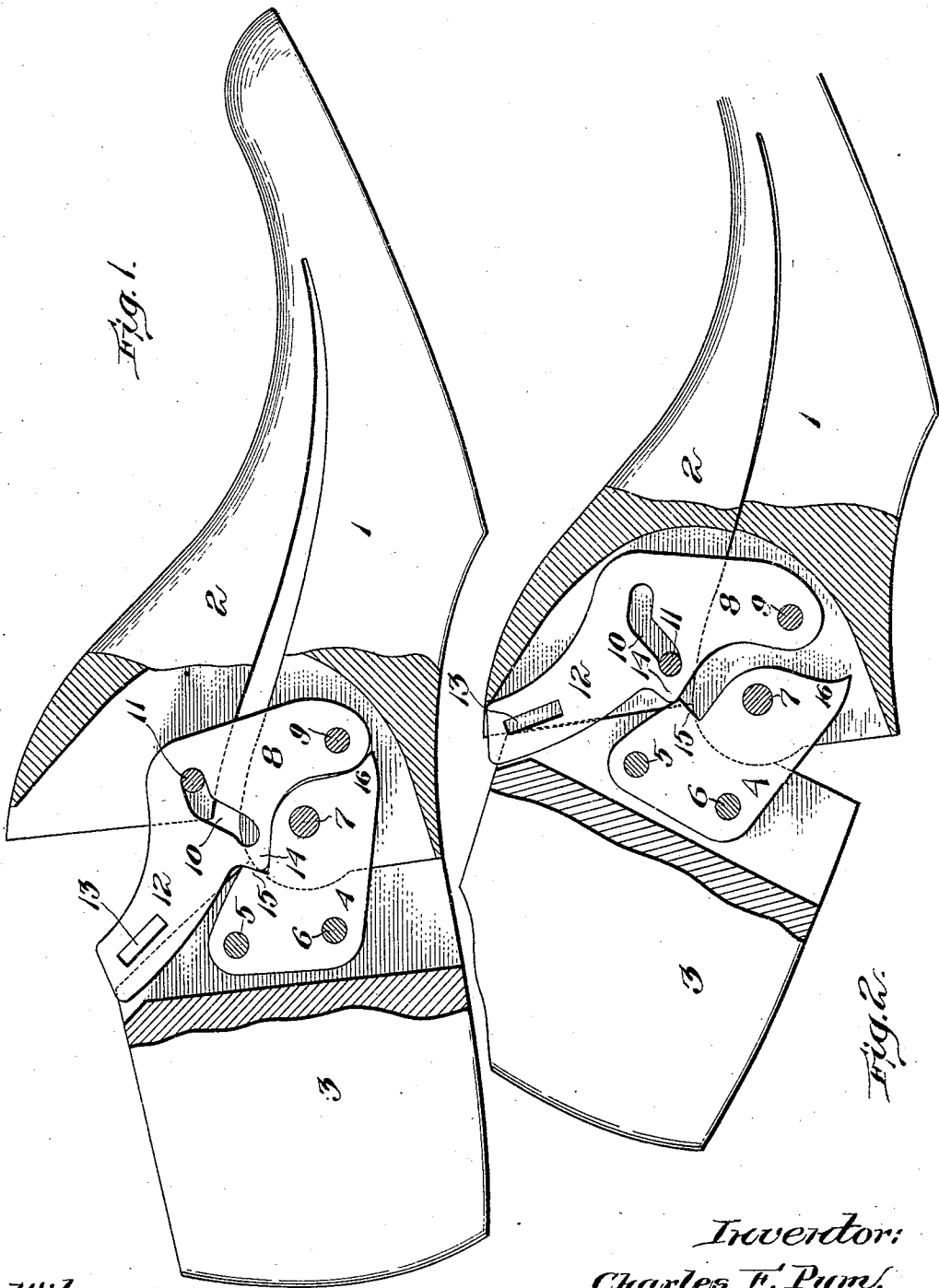


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 LOCKING COLLAPSIBLE LAST.
 APPLICATION FILED MAR. 5, 1906.

939,860.

Patented Nov. 9, 1909.



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LOCKING COLLAPSIBLE LAST.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, CHARLES F. PYM, a citizen of Canada, residing at Essex, county of Essex, Province of Ontario, Canada, have
5 invented an Improvement in Locking Collapsible Lasts, of which the following description, in connection with the accompanying drawings, is a specification, like numerals on the drawings representing like parts.
10 The object of my invention is to provide a collapsible hinged last capable of having the heel-part turn down while the instep block is still collapsed; and also preferably capable of collapsing the instep-block before
15 the heel-part is turned up.

Collapsible hinged lasts (by which I mean the kind of lasts set forth in my patent No. 673,889 of May 14, 1901) are specially adapted to making turn shoes. It is sometimes
20 preferable to have the heel-seat of these shoes sewed, but on account of the difficulties of making sewed heel-seats it is at present the general practice to nail the heel-seats, in which case the sewing of the upper to the sole
25 stops at the heel. This leaves the leather slack and loose about the heel so that it is easy to get the heel of the last in place in the shoe by reason of the freedom and looseness of the leather which permits stretching in such various
30 directions as the movement of the last may require. In making sewed heel-seats, however, the upper and sole are sewed all around, and hence there is not the freedom of movement just mentioned, but on the contrary the leather is closed in tight and is
35 taut so that the necessary give or yield of the leather cannot take place at the heel as in the nailed heel-seat construction. Accordingly, to make it as practicable from
40 the re-lasting standpoint to manufacture the sewed heel-seat turn shoe as it has heretofore been to make the nailed heel-seat turn shoe, I have provided the hereinafter special construction of last which permits the
45 leather of the upper to yield elsewhere than at the heel. By this means it becomes a matter of indifference whether the leather is loose and open at the heel or not, so that as far as this point is concerned, the objection
50 to making the sewed heel-seats is obviated.

In carrying out my invention I provide the union at the joint-portion of the last in two dissimultaneously moving parts instead of in one operating mechanism or plate, so
55 that the instep-block may remain collapsed

until after the heel of the last has been lowered into the heel-seat of the shoe. This leaves the instep-portion of the upper slack and loose, while the heel-part of the last is being lowered. After the last is in length-
60 ened position the instep-block of the previously collapsed last is raised. I prefer to accomplish this movement by hand instead of automatically, as it leaves the timing of this part of the process to the operator, so
65 as to enable him to run the smoothing knife around between the vamp and last freely for removing wrinkles, etc. before expanding the last into tight relation with the entire
70 upper.

Further advantages and the constructional details of my invention will be pointed out in the course of the following description, reference being had to the accompanying
75 drawings in which I have illustrated a preferred embodiment of the invention.

In the drawings, Figures 1 and 2 are views in side elevation of one embodiment of my invention, the intermediate portion of the last being broken away to show the in-
80 ternal construction at the joint, Fig. 1 showing the last in expanded and lengthened position, and Fig. 2 showing the last in collapsed and shortened position.

The forepart 1 is provided with a col-
85 lapsible instep-block 2 and is joined to a swinging heel-part 3 by a plate-hinge or union 4 rigidly secured by transverse pins 5, 6 to the heel-part and mounted to turn on a heavy transverse pivot 7 in the knuckle-
90 end of the forepart (my last being of the knuckle-joint kind previously patented to me in Patent 608,006, dated July 26, 1898).

My invention may be accomplished in a wide variety of constructions, but for sim-
95 plicity and cheapness of construction I prefer to employ a central plate-like construction fitting alined kerfs in the fore-part and heel-part substantially the same in general arrangement and location as heretofore
100 practiced by me in my collapsible last. Instead of making the plate which connects the parts 1, 2 and 3 in one piece as has been heretofore done in all my collapsible lasts
105 put upon the market, I have stamped the plate into two parts or plates, 4 and 8, preferably arranged to interlock with each other as shown in Fig. 1, the plate 4 acting simply to pivotally connect the fore-part and heel-
110 part, and the plate 8 cooperating therewith

as a lock and at the same time connecting the rear end of the instep-block with the body-portion of the fore-part for collapsing the last. The combined locking- and- collapsing plate 8 is pivoted at 9 in the thick portion of the fore-part and is provided with a cam slot 10 for receiving a transverse pin 11 in the instep-block for collapsing the latter, said cam plate having its opposite ends so shaped that they serve to lock the instep-block positively against unauthorized movement from raised position and lowered position when shifted to either of these positions by the swinging of the plate 8. The plate 8 is provided with an upwardly extending portion 12 having an elongated slot 13 or other means for cooperating with a suitable tool by which it may readily be swung from one position to the other for operating the last. At its lower side a shoulder 14 is provided adapted to fit against a shoulder 15 in the plate 4 for locking the heel-part in lengthened position.

The pins 7 and 9 are located out of horizontal alinement with each other, and the plate 4 is provided with a corner or projection 16 for abutting against the plate 8 as a positive limiting stop when the last arrives at lengthened position.

By reason of the relative arrangement and angular position, one with relation to the other, of the shoulders 14, 15, pins 9 and 11 and slot 10, the last, when in lengthened position as shown in Fig. 1, is rigidly locked against movement in any direction until the lever plate 8 is swung upward, the upper cam-shaped end of the slot 10 first compelling movement of the instep block from normal last-lengthened-and-expanded position before permitting the swinging movement of the heel-part.

When the lever plate 8 is turned to the right, Fig. 1, the pin 11 travels along the cam slot 10 as said plate swings on its pivot 9. Said slot 10 is eccentric, excepting at its locking ends, to the pin 9 as a center, and its eccentric edges crowd against the pin 11 as the plate 8 is swung to the right, as stated, and wedge the instep block 2 downwardly until it reaches the entirely collapsed position of Fig. 2. Until the shoulder 14 gets entirely out of the way of the shoulder 15, it is impossible for the heel-part to have the slightest movement, and it cannot move to and from collapsed position until the instep block is first collapsed. The main purpose of my invention is to provide means for maintaining the instep block collapsed while permitting the heel-part to be swung down from collapsed position into lengthened position. I prefer to provide the locking construction in the form of shoulders 14, 15 and to locate this lock above the pivot-pin 7 and also approximately in line with the pin 5, as this construction is very strong and

will endure considerable wear, besides being in a position to be readily inspected. But these details, although of great practical value, are of relatively minor importance as compared with the broad general features of my invention. The latter features I consider of a foundation character, as they make possible and practicable the easy manufacture of sewed heel-seat turn lasts. I believe that I am the first to have invented a last capable of first having its heel-part swung down into position in the heel of the shoe, while the forepart is in a shrunk or collapsed condition and then thereafter having its forepart distended or expanded to full size. The further limitations of my invention will be more fully apprehended from the following claims, taken in connection with the foregoing description and drawings.

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

1. A last, comprising a collapsible forepart, and a heel-part permanently connected to the forepart having an up and down movement with relation to said forepart for shortening and lengthening the last, connecting means connecting said heel-part and forepart to permit said movement of the heel-part, and means operating independently of said connecting means to distend the forepart after the heel-part is in lengthened position.

2. A last, comprising a collapsible forepart, and a heel-part permanently connected to the forepart having an up and down movement with relation to said forepart for shortening and lengthening the last, and means, operating separate from the heel-part, for positively forcing the forepart into collapsed position and into expanded position.

3. A last, comprising a collapsible forepart, and a relatively movable heel-part permanently secured thereto, and means carried solely by said forepart for positively forcing the forepart into collapsed position.

4. A last, comprising a collapsible forepart, and a heel-part permanently connected to the forepart having an up and down movement with relation to said forepart for shortening and lengthening the last, and means for expanding the forepart after the heel-part has moved downwardly, and for collapsing the forepart before the heel-part has moved upwardly.

5. A last, comprising a collapsible forepart, and a heel-part permanently connected to the forepart having an up and down movement with relation to said forepart for shortening and lengthening the last, and means for expanding the forepart after the heel-part has moved downwardly.

6. A last, comprising a collapsible fore-

part, and a heel-part permanently connected to the forepart having an up and down movement with relation to said forepart for shortening and lengthening the last, and means for maintaining the forepart collapsed during the downward movement.

7. A last, comprising a collapsible forepart, and a heel-part permanently connected to the forepart having an up and down movement with relation to said forepart for shortening and lengthening the last, said forepart having movement independent of the heel-part, and means for maintaining the forepart collapsed during the downward movement of the heel-part.

8. A last, comprising a collapsible forepart consisting of a body part, and an instep part, and a heel-part permanently connected to the body part of the forepart having an up and down movement with relation to said body part for shortening and lengthening the last, said body part, instep part, and heel-part having provision for dissimultaneous movement into lengthened position and fully expanded position.

9. A last, comprising a collapsible forepart consisting of a body part, and an instep part, and a heel-part permanently connected to the body part of the forepart having an up and down movement with relation to said body part for shortening and lengthening the last, said body part, instep part, and heel-part having provision for dissimultaneous movement from lengthened and expanded position to upward heel-part position and collapsed downward instep-part position.

10. A last, comprising a collapsible forepart, having movement independent of the heel-part, and a dissimultaneously movable heel-part permanently connected to the forepart, and means for positively collapsing and positively maintaining the forepart collapsed during the lengthening movement of the heel-part, said means including a lock for locking the last in lengthened position.

11. A last, comprising a collapsible forepart, a heel-part having an up and down movement with relation to said forepart for shortening and lengthening the last, means permanently connecting the forepart and heel-part, and means permitting the collapsing of the forepart before the upward movement of the heel-part.

12. A last, comprising a collapsible forepart, a heel-part having an up and down movement with relation to said forepart for shortening and lengthening the last, means permanently connecting the forepart and heel-part, and means for positively collapsing the forepart prior to but independently of the upward movement of the heel-part.

13. A last, comprising a collapsible forepart, and a heel-part permanently secured thereto and having an up and down move-

ment relatively to the forepart for shortening and lengthening the last, means for securing said two parts together, and means separate from said securing means and operating independently thereof, carried by the body of the forepart, for positively locking the forepart in expanded position.

14. A last, comprising a collapsible forepart, a relatively movable heel-part, means permanently connecting said parts, and a cam plate, separate from and movable independently of the connecting means, mounted in the forepart for positively holding the latter expanded.

15. A last, comprising a collapsible forepart, a relatively movable heel-part, means permanently connecting said parts, and a cam plate, separate from and movable independently of the connecting means, pivoted in the forepart for positively holding the latter expanded.

16. A last, comprising a collapsible forepart, a relatively movable heel-part, means permanently connecting said parts, and a separate cam plate mounted in the lower portion of the forepart and having cam connection with the upper portion thereof for positively controlling the movements of the latter.

17. A last, comprising a collapsible forepart, and a pivoted heel-part, provided with means for collapsing the forepart including provision compelling movement from normal last-lengthened-and-expanded position before permitting the swinging movement of the heel-part.

18. A last, comprising a heel-part, a body-part, and an instep-part, and hinging plates for moving said three parts in predetermined relation to each other, provided with interlocking portions for locking said parts rigidly in expanded relation.

19. A last, comprising a heel-part, a body-part, and an instep-part, and connecting mechanism for permanently connecting three parts, including means permitting the independent movement of the instep-part when the heel-part is in lengthened position, and means for preventing movement of the heel-part when the instep-part is expanded.

20. A last, comprising a forepart and heel-part hinged together, said forepart having an expansible instep-part, and a hand operating locking lever for collapsing and expanding the forepart and locking said instep-part expanded and also contracted.

21. A last, comprising a forepart and heel-part hinged together, said forepart having an expansible instep-part, and an operating lever for collapsing and expanding the forepart mounted in said last, containing locking means for locking said instep-part contracted.

22. A last, comprising a forepart and heel-part hinged together, said forepart having

an expansible instep-part, and means, including a last operating lever, for locking said instep-part and heel-part expanded.

23. A last, comprising a heel-part, a body-part, and an instep-part, a hinge-plate and a separate cam plate locking into each other for connecting said respective last-parts.

24. A last, comprising a heel-part, a body-part, and an instep-part, a collapsing device pivoted in said body-part to collapse said instep-part, and a hinge plate for said heel-part having a projecting stop for engaging said collapsing device when the heel-part is in lengthened position.

25. A last, comprising a forepart and a heel-part arranged to swing on each other, and provided with vertical longitudinal kerfs in their meeting ends, combined with a single pivoted hinge-plate occupying both kerfs, and a locking plate standing edgewise in the same plane as said single hinge-plate and snugly fitting and retained by both of

said kerfs and interlocking with the hinge-plate.

26. A last, comprising a collapsible forepart, and a relatively movable heel-part permanently secured thereto, and means, operating separate from the heel-part, pivoted in the lower portion of the forepart for positively collapsing the forepart.

27. A last, comprising a collapsible forepart, a relatively movable heel-part, means permanently connecting said parts, and a separate cam plate pivotally mounted in the forepart for positively holding the latter contracted.

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

CHARLES F. PYM.

Witnesses:

OTTO F. BARTHEL,
THOS. S. LONGSTAFF.