

UNITED STATES PATENT OFFICE.

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FOLDING LAST.

978,309.

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To all whom it may concern:

Be it known that I, CLEMENTS B. KOSTERS, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented a certain new and useful Improvement in Folding Lasts, of which the following is a specification.

This invention relates to lasts which are principally used in supporting foot wear during the manufacture thereof and to that class of lasts in which the members are so connected that they may be folded sufficiently to collapse the last to permit the easy removal of the article of foot wear from the same.

The objects of the invention are to produce a last of this character in which the members are connected together at a point remote from the line of severance dividing the members, so that a solid connecting element will extend across the line of separation, and to so reinforce the last interiorly that great strength of structure and extreme durability are obtained, securing a last having strength and stiffness far in excess of the ordinary solid last when in extended operating position to resist the strain occasioned by the making of footwear thereon.

To this end, one of the members of the last is provided with a recess and a metal tube or sleeve is secured in said recess in which the projecting end of a bar attached to another member fits and is supported when the last is in its extended operating position.

The invention also relates to a novel locking device and to certain details of construction of the last members, the bar and the sleeve and the locking device which will be hereinafter described and claimed reference being had to the accompanying drawings, in which,—

Figure 1 is a central longitudinal vertical section through the improved folding last with the members thereof in an extended operating position. Fig. 2 is a central longitudinal vertical section through the improved folding last with the members thereof in a partially folded or collapsed position. Fig. 3 is a detached view of the reinforcing sleeve. Fig. 4 is an enlarged fragmentary transverse section on line *a—*a**, Fig. 2 to illustrate the construction of the locking device. Fig. 5 is a detached top view of the connecting bars. Fig. 6 is a detached side view of a strengthening bar suitable for connecting the members of flat lasts.

In referring to the drawings in detail like numerals designate like parts.

The members of this improved folding last are preferably two in number, a toe member 1 and a heel member 2. These members are cut and shaped to the contour desired and have their adjacent ends so formed that they may be moved or folded relatively to each other within certain limits to permit the last to be collapsed for easy removal from the article of foot wear.

Referring to Fig. 1, it will be noted that the members of the last are provided with oppositely extending projections 3 and 4 which lap each other when the last is in operating position, as shown in said Fig. 1, and serve to mutually support the members against independent lateral movement.

The toe member is provided with an exceedingly deep V shaped recess 5 which extends through the greater portion of the toe member and terminates in the toe proper of the toe member, as shown in Figs. 1 and 2. The lower portion 6 of the V shaped recess is made larger than the remainder and is a substantially circular form in cross section and a metal reinforcing sleeve or tube 7 is screwed or otherwise rigidly fitted in said circular portion, as shown in Figs. 1 and 2. The sleeve is preferably formed as shown in Figs. 1, 2 and 3, being externally screw threaded and having the upper portion thereof cut away from its rear end to a point near its front end thereby providing a top slot or opening. The sleeve when in place forms a metal reinforcement at the lower wall of the V shaped recess which extends the full length of said recess as shown in Figs. 1 and 2.

The members of the last are connected so that they will fold relatively to each other by means of a long metal bar 8, the rear portion of which is rigidly fitted in a longitudinal opening in the heel member. The projecting forward portion of the bar has its front extremity beveled or rounded off on its lower surface as shown at 9 in Figs. 1, 2, 5 and 6, and it is provided with a transverse opening 10 through which a pivot pin 11 is fitted to secure the forward end of the bar in the sleeve as shown in Figs. 1 and 2. The purpose in beveling the forward end 9 is to provide for the turning of the bar in the pivot 11 within the vertical depth of the V shaped recess without striking the inner surface of the sleeve in the manner shown in

Fig. 2, and the object in cutting away the greater part of the upper portion of the sleeve is to provide for the free turning movement of the bar on the pivot pin 11, from one position to another, as shown in Figs. 1 and 2. The bar 8 may be round in cross section as shown in Fig. 4, or may be formed in any other equally adaptable form, and it may be bent more or less as shown in Figs. 1 and 2, so that it will extend approximately longitudinally through the angular form of a high arched last or it may be straight as in Fig. 6 to extend within a flat last. In this connection it should be noted that the purpose is to so form and extend the bar to secure the greatest possible strength to resist the strains to which a last is exposed while being used in the manufacture of shoes.

A novel locking device is provided to secure the members in extended locking position which is self locking.

Referring to Fig. 4 a curved metal strip 12 is slidably fitted in a groove 13 formed on the exterior of the sleeve and has a laterally projecting handle 14. A coil spring 15 is fitted in the groove and bears against the end of the stop opposite the handle, serving to normally maintain the strip in locking position with a spring tension. The object of this lock is as follows,—When the device is in locking position the handle extends diagonally as shown in Fig. 4. Now a movement of the bar downward turns the handle to one side and partially rotates the curved strip in the groove against the tension of the spring. The lock is limited in its movement in either direction by means of a rivet 16 which is fitted vertically through the sleeve, the lower portion of the toe member beneath the sleeve and a slot 17 cut in the curved strip, as shown in Figs. 2 and 3. The rivet 16 also serves to secure the sleeve in place against rotation.

In this improved last the toe member is internally reinforced by metal from its rear end to near its front end which produces great strength of structure and absolutely obviates any danger of splitting.

All lateral strain, when the last members are in operating position, is borne by the lapping parts 3 and 4, and the sides of the sleeve which contact with the sides of the bar, and all of the vertical strain of the machine, when the last is being used in shoe manufacture, is borne by the bar and sleeve so that the only strain upon the pivot pin is the ordinary strain of turning the bar thereon and the slight longitudinal strain of inserting the last into and removing the last from the shoe.

The great advantages of this improved folding last are that it possesses all the desirable features of the collapsible last without its weaknesses, that its parts are few in number, are comparatively large, of great

strength and durability and are so arranged and located that the last when in operating position is actually decidedly stronger than a solid last.

I claim.

1. In a folding last, a toe member having a recess, a metal reinforcing sleeve secured in the recess in the toe member and having its upper portion cut away from its rear end to near its front end, a heel member, and a metal bar fastened in the heel member and having a projecting part pivoted at its front end in the forward uncut portion of the sleeve.

2. In a folding last, a toe member having a recess, a metal reinforcing sleeve secured in the recess in the toe member and having its upper portion cut away from its rear end to near its front end, a heel member and a metal bar fastened in the heel member and having a projecting part provided at its front end in the forward uncut portion of the sleeve; and said front end being beveled.

3. In a last of the class described, a toe member, a tubular metal member rigidly fitted within the toe member, a heel member, and a metal bar rigidly fastened to the heel member and having a projecting part movably secured in the tubular metal members; said projecting part being adapted to fit continuously throughout its length against the sides and bottom of and be supported by the tubular member when the last is in operating position.

4. In a last of the class described, a toe member, a metal reinforcement within said toe member, a heel member, a metal bar fastened to the heel member and projecting within the metal reinforcement, and a locking device adjustably supported by the metal reinforcement and adapted to be turned above the bar to secure the last in extended operating position.

5. In a last of the class described, a toe member, a metal reinforcement within said toe member, and having an exterior groove, a heel member, a metal bar fastened to the heel member and projecting within the metal reinforcement, and a locking device having a curved strip slidably supported in the groove of the metal reinforcement.

6. In a last of the class described, a toe member, a metal reinforcement within said toe member and having an exterior groove, a heel member, a metal bar fastened to the heel member and projecting within the metal reinforcement, and a locking device having a curved strip slidably supported in the groove of the metal reinforcement and a projecting handle and a spring arranged relatively to the strip.

7. In a last of the class described, a toe member, a metal reinforcement within said toe member, a heel member, a metal bar

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fastened to the heel member and projecting within the metal reinforcement, and a self locking spring tensioned locking device supported by the metal reinforcement.

- 5 8. In a last of the class described, a toe member, a metal reinforcement within said toe member, of tubular form in cross section, a heel member and a metal bar fastened to the heel member and projecting

within and pivoted to the metal reinforcement; said bar being supported on its sides and bottom by the metal reinforcement while the last is in operating position.

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Witnesses:

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