No. 661,397. Patented Nov. 6, 1900.

F. DECKER.

LAST.

(Application filed Oct. 4, 1897.)

(No Model.)

FIG. 1.

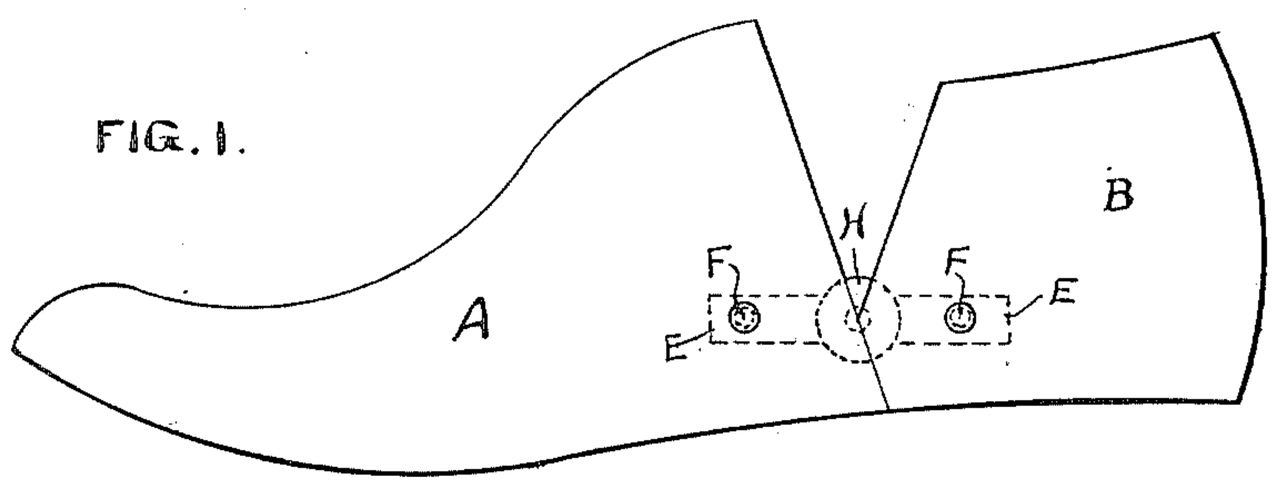


FIG. 2.

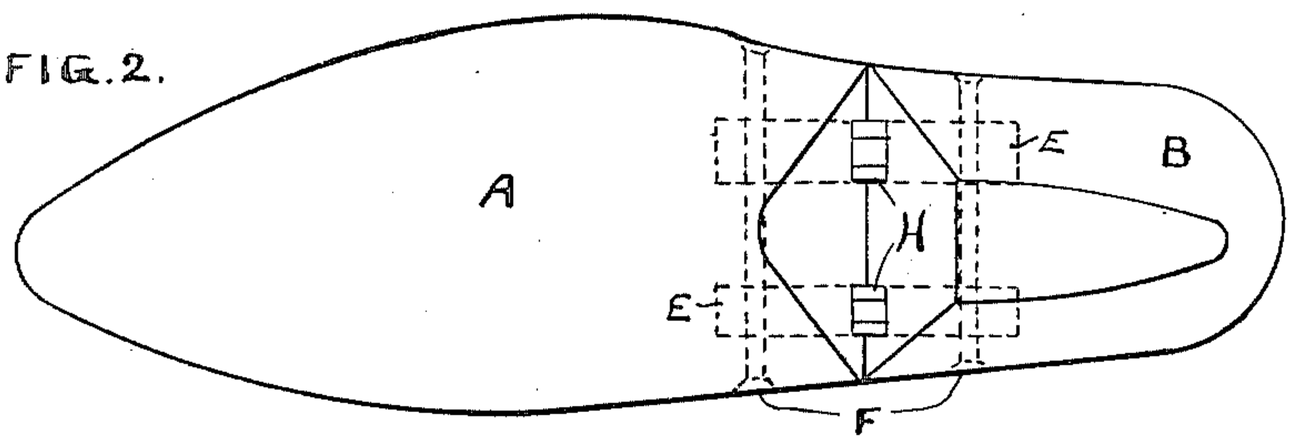
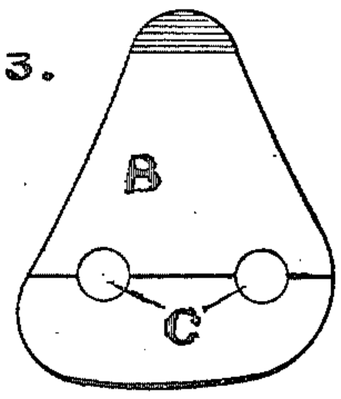


FIG. 3.



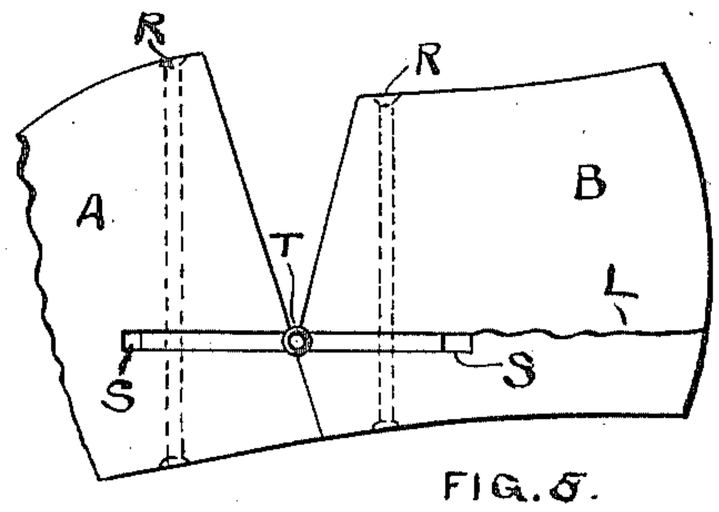
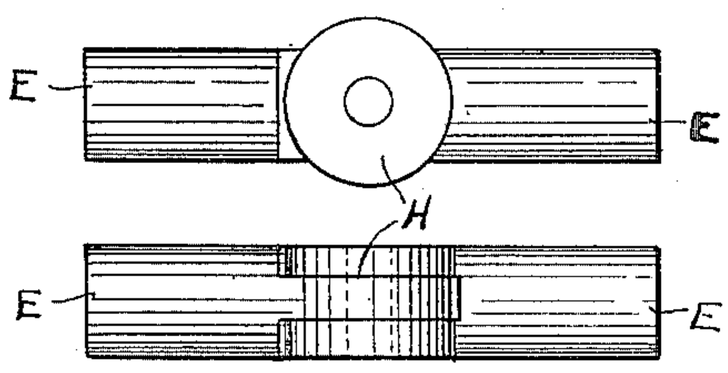


FIG. 5.

FIG. 4.



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FILLMORE DECKER, OF CHICAGO, ILLINOIS.

LAST.

SPECIFICATION forming part of Letters Patent No. 661,397, dated November 6, 1900.

Application filed October 4, 1897. Serial No. 654,006. (No model.)

To all whom it may concern:

Be it known that I, FILLMORE DECKER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Hinged Lasts, of which the following is a specification.

My invention relates to a new and improved hinged last in which the heel and body portions, which are movable relative to each other to shorten the last, are connected by a plurality of articulated metallic hinges properly alined and having their leaves or stems, which are of small cross-section, (preferably circular,) so inserted at such a distance from the sides of the last and from each other as will secure a sufficient contact-surface between the portions of the last and the leaves of the hinges and yet not materially weaken the body portions of the last. As these inserted-hinge lasts have been constructed and manufactured prior to my invention flat-leaf hinges were employed which (in order to secure a sufficient contact-surface and strength) were of substantially the width of the last where they were inserted, so that it necessitated the sawing or cutting out of two horizontal sections completely through the last along the grain of the wood to accommodate the leaves of the hinges. This removal of these two sections, necessitated by the employment of this form of hinge, so weakened the last that under the severe pressures and rough treatment received in use they frequently split and were very unsatisfactory and practically unsalable.

In my new and improved construction instead of cutting out two horizontal sections through the parts of the last, thereby materially weakening it, I bore or otherwise cut out a plurality (preferably two) of apertures along the grain of the wood and of such cross-section (preferably circular) that its horizontal and vertical axes are substantially the same. Of course the leaves of the hinges correspond in cross-section to that of the apertures in which they snugly fit, and thereby I secure a sufficient strength of material in the hinges without thereby materially weakening the heel and body portions of the last.

Referring to the sheet of drawings, in which the same letters of reference are used to designate identical parts in all the views, Figure 1 is a side elevation of my improved last. Fig. 2 is a plan view thereof. Fig. 3 is an end elevation of the rear or heel portion of the last with the hinges removed. Fig. 4 comprises a side elevation and a plan view of one of the hinges; and Fig. 5 represents a portion of a last employing the old style of hinge, showing how they frequently split.

A represents the front or body portion of the last, the rear end of which preferably consists of a plane surface inclined so as to make an acute angle with the bottom of the last. The rear or heel portion B is of the customary shape, and preferably has its front end composed of two plane surfaces, the lower one of which contacts with the lower portion of the plane surface constituting the rear end of the front portion A, and in order to secure the alinement of the two portions in their extended position the angle between the lower plane surface of the end of the part B and the bottom thereof is an obtuse angle, which is the supplement of the acute angle formed on the body portion A. The upper plane surface on the end of the portion B makes an obtuse angle with the lower plane surface of the part B and with the lower portion of the plane surface forming the rear of the part A.

Having now the front and rear portions shaped substantially as described, the hinges connecting them are inserted and formed as follows: At the angle formed by the two plane surfaces on the end of the part B and at the corresponding location on the plane surface of the part A, I preferably bore or otherwise excavate two holes C, which extend into the body of the last ordinarily along the grain of the wood, which usually extends substantially horizontal, to such a depth as is necessary to accommodate the leaves or stems of the hinges. As seen in Fig. 3, these holes are located at a distance from the sides of the last about equal to the diameter of the holes, and in the average size of the apertures the distance between them will be equal to substantially twice the diameter of one of the holes. This location of the holes is adapted to secure a sufficient distance between the two hinges to form the necessary length of bearing, and at the same time the holes do

not approach close enough to the sides of the last to endanger the strength thereof.

Having provided the portions of the last with the necessary apertures, I insert therein the hinges, which have their stems E circular in cross-section or whatever shape may be necessary to correspond to the cross-section of the apertures C. One of the stems E is provided at its end with a centrally-located leaf or blade, which takes between the two coöperating leaves or blades formed on the end of the other stem E, and are secured by a pivot-pin in the customary manner. This form of bearing between the two portions of the hinge forms a large frictional surface, which is very advantageous in hinges in lasts, inasmuch as it is desirable that they shall work with considerable friction in order to prevent any accidental disarrangement of the parts. After the hinges are properly located, so as to bring the parts in contact, as shown in Figs. 1 and 2, and to permit of the bending upward of the heel portion to shorten the last, I preferably secure the hinges in place by boring holes through the last and the stems of the hinges and inserting in said holes the rods or rivets F, which serve to hold the hinges not only in alinement, but to secure them absolutely from any movement. The ends of these rods F may be riveted in place, or the ends of the apertures which they occupy may be plugged up with wood or other material, so as to secure the absolutely smooth surface which is essential to a last.

In Fig. 5 I have illustrated the old form of last, in which the slots S are sawed completely through both portions of the last and the ordinary flat-leafed hinge T is placed therein and secured by the vertical rods or rivets R, passing through the last. This form of construction was found to be extremely objectionable, not only on account of the slots S extending to the surface of the last, and thus leaving a depression tending to mark and disfigure the leather of the upper, but also on account of the weakening of the portions of the last, especially the heel portion, which frequently resulted in the splitting of the last along the grain, as indicated by the line L in Fig. 5. This evil is greatly augmented in block lasts used in making turned shoes, inasmuch as the cutting away of the toe part necessitated by the use of the block leaves so little space between the cut-out portions for the hinge and block as to make it impossible to make a block last with a flat-leaf hinge that has strength enough to be practical. With my improved construction block lasts can be employed as readily as any other form. The small frictional contact-surface between the two leaves of the hinge, which contact-surface was disadvantageously disposed to secure the necessary stiffness of the hinge on account of its being so close to the pivotal center of the hinge and having such a leverage operating against it to overcome the friction, resulted in the hinge soon becoming so loose that the last was utterly worthless, as a hinge that yields easily is very objectionable, as it is impossible to secure a shoe made thereon that is of the proper shape, as the last yields in use and causes the shoe to become misshapen. In my improved last this difficulty is largely overcome, as the increased contact-surface disposed at a greater distance from the pivotal center secures the necessary enduring stiffness of the hinges.

While I have shown the apertures C as circular in cross-section, which I consider most advantageous, as such apertures can be readily bored, yet I do not limit myself strictly to such a construction, as the cross-sections might be oval, square, &c., the only limitation being that they shall be substantially of the same dimensions horizontally and vertically, so that the necessary frictional contact-surface and the necessary strength of material of the hinges may be secured without materially weakening the two portions of the last by the size and shape of the apertures therein.

The stems of the hinges will be constructed to correspond in size and shape to the apertures; but it will be understood that I do not limit myself to a construction in which the blades are enlarged as shown.

From the foregoing description it will be seen that my invention consists of an improved article of manufacture constructed in a certain way, and that while some slight variations in the method of construction and the form of the parts are possible, yet I do not claim an inserted-hinge last broadly; but

What I do claim, and desire to secure by Letters Patent of the United States, is—

1. A transversely-divided hinged last comprising a fore part and a heel part formed with opposed ends contacting from the bottom of the last upwardly toward the center, and with an open space above said contacting surfaces and between the upper portion of the inner ends of the fore part and heel part, with a plurality of articulated metallic hinges whose stems have cross-sections whose vertical and horizontal axes are substantially equal, said stems being placed in correspondingly-shaped apertures cut into the opposing ends of said fore and heel parts in a transverse horizontal line at the upper edge of said contacting end portions, said last being so constructed and the hinges so located that the heel part can swing upwardly on said hinges to remove the last from the shoe, the pivots of said hinges being in the line of the transverse cut separating the fore and heel parts.

2. A transversely-divided hinged last comprising a fore part and a heel part formed with opposed ends contacting from the bottom of the last upwardly toward the center, and with an open space above said contacting surfaces and between the upper portion of the inner ends of the fore part and heel part, with a plurality of articulated metallic hinges whose stems have cross-sections whose vertical and horizontal axes are substantially equal, said

stems being placed in correspondingly-shaped apertures cut into the opposing ends of said fore and heel parts in a transverse horizontal line at the upper edge of said contacting end portions, and the pins passing through the holes cut through the sides of the last and into the stems of the hinges to secure them in place and in proper alinement, said last being so constructed and the hinges so located that the heel part can swing upwardly on said hinges to remove the last from the shoe, the pivots of said hinges being in the line of the transverse cut separating the fore and heel parts.

3. A transversely-divided hinged last comprising a fore part and a heel part formed with opposed ends contacting from the bottom of the last upwardly toward the center, and with an open space above said contacting surfaces and between the upper portion of the inner ends of the fore part and heel part, with two articulated metallic hinges whose stems have cross-sections whose vertical and horizontal axes are substantially equal, said stems being placed in correspondingly-shaped apertures cut into the opposing ends of said fore and heel parts in a transverse horizontal line at the upper edge of said contacting end portions at a distance from the sides of said portions substantially equal to the thickness of one of said hinges, said last being so constructed and the hinges so located that the heel part can swing upwardly on said hinges to remove the last from the shoe, the pivots of said hinges being in the line of the transverse cut separating the fore and heel parts.

4. A transversely-divided hinged last comprising a fore part and a heel part formed with opposed ends contacting from the bottom of the last upwardly toward the center, and with an open space above said contacting surfaces and between the upper portion of the inner ends of the fore part and heel part, with two articulated metallic hinges whose stems have cross-sections whose vertical and horizontal axes are substantially equal, said stems being placed in correspondingly-shaped apertures cut into the opposing ends of said fore and heel parts in a transverse horizontal line at the upper edge of said contacting end portions at a distance from the sides of said portions substantially equal to the thickness of one of said hinges, and the pins passing through the holes cut through the sides of the last and into the stems of the hinges to secure them in place and in proper alinement, said last being so constructed and the hinges so located that the heel part can swing upwardly on said hinges to remove the last from the shoe, the pivots of said hinges being in the line of the transverse cut separating the fore and heel parts.

5. A transversely-divided hinged last comprising a fore part and a heel part formed with opposed ends contacting from the bottom of the last upwardly toward the center, and with an open space above said contacting surfaces and between the upper portion of the inner ends of the fore part and heel part, with a plurality of articulated metallic hinges whose round stems are placed in correspondingly-shaped apertures cut into the opposing ends of said fore and heel parts in a transverse horizontal line at the upper edge of said contacting end portions, said last being so constructed and the hinges so located that the heel part can swing upwardly on said hinges to remove the last from the shoe, the pivots of said hinges being in the line of the transverse cut separating the fore and heel parts.

6. A transversely-divided hinged last comprising a fore part and a heel part formed with opposed ends contacting from the bottom of the last upwardly toward the center, and with an open space above said contacting surfaces and between the upper portion of the inner ends of the fore part and heel part, with a plurality of articulated metallic hinges whose round stems are placed in correspondingly-shaped apertures cut into the opposing ends of said fore and heel parts in a transverse horizontal line at the upper edge of said contacting end portions, and the pins passing through the holes cut through the sides of the last and into the stems of the hinges to secure them in place and in proper alinement, said last being so constructed and the hinges so located that the heel part can swing upwardly on said hinges to remove the last from the shoe, the pivots of said hinges being in the line of the transverse cut separating the fore and heel parts.

7. As a new and improved article of manufacture, a transversely-divided hinged last comprising a fore part and a heel part formed with opposed ends contacting from the bottom of the last upwardly toward the center, and with an open space above said contacting surfaces and between the upper portion of the inner ends of the fore part and heel part, with a plurality of articulated metallic hinges whose round stems are placed in correspondingly-shaped apertures cut into the opposing ends of said fore and heel parts in a transverse horizontal line at the upper edge of said contacting end portions at a distance from the sides of said portions substantially equal to the thickness of one of said hinges, and the horizontal pins passing through the holes cut through the sides of the last and into the stems of the hinges to secure them in place and in proper alinement, said last being so constructed and the hinges so located that the heel part can swing upwardly on said hinges to remove the last from the shoe, the pivots of said hinges being in the line of the transverse cut separating the fore and heel parts.

FILLMORE DECKER.

Witnesses:
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R. A. EASTMAN.