E. J. BLISS & E. F. WHITE.

SECTIONAL LAST FOR MAKING SHOES.

APPLICATION FILED FEB. 3, 1909.

1,018,959. Patented Feb. 27, 1912.

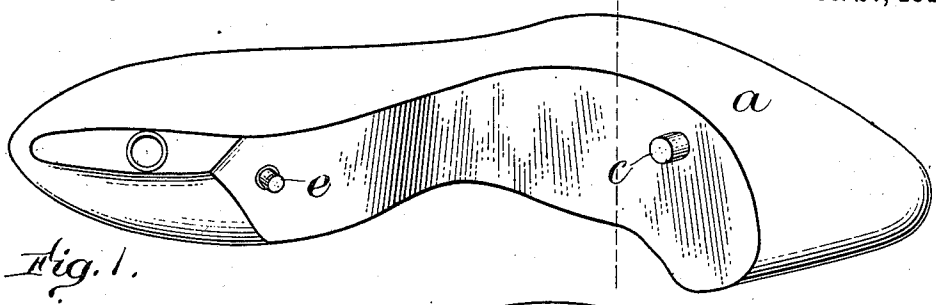

Fig. 1.

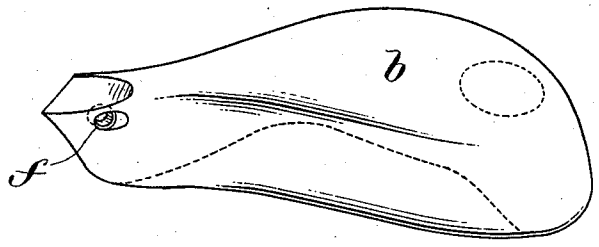

Fig. 2.

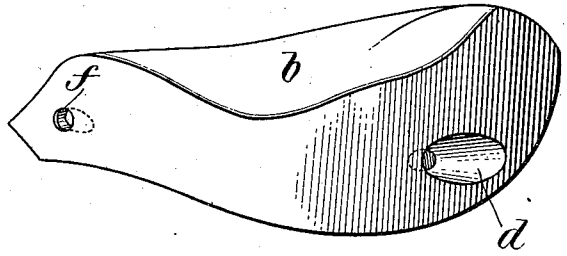

Fig. 3.

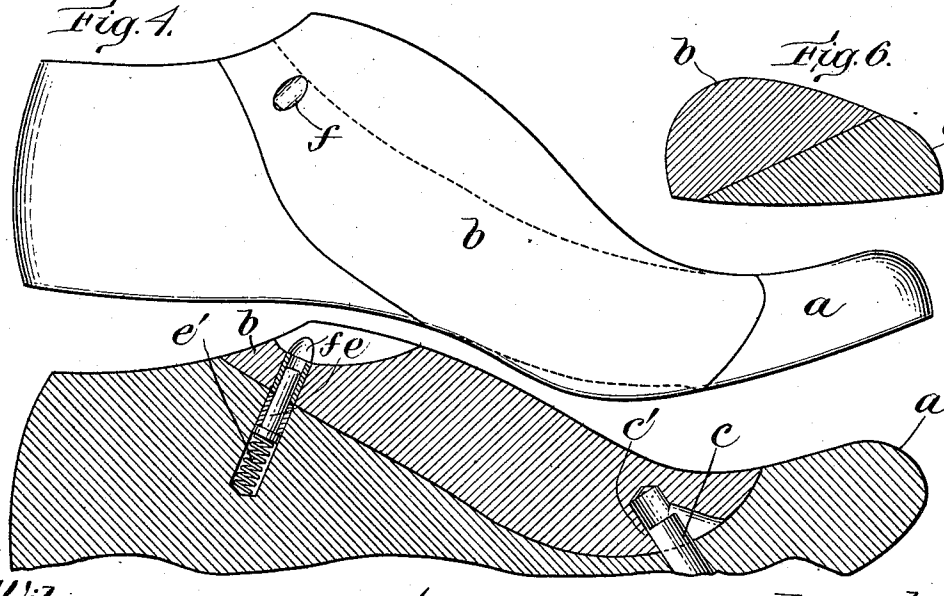

Fig. 4.

Fig. 6.

Fig. 5.

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UNITED STATES PATENT OFFICE.

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SECTIONAL LAST FOR MAKING SHOES.

1,018,959. Specification of Letters Patent. **Patented Feb. 27, 1912.**

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To all whom it may concern:

Be it known that we, ELMER J. BLISS and EDWARD F. WHITE, citizens of the United States, and residents, respectively, of Edgartown, county of Dukes, Massachusetts, and Quincy, county of Norfolk, Massachusetts, have invented certain new and useful Improvements in Sectional Lasts for Making Shoes, of which the following is a specification.

This invention relates to lasts employed in the manufacture of boots and shoes and is intended to provide a simple and effective construction by which it is practicable to make the ball of the last as much larger in circumference than the waist portion thereof, as may be desired, while still making it possible to easily withdraw the last from the boot or shoe after the lasting operation without straining or distorting the smaller waist portion.

The ideal form of shoe would be one that would give ample room for the ball portion of the foot to expand without cramping, while the waist portion of the shoe fits snugly about the waist portion of the foot to support the foot and prevent it from sliding forward when supporting the weight of the wearer. The practical difficulty of making boots or shoes to embody these principles is due to the difficulty in withdrawing the wider and larger ball portion of the last through the narrower and smaller waist portion without stretching and distorting or "breaking down" the waist portion in so doing.

Heretofore it has been proposed to section or cut the last block through the ball portion so that by the movement of one section relative to the other, the width of the ball portion may be reduced. In doing this however, practical difficulties have been encountered owing to the fact that the middle portion of the last has to withstand great pressure or strain during subsequent operations following the lasting of the shoe so that the ball portion must have sufficient thickness to provide the required strength and at the same time the separable section must be capable of easy and quick manipulation by the workman. The practical requirements have been such that the actual amount of reduction in width and size has been very limited.

The present invention comprises a last block divided into a main portion and an instep portion, the latter embracing both the instep and a large part of the ball, the dividing plane between these sections being oblique to the plane of the sole transversely.

In the accompanying drawings is illustrated the preferred form of embodying the principle of this invention, of which—

Figure 1 is a plan view showing the main section alone. Fig. 2 is a plan view of the instep section or member. Fig. 3 is a bottom plan view of the instep section or member. Fig. 4 is a side elevation showing the lines of the cutting plane or dividing surface. Fig. 5 is a central vertical longitudinal section; and Fig. 6 is a vertical cross section through the ball portion of the main section.

In the practice of the invention as illustrated in the drawings, a last block having the proper lines, is divided into a main section or member *a* and a separable section *b* by a divisional plane or cut which, as shown, extends longitudinally from behind the instep portion forward to a point intermediate of the ball and the toe of the last. Transversely considered this divisional cut extends obliquely to the sole of the last and preferably at such an angle as to intersect the top surface of the last on one side of the instep and the bottom or sole of the last on the other side of the instep through the ball portion of the last, the ball portion being indicated by dotted lines in Fig. 1. By this principle of cutting it will be seen that a cross section through the ball of the main section of the last is practically speaking triangular, the bottom or sole of the last forming one side of the triangle, the diagonal sectional plane forming a second side, while the third side is formed by the top surface of the last from its point of intersection with the cutting plane to the edge of the sole, this side having a slight curvature.

The preferred means for locking the instep or separable section *b* to the main sec-

tion *a* to hold it in operative position, comprises a projecting peg or pin *c* secured to or embodied in the sectional plane or surface of the main part adapted to engage the flared opening *d* formed in the under side of the instep section, and a spring-pressed pin *e* secured in a socket formed at the rear portion of the divisional plane of the main section and adapted to engage a corresponding recess or hole *f* formed in the corresponding portion of the instep block. It will be noticed that the projection or pin *c* extends obliquely in a rearward direction so as to form an overhanging engagement with that portion of the wall of the engaging recess in the instep section which it engages, as shown most clearly at *c'*, while the yielding pin or plunger *e* serves to prevent the rearward movement of the member *b*, which movement is necessary to disengage or free the instep member from its engagement with the pin *c*. In order to remove the instep section, the operator must first depress or force in the locking pin *e* against its retaining spring *e'* after which the instep member is readily removed without the slightest difficulty.

It will be noticed that by dividing the last block in the manner described, not only is the circumferential measure of the ball portion reduced nearly one half, but the actual width of the ball portion of the main member of the last block is diminished to less than the width of the waist. Hence, however much the measurement of the ball exceeds the measurement of the waist of the entire last, the removal of the instep member, which is effected without difficulty, reduces both the circumference and the actual width of the ball considerably below the corresponding measurements of the waist and permits the heel portion of the last to be raised preparatory to withdrawing the main section without distorting or straining the shoe at all, thus accomplishing fully all the results sought by the use of hinged lasts but without weakening the last block by the introduction of a hinged joint on the one hand or by cutting the ball portion of the main part so thin that it is likely to break under the strain of leveling or other operations subsequent to the lasting of the shoe. Moreover, when assembled and in operative position for use, the last is to all intents and purposes a solid rigid last block having precisely the form that it may be desired to give the finished shoe.

This peculiar method of dividing the last block leaves an integral or unbroken toe portion without crack or gap into which the lasting tacks might be driven to the injury of the last and the detriment of the lasting by reason of the insecurity of the hold or grip of the tack under such circumstances. Moreover, in the case of feet affected with bunions or abnormal enlargements of the joints, the ball of the shoe can be given the precise shape of the foot without interfering with the easy removal of the last.

What we claim is:—

1. A sectional last block comprising two sections namely, an integral heel and toe section and an instep section divided from each other by a divisional cut which intersects the top surface of the last on one side of the instep and which on the other side of the instep intersects the sole of the last through the ball portion thereof, substantially as described.

2. A sectional last embracing in its construction a main section, an instep section detachable therefrom, said instep section being divided from said main section by a longitudinal cut which is transversely inclined to the plane of the sole and which intersects the sole at its widest part, substantially as described.

3. A sectional last block divided into two solid separable sections comprising a main heel and toe section and an instep section which includes a part of the entire thickness of the ball, the divisional cut or plane of separation being so extended as to give the cross section of the ball portion of the main member a triangular form, substantially as described.

4. A sectional last block for making shoes, embracing in its construction a main section embracing the heel and toe portions of the last, and an instep section separated therefrom by a transversely oblique cut extending through the ball and the instep portions of the last so as to intersect the bottom of the last, substantially as described.

5. In a sectional last an instep block formed to be detachably secured to the main portion of the last and embracing the middle portion of the instep and a portion of the sole of the ball of the last, substantially as described.

6. A sectional last embracing a solid main section and a solid instep section divided therefrom by a divisional cut which intersects the top surface of the entire last on one side of the instep and the sole of the last through the ball portion thereof, said oblique face being provided with a rearwardly overhanging projection at its forward portion to engage and hold the instep member, and a movable locking pin to prevent the rearward movement of the instep member, substantially as described.

7. A sectional last embracing in its construction a main section or member having an integral or unsplit toe portion embracing the whole toe of the last, and a separable instep portion divided therefrom by a transversely inclined cut which intersects the sole through the ball portion of the last, substantially as described.

8. A sectional last embracing a solid main section with integral heel and toe portions, and a separable instep section divided therefrom by a sectional plane intersecting the upper face of the last on one side and the sole of the last on the other side, substantially as described.

In witness whereof, we have subscribed the above specification.

ELMER J. BLISS.
E. F. WHITE.

In the presence of—
N. W. EMERSON,
K. T. HARTNETT.