

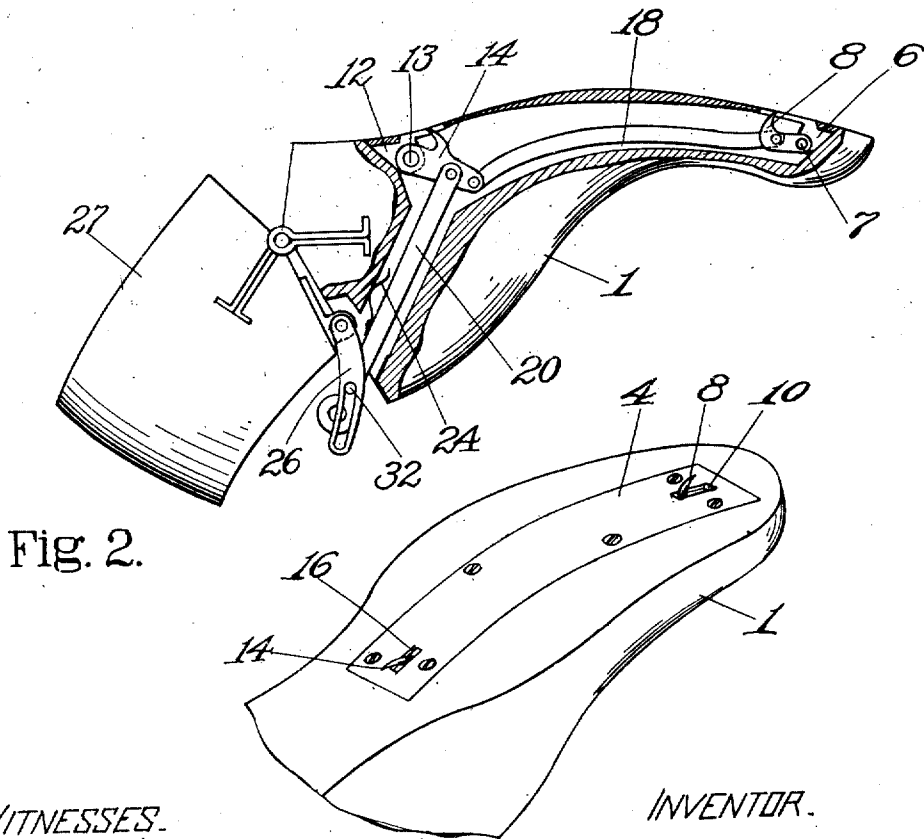
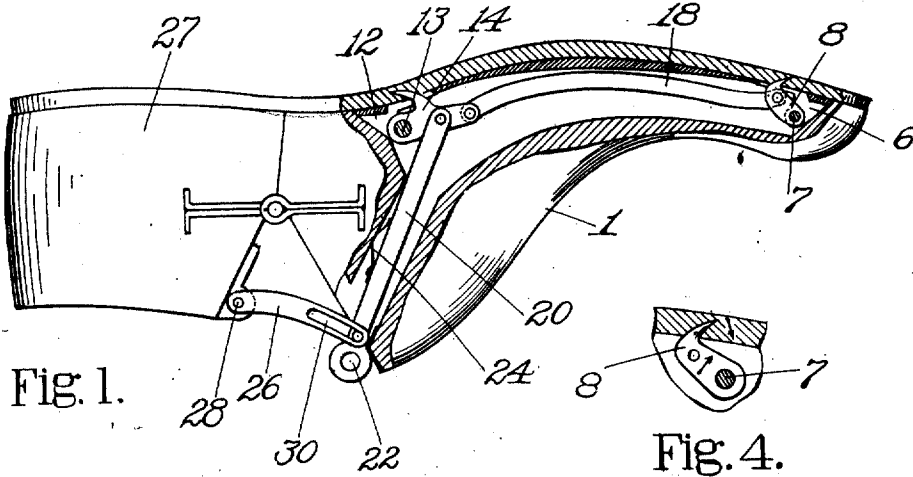
J. A. BROGAN.

LAST.

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Patented May 30, 1911.

993,502.



WITNESSES.

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LAST.

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To all whom it may concern:

Be it known that I, JAMES A. BROGAN, a citizen of the United States, residing at Lawrence, in the county of Essex and State of Massachusetts, have invented certain Improvements in Lasts, of which the following description, in connection with the accompanying drawings, is a specification, like reference characters on the drawings indicating like parts in the several figures.

This invention relates to lasts.

In making the better grades of boots and shoes it is customary, before pulling-over and lasting, to secure the insoles to the lasts. In doing this tacks are driven through the insole into the last at several points in the bottom of the last. These tacks should be removed before the shoes leave the factory, as their presence in the shoes is highly objectionable. It is also desirable that they be removed before the outsole is laid. It often happens, however, that an insole tack remains in the shoe throughout the making operations. On this account it is a frequent practice to have shoes examined after the making operations in order to insure that all of the insole tacks have been removed.

It will be apparent that the cost of inserting and removing insole tacks is considerable. Furthermore in spite of the care taken to prevent the tacks being left in the shoe it sometimes happens that they are overlooked. If they happen to be left in shoes they are, of course, a menace to the purchaser or to anyone who has occasion to handle the shoes.

It is the object of the present invention to equip a last with means for retaining a sole thereon which will obviate objections incident to the use of tacks or other fasteners.

I am aware that it has been before proposed to provide a last with spurs or the like for retaining a sole in place, but these prior devices have never gone into commercial use, and I believe them to have been ineffective to retain a sole securely in place.

The invention consists primarily in a last provided with sole retaining means so constructed and arranged that not only is the sole restrained from movement over the bottom of the last but is also held from outward movement normal to the bottom of the last. In this respect, the present invention is distinguished from prior lasts equipped with

sole retaining means, since in all of the prior devices of which I am aware the construction of the sole retaining means has not been such as to prevent a sole from being easily pulled off from the bottom of the last. In the use of a last embodying the present invention, a sole is held upon the bottom of the last as securely as would be the case if it were tacked, or even more so.

The invention consists also in a last equipped with sole retaining means so constructed and arranged that in its action upon the sole it has a tendency to stretch the sole longitudinally and thus bring it into close contact with the longitudinally convex bottom of the last at the forepart. In tacking an insole to a last, particularly when the insole is quite light and flexible, it frequently happens that it is not brought closely against the bottom of the last over the portion lying between the tacks. The use of a last embodying this feature of the present invention is advantageous in preventing this occurrence.

In the embodiment of the invention herein shown and described there is provided a plurality of sole retaining prongs which are mounted within the last for movement outwardly from the bottom of the last. The form of the prongs and the paths in which they move are such that the sole is securely held upon the bottom of the last.

An important feature of the invention consists in arranging the prongs so that pressure applied to the sole by one prong is neutralized by pressure applied by another prong. The arrangement may thus be such that there is substantially no tendency to displace the sole in forcing the prongs into the same. This feature facilitates the application of a sole to a last and also tends to insure a proper position of the sole upon the last.

In the particular construction shown there is provided a curved prong at the toe of the last pivoted upon the interior of the last for movement in a vertical plane extending longitudinally of the last. The arrangement is such that the curved prong enters the sole in a curved path extending forwardly of the last. A sole retaining prong is pivoted at the shank portion of the last that is so arranged that it enters the sole in a path extending toward the rear of the

last. The two prongs are interconnected for simultaneous movement and are actuated by a common actuating device arranged for manipulation by the operator. Inasmuch as

5 the two prongs enter the sole in opposite directions, each prong neutralizes the pressure applied to the sole by the other prong.

Other features of the invention including details of construction and combinations of parts will be hereinafter described and referred to in the appended claims.

10 In the drawings,—Figure 1 is a view in side elevation, partly in section, of a hinged last equipped with mechanism constituting one embodiment of the invention; Fig. 2 is a view in side elevation, partly in section, showing the last of Fig. 1 with its prongs in their inoperative position; Fig. 3 is a view in perspective showing the forepart of the last of the preceding figures with the prongs extended from the bottom thereof; Fig. 4 is a fragmentary sectional view showing a prong inserted within a sole.

Referring to the drawings, 1 indicates a forepart of a hinged last equipped with mechanism embodying the present invention. The forepart 1 is provided with a longitudinal plate 4 secured to the bottom of the forepart and arranged with its outer face flush with the bottom of the forepart. The plate 4 is provided at its forward ends with a projecting web 6 upon which is pivotally mounted at the point 7 a prong 8. At the rear of the web 6 there is provided a slot 10 in the plate 4 through which the prong 8 may project into the sole. At the rear end of the plate 4 is provided a web 12 upon which is pivotally mounted at the point 13 another prong 14 arranged for movement through a slot 16 in the plate 4. The prong 8 is connected to the prong 14 by a link 18. An actuating rod 20 is pivotally connected to the prong 14 and is provided with an eye 22 at its outer end for receiving an actuating hook. The prongs 8 and 14, the link 18 and the rod 20 move in a space cut out upon the interior of the forepart. The rod 20 is provided with a leaf spring 24 bearing upon the rear wall of the space in which said rod is received. This spring tends to maintain the rod in whatever position it may be given by the operator.

The hinged last shown is provided with a locking device for holding the heel part in its extended position. This comprises a bar 26 pivoted to the heel part 27 and 28 and of such a length that in the extended position of the parts shown in Fig. 1 the forward end of said bar engages a portion of the forepart and prevents the heel part from collapsing movement. The bar 26 is provided at its forward end with a slot 30 in which is received a pin 32 secured to the rod 20. It will be obvious that with this arrangement when the rod 20 is retracted to withdraw the

prongs from the sole the last will at the same time be unlocked and prepared for withdrawal from the shoe. It will be also seen that this feature tends to insure withdrawal of the prongs from the sole before the last is collapsed and removed from the shoe.

Referring to Fig. 4 it will be observed that the outer curved side of the prong 8 is substantially concentric with the axis of the prong. The inner side of the prong is eccentric to the axis thereof in such manner that the acting portion of the prong tapers or decreases vertically in thickness progressively toward its point. On account of the shape of the prong it tends to draw the sole closely against the bottom of the last as it is forced into the leather. It will be understood that if the prong were so shaped that successive points on its outer side from the point toward the shank were at increasing distances from the axis of the prong, the prong would tend to force the sole away from the bottom of the last as it is forced into the sole. I consider it advantageous, therefore, to have the outer side of the prong either concentric with the axis thereof or formed so that successive points preceding from point to shank would lie at diminishing distances from the axis. It will also be seen that the curvature shown on the inner side of the prong tends to pull the sole closely against the bottom of the last.

In the use of the construction shown, the prongs being in their retracted position, a sole is placed upon the bottom of the last. The actuating rod 20 now being forced toward the bottom of the last, the prongs are forced into the sole. As soon as the points of the prongs enter the face of the sole it is no longer necessary to hold the sole by hand against the bottom of the last, since further outward movement of the prongs tends to hold the sole more tightly against the last. Furthermore the prongs after their points enter the face of the sole have no tendency to shift the sole on the last since pressure applied by one prong is neutralized by pressure applied by the other. It will be observed from Fig. 1 that the prong 14 is so situated at the shank of the last that it holds the sole closely against the last in that portion thereof which is longitudinally concave. It may be found desirable to incline slightly this prong laterally toward the inner side of the last. As a last slopes at the shank laterally toward the inner side, this feature tends to bring the sole closely against the last bottom at the shank.

The prongs 8 and 14 not only hold the sole closely against the last at the points where they enter the sole, but on account of their shape and the nature of the paths in which they move they tend to stretch that part of the sole which lies between them. As it is desirable that an insole lie snugly against

the bottom of the last, it will be seen that this feature of the invention is an advantageous one, particularly with insoles which are rather light and flexible. Since the 5 prongs 8 and 14 are forced somewhat longitudinally into the sole they obviously hold the sole from outward movement normal to the bottom of the last. Furthermore inasmuch as they extend some distance into the 10 sole longitudinally thereof they hold the sole more securely from lateral displacement upon the bottom of the last than would tacks driven at the same point through the sole into the last.

15 By referring to Fig. 1 it will be seen that the arrangement of the parts is such that if pressure were applied to the link 18 through the prong 8 it would not tend to withdraw the prong 14 from the sole. In 20 the operative position of the parts shown in this figure, the prong 8 is thus locked by the prong 14 from movement out of the sole. To withdraw the prong 8 from the sole it is necessary to turn the prong 14 by 25 an outward pull upon the rod 20, in order to move the prong 14 by the dead center. The prongs 8 and 14 are also locked in their outer positions by the locking bar 26. This bar 26 is held in its locking position by the 30 ordinary strains applied to the last in the manufacture of shoes.

Having described my invention what I claim as new and desire to secure by Letters Patent of the United States is:—

35 1. A last having one or more sole retaining prongs formed and arranged to retain a sole from outward movement normal to the bottom of the last.

40 2. A last having one or more sole retaining prongs arranged to enter the sole in a curved path.

3. A last having one or more sole retaining prongs arranged to enter the sole in a 45 vertically curved path.

4. A last having at its toe portion a sole retaining prong arranged for movement into the sole in a path extending forwardly of the last.

50 5. A last having intermediate its ends a sole retaining prong arranged for movement into the sole in a path extending rearwardly of the last.

6. A last having at its toe portion a sole retaining prong arranged for movement into the sole in a path extending forwardly of the 55 last and having at its shank portion a sole retaining prong arranged for movement into the sole in a path extending rearwardly of the last.

60 7. A last having at its toe portion a sole retaining prong arranged for movement into the sole in a path extending forwardly of the last and having at its shank portion a sole retaining prong arranged for movement 65 into the sole in a path extending rearwardly

of the last, and means for simultaneously actuating said prongs.

8. A last having a plurality of sole retaining prongs arranged at different points in the bottom of the last and constructed for 70 movement into the sole in paths arranged to cause pressure applied to the sole by one prong to be neutralized by pressure applied by another prong.

9. A last having a plurality of sole retain- 75 ing prongs arranged at different points longitudinal of the last and constructed for movement into the sole in paths arranged to cause pressure applied to the sole by one prong to be neutralized by pressure applied 80 by another prong.

10. A last having one or more longitudinally curved sole retaining prongs arranged for movement into the sole in a curved path.

11. A last having one or more sole retain- 85 ing prongs arranged to be forced into the sole and constructed for movement in the plane of the sole after penetrating the inner face of the sole.

12. A transversely divided last compris- 90 ing a forepart and a heel part movably connected for relative collapsing movement, means for locking the heel part from collapsing movement, sole retaining means 95 comprising prongs arranged to be forced into the sole and means for simultaneously actuating said locking means and said retaining means.

13. A last having at the toe a sole retaining prong arranged for movement into and 100 out of the sole and at a point intermediate its ends a second sole retaining prong arranged for movement into and out of the sole, and means for connecting said prongs for simultaneous movement constructed to 105 lock the prong at the toe from withdrawal from the sole.

14. A last having a sole retaining prong arranged for movement into and out of the sole and means for locking said prong from 110 withdrawal from the sole.

15. A last having at different points in its length sole retaining prongs arranged for movement into the sole and constructed to impart longitudinal stretching movement 115 to the sole in their movement into the sole.

16. A last having sole retaining means at the toe and having at a point at the rear of the toe a sole retaining prong arranged for movement into the sole in a path extending 120 toward the rear of the last.

17. A last having a sole retaining prong arranged for movement into the sole and constructed to draw the sole toward the bot- 125 tom of the last in its movement into the sole.

18. A last having sole retaining means comprising one or more prongs arranged to enter the sole obliquely to the inner face of the sole and tapering toward the point in 130 vertical section.

19. A last having at its shank portion a sole retaining device and at the toe a sole retaining prong arranged for movement into the sole in a path extending forwardly of the last.

20. A last having sole retaining means constructed and arranged to apply longitudinal tension to the sole in its action upon said sole.

21. A last having one or more curved sole retaining prongs arranged for movement into the sole in a circularly curved path, the outer side of said prong being substantially concentric with the axis of the prong.

22. A last having one or more curved sole retaining prongs arranged for movement into the sole in a circularly curved path, the inner side of said prong being curved eccentrically with respect to the axis of the prong.

23. A last having one or more sole retaining prongs arranged for movement outwardly from the bottom of the last and constructed to retain a sole from outward movement normal to the bottom of the last.

24. A last having sole retaining prongs and means for projecting said prongs at opposite inclinations into an insole on the last bottom.

25. A last having prongs arranged to be projected at opposite inclinations lengthwise of the last into an insole on the last bottom and operating means within the last for moving the prongs.

26. A last having a cavity therein and apertures opening from the bottom of the last into said cavity, two sole retaining prongs pivoted in said cavity, a link connecting said prongs and an operating member for moving said prongs to project them

through said apertures or to retract them within the cavity.

27. A last having a fore part, a heel part movable relative thereto and one or more sole retaining prongs carried by the fore part and arranged to be projected through the last bottom into an insole thereon in a path inclined toward the heel of the last.

28. A last having a fore part and a heel part movable relative to the fore part into collapsed or extended position, sole retaining prongs carried by the fore part, operating means for moving said prongs and connections between said heel part and said operating means whereby the heel part is moved into collapsed position when the prongs are retracted.

29. A last having a fore part and a heel part hinged thereto, the fore part having a cavity formed therein and having apertures opening from the bottom of the last into said cavity, a sole retaining prong pivoted in said cavity near the toe of the last, a lever carrying a second prong pivoted in said cavity near the shank portion of the last, a link connecting said lever to the first prong, a rod pivoted to said lever and extending through the top of the last, a locking device hinged to said heel part and arranged to lock the last in extended condition and a lost motion connection between said rod and said locking device.

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

JAMES A. BROGAN.

Witnesses:

BERNARD BARROWS,
ALLAN H. BARROWS.