

No. 841,732.

PATENTED JAN. 22, 1907.

J. J. SMITH.

LAST.

APPLICATION FILED FEB. 17, 1906.

2 SHEETS—SHEET 1.

Fig. 1

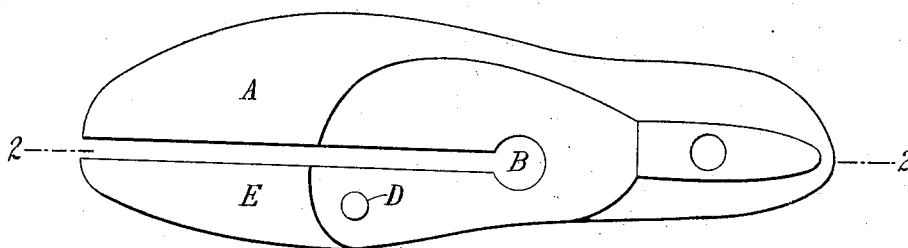


Fig. 2

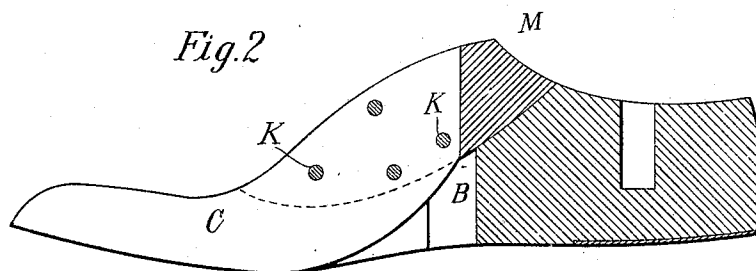


Fig. 3

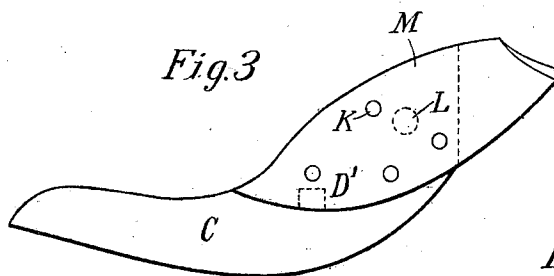
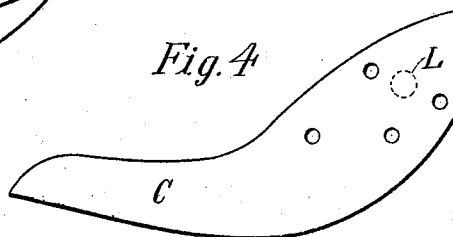


Fig. 4



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2 SHEETS—SHEET 2.

Fig. 5

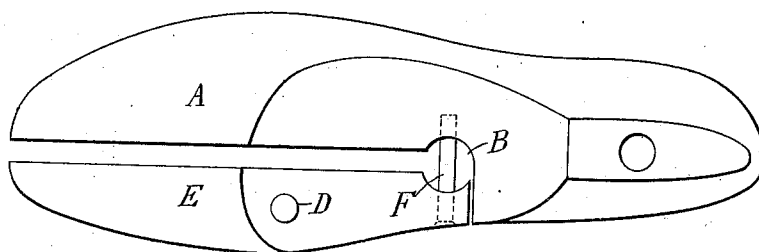


Fig. 6

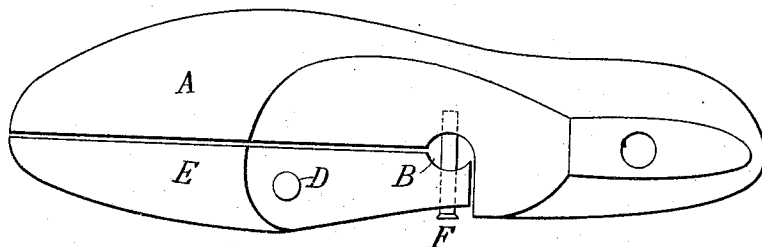
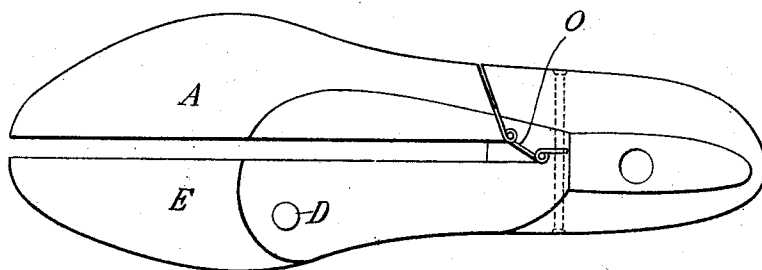


Fig. 7



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UNITED STATES PATENT OFFICE.

JOSEPH J. SMITH, OF NEW YORK, N. Y.

LAST.

No. 841,732.

Specification of Letters Patent.

Patented Jan. 22, 1907.

Application filed February 17, 1906. Serial No. 301,580.

To all whom it may concern:

Be it known that I, JOSEPH J. SMITH, a citizen of the United States, residing at New York city, in the county of New York and State of New York, have invented certain new and useful Improvements in Lasts, of which the following specification and accompanying drawings illustrate the invention in several forms which I now regard as the best out of the various forms in which it may be embodied.

Figure 1 is a plan of my last with the instep-block removed. Fig. 2 is a section of the same with the instep-block in place. Fig. 3 shows the instep-block with the attached filler. Fig. 4 shows the filler itself. Figs. 5 and 6 show one modification of my invention. Fig. 7 shows a plan view of another modification.

In the manufacture of boots and shoes it is desirable that the waist of the shoe, being the part between the ball and the instep, should be formed so as to grip the waist of the foot and receive the forward thrust of the foot within the shoe, while at the same time the ball should be made large to allow the foot to spread at that point, as it naturally will in walking. Ordinarily, however, this is not attainable, because in making the shoe it is necessary to have a working last that can be readily withdrawn from the shoe after the latter is formed thereon. With the construction referred to the ball of the last becomes so much larger than the waist that it is difficult or impossible to withdraw the last after the shoe has been formed if it is of the proper shape to give the required room for the ball of the foot and together therewith the gripping fit around the waist of the foot. As a consequence in the ordinary shoe the foot in walking is free to slide forward and the thrust upon the shoe is taken up by the toes, which leads to many troubles. When attempts are made to avoid this, it usually consists in making a broad and clumsy-shaped shoe, which is not a fitting shoe, but simply one too large for the foot.

My invention consists in a working last, by which I mean the original shaping-last for boots, shoes, and other footwear, which is made transversely collapsible, so that the ball of the shoe may be made large enough to give the freedom required by the foot at that point and permit the removal of the last from the completed shoe to be effected by the collapse of the last at the ball. More-

over, while the stretching and attaching of the leather to give the shoe its permanent form is going on the last is held securely in its normal shape. The construction of the last is also one which is cheap and simple and adapted for use in large factories, where great numbers of lasts are employed. It also can be made by the same methods and machines as are now used in the manufacture of lasts, thus avoiding the necessity of expensive changes in the present practice of last-making.

Referring to the accompanying drawings, A in Fig. 1 represents a last of the shape I have described—viz., one in which the ball is made considerably larger than the waist, so that after the shoe is completed it will be difficult to withdraw the last except for the expedient contemplated by my invention. The last is slotted longitudinally from the toe to the instep, leaving a space of one-quarter of an inch or thereabout, between the two lateral halves of the last. The space, however, may be made larger or smaller, according to requirements. This slot at its inner end terminates in a circular hole B, the effect of which is to remove enough of the material of the last at that point to allow the separated parts to spring together sufficiently to allow the ball of the last to be withdrawn through the contracted waist of the shoe after the latter is completed.

In Fig. 3 there is shown an instep-block M, on the under side of which is attached a strip C, corresponding in thickness to the width of the slot shown in Fig. 1 and otherwise shaped so that when inserted in the said slot it will come into alinement with the external surface of the last at all points. In other words, it may be termed a "filler," which when in place will occupy the space formed by the slot aforesaid. Preferably I make the filler C of metal, as a simple plate of brass or iron, having the form shown in Fig. 4, but may make it of wood or in any other desired manner. The shape of the filler, it will be observed, is such that it will constitute a slightly-curved extension of the instep-block, so that it can be withdrawn from the completed shoe by lifting the rear end of the block, as is the common practice, and drawing it upward and backward without causing the filler to bind on the top or the sole of the shoe. The instep-block is then split for a certain distance back from the front edge and the two forks thereof attached by several rivets K K to the

opposite sides of the filler, so that the filler and the instep-block together have the appearance indicated in Fig. 3. I may, however, use but a single rivet L (shown in dotted lines) and allow the filler to turn on the rivet, which gives a jointed connection of the filler to the block to facilitate removal from the shoe. When the instep-block is applied to the last shown in Fig. 1, the filler C slips into place in the slot and the instep-block comes down into the recess formed to receive it and is held in place in the usual manner by a dowel-pin D, fitting into a recess D' on the under side of the block. When the instep-block is in place, a section of the last taken on the line 2 2 of Fig. 1 will have the appearance indicated in Fig. 2. In the use of this last the instep-block will be put in place and the shoe built up around the last in the usual manner. When it is completed and it is desired to withdraw the last, the instep-block is first removed in the usual way and together with it the filler C. The last itself will then be free to collapse in a transverse direction, so that it can be withdrawn from the shoe in spite of the ball being larger than the waist. To facilitate the withdrawal of the filler, it may be lubricated by powdered French chalk, soapstone, or similar material, and if need be it can be made thinner toward the toe, thus having a tapering thickness, which will permit it to be readily removed.

In some cases it has been found that the mere springing together of the two halves of the last by the construction shown in Fig. 1 is inadequate to give the necessary contraction of the last to permit it to be easily withdrawn through the waist of the shoe. In such cases I may employ the construction shown in Figs. 5 and 6, wherein the shape of the last and the combination therewith of the instep-block and filler are the same as in the form already described, but the lower portion E is completely severed from the main body of the last and then secured thereto by a pin F, which is firmly seated in the body of the last, but at its outer end passes loosely through a hole in the part E and then has on its outer end an expanded head, which will prevent the complete detachment of the part E from the remainder of the last. By this construction the part E after the filler is withdrawn can slide on the pin F in a direction at right angles to the longitudinal axis of the last close up to the remainder of the last, as shown in Fig. 6, and thereby make such a decided reduction in the ball measure that it may be readily removed from the shoe. With this construction any suitable substitute for the pin F as an attaching means may be employed, and I may have the movable section either on the inside of the last, as shown in Figs. 5 and 6, or on the outside, as in the modification shown in Fig. 7, which also illustrates a hinge O in place of the pin F, said hinge

serving to support the movable part E in the plane of the opposite part. The hinge also allows the front end of the part E to cant at an angle to the fixed part and somewhat facilitates the insertion of the filler, an effect which requires an enlargement of the hole for the pin F in the form shown in Figs. 5 and 6. In Fig. 7 the preponderance of width at the ball is made very plain to the eye. In all the forms of my invention here shown one side of the ball is integral with the heel. In Fig. 1 both sides are integral, while in the other forms one side is a separate piece transversely movable as a whole. This integral construction is not essential to the invention, but it makes a very strong last and is preferred.

Various other modifications are possible. For example, instead of having the instep-block M removable it may be incorporated with the last and the filler C alone made removable, as will be readily understood; but a removable instep-block is preferred, since it serves to give vertical support to the movable fore-part section E during the leveling and other operations performed upon the lasted shoe. Other specific embodiments of my invention may be made, it being understood that whatever may be the specific form assumed by the invention I desire to claim herein a working last (by which I mean a last to be used in the manufacture of footwear to support and give shape to the article formed thereon) which is collapsible transversely, so that the ball of the last can be made larger in lateral dimension than has been heretofore feasible and can still be withdrawn through the smaller dimensions of the waist of the shoe, the last having means for making it solid against lateral strain while in place.

It may be added that by my invention it becomes possible to make a shoe with the described enlargement of the ball which will still have a stylish and well-fitting appearance. The last I have devised will act like the foot itself, which can be more or less compressed at the ball so as to pass through the waist of the shoe, but when in the shoe tends to spread out laterally, particularly when subjected to the weight of the wearer. This last is distinguished from ordinary split followers, second lasts, and divided tree-feet, which cannot be used as original lasts; but nevertheless it is possible to use my last a second time in the same shoe, and thus do away with a follower, particularly in McKay-sewed shoes, where the first last must be removed to admit the horn of the sewing-machine. After that operation is completed my last can be reinserted instead of a second last.

What I claim as new, and desire to secure by Letters Patent, is—

1. A shoe-forming last with permanently-connected fore and heel parts, said last being

larger at the ball than at the waist and transversely collapsible at the ball, and provided with means for maintaining the fore part unyieldingly in its normal shape during the
 5 shaping process, said means controllable without removal of the last from its position in the shoe.

2. A shoe-forming last with heel part and one side of the fore part integral with each
 10 other, said last being divided longitudinally to make it laterally collapsible at the ball, and provided with a filler intervening between the divided parts and conforming to the sectional outline of the last so as to pre-
 15 serve an unbroken lasting-surface when the filler is in position between the parts, said filler being removable by sliding it between the divided parts while the last is in the shoe.

3. A shoe-forming last larger at the ball
 20 than at the waist and divided longitudinally at the ball to provide a lateral yield, said last having an unyielding filler intervening between the parts of the last and removable from the last through the shoe-opening.

4. A filler-section for a divided shoe-last
 25 shaped to correspond to a longitudinal vertical section of the fore part of the last and of such shape and dimensions as to permit its removal from the last through the shoe-open-
 30 ing.

5. A shoe-last divided longitudinally at the ball and provided with an intervening part adapted to maintain an unyielding separation of the two halves of the ball, said part
 35 being adjustable without removing the body of the last from the shoe.

6. A shoe-last of fore and heel parts, divided longitudinally at the forward end and provided with a longitudinal filler interven-
 40 ing between the divided forward portions of the last to maintain them separated, said filler removable without removing the body of the fore and heel parts from the shoe.

7. A shoe-last divided longitudinally at
 45 the forward end and provided with a flat fill-

ing-strip corresponding in shape at its forward end to the sectional outline of the divided last and removable from the last through the shoe-opening.

8. A shoe-last divided longitudinally at its
 50 forward end, and provided with an instep-block having on its under side a projecting part intervening between the divided forward parts of the last to maintain them separated but removable from the last together
 55 with the instep-block through the shoe-opening.

9. A shoe-last divided longitudinally at the ball, and means for unyieldingly separating or collapsing the divided parts at will,
 60 said means being operable while the entire last is in position in the shoe.

10. A shoe-forming last collapsible transversely at the ball, a filler for separating the collapsing portions and removable therefrom
 65 while the last is in the shoe, and an instep-block attached to said filler and overlying the collapsing part so as to give vertical support thereto.

11. A shoe-forming last having an entire
 70 heel part, one side of a fore part integral therewith, the other side of the fore part being a separate piece transversely movable with respect to the integral side, and adjustable means for unyieldingly separating said
 75 sides.

12. A shoe-forming last having an entire heel part, one side of a fore part integral therewith, and the other side of the fore part
 80 hinged to the body of the last on an upright axis, combined with a removable unyielding filler intervening between said sides for holding them separated.

In testimony whereof I have hereunto set my hand, in the presence of two subscribing
 85 witnesses, the 16th day of February, 1906.

JOSEPH J. SMITH.

Witnesses:

R. M. PIERSON,
 L. T. SHAW.