to and maintained in said engaging position, a bar socketed to slide longitudinally within said last to engage said portion of the lever for turnng it to said engaging position and maintaining it in such position, or become withdrawn into a disengaging position with respect to said lever, permitting said lever to turn to and assume its disengaging position as aforesaid.

4. A last having a fore part and a heel part movable relatively to the fore part whereby the last may be extended or collapsed, a lever presenting a sole retaining point, means for mounting said lever in the fore part of said last to have an engaging position when the point thereof will project outwardly from the bottom of the last, or become turned to have a disengaging position when the point thereof will project forward in the general direction of the toe of the last, said lever presenting also a portion by which it may be turned to and maintained in said engaging position, and means whereby said lever may be automatically turned to and maintained in an engaging position upon extending said last, or released whereby it may assume a disengaging position upon collapsing said last.

5. A last having a lever presenting a sole retaining point, a slotted stud secured to said last in which said lever is mounted to have an engaging position when the point thereof will project through the bottom of said stud to extend outwardly from the bottom of the last in a defined engaging position, or become turned in said stud to have a disengaging position when the point thereof will project forward in the general direction of the toe of the last, said stud presenting an edge against which said lever may turn for defining the engaging position thereof, and releasable means for engaging said lever for turning it to said engaging position and maintaining it in such position.

6. A last having a cam shaped lever presenting a sole retaining point and an inclined edge, means for pivotally mounting said lever to have an engaging position when the point thereof will project outwardly from the bottom of said last, or become turned to have a disengaging position when the point thereof will project forward in the general direction of the toe of the last, and sliding means socketed within said last to engage the inclined edge of said lever for moving the same into its engaging position and for maintaining it in such position upon movement in one direction, or to become disengaged from said lever upon movement thereof in a reverse direction when said lever will become released to assume its disengaging position as aforesaid.

7. A last having a fore part and a heel part movable relatively to the fore part whereby said last may be extended or collapsed, a lever presenting a sole retaining point, means for mounting said lever to have an engaging position when the point thereof will project outwardly from the bottom of said last, or become turned to have a disengaging position when the point thereof will project forward in the general direction of the toe of the last, said lever presenting also an edge by which it may be turned to and maintained in said engaging position, a bar socketed to slide longitudinally within said last and engage said edge portion of the lever for turning it to said engaging position and maintaining it in such position upon forward movement of said bar, or become withdrawn into a disengaging position with respect to said lever permitting said lever to turn and assume its disengaging position as aforesaid, said bar presenting an end engaged by the heel part of said last for imparting a forward movement to said bar upon extending said last, and means whereby said bar may be withdrawn upon collapsing said last.

8. A last having a fore part, a heel part and a hinge connecting said parts of the last, a lever presenting a sole retaining point, means for mounting said lever to have an engaging position when the point thereof will project outwardly from the bottom of said last, or become turned to have a disengaging position when the point thereof will project forward in the general direction of the toe of the last, said lever presenting also an edge by which it may be turned to and maintained in said engaging position, a bar socketed to slide longitudinally within the fore part of said last and engage said edge portion of the lever for turning it to said engaging position and maintaining it in such position upon forward movement of said bar, or become withdrawn into a disengaging position with respect to said lever permitting said lever to turn to and assume its disengaging position as aforesaid, said bar presenting an end engaged by the heel part of said last for imparting a forward movement to said bar upon extending said last, and means carried by said hinge for withdrawing said bar upon collapsing said last.

9. In a last having a fore part and a heel

part movable relatively to the fore part whereby said last may be extended or collapsed, movable sole retaining means mounted in the fore part of said last, an actuating bar for operating said means, said bar presenting an end engaged by the heel part of said last for imparting a forward movement to said bar upon extending said last, and means whereby said bar may be withdrawn upon collapsing said last.

10. A last having a fore part and heel part, and a hinge connecting said parts of the last, movable sole retaining means mounted in the fore part of said last, an actuating bar for operating said means, said bar presenting an end engaged by the heel part of said last for imparting a forward movement to said bar upon extending said last, and means carried by said hinge for withdrawing said bar upon collapsing said last.

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