No. 871,150. PATENTED NOV. 19, 1907.

J. J. SMITH.

CONTRACTING LAST.

APPLICATION FILED DEC. 8, 1906.

2 SHEETS—SHEET 1.

Fig. 1

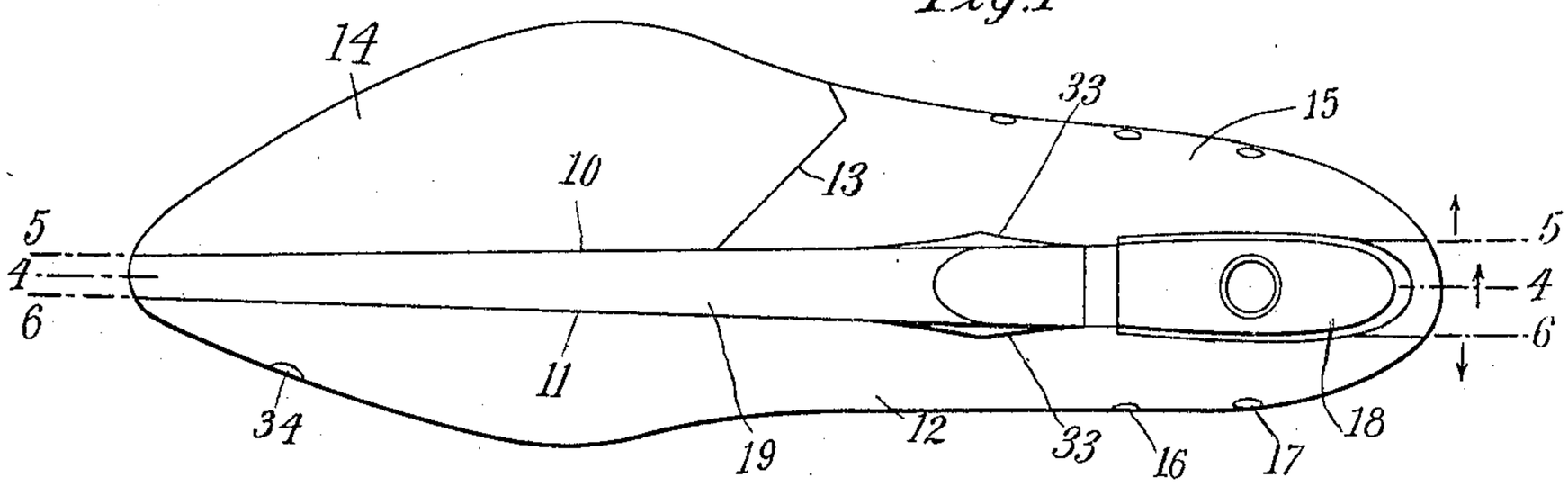


Fig. 2

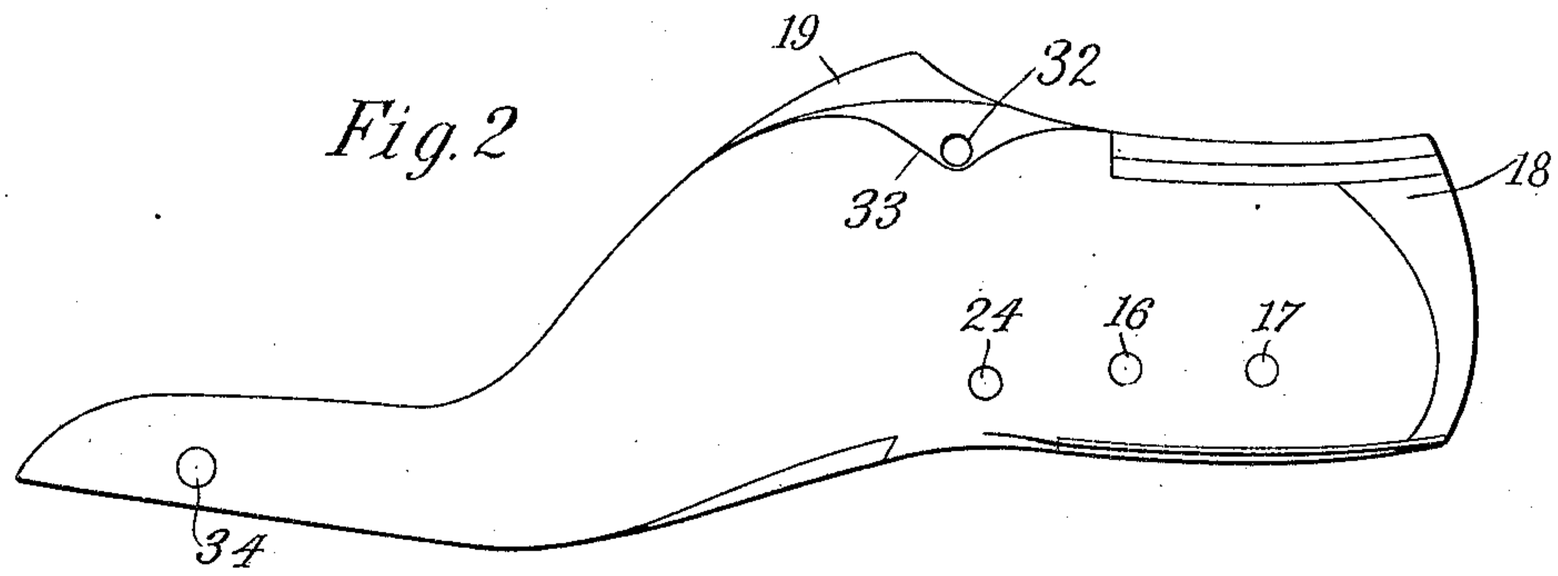


Fig. 3

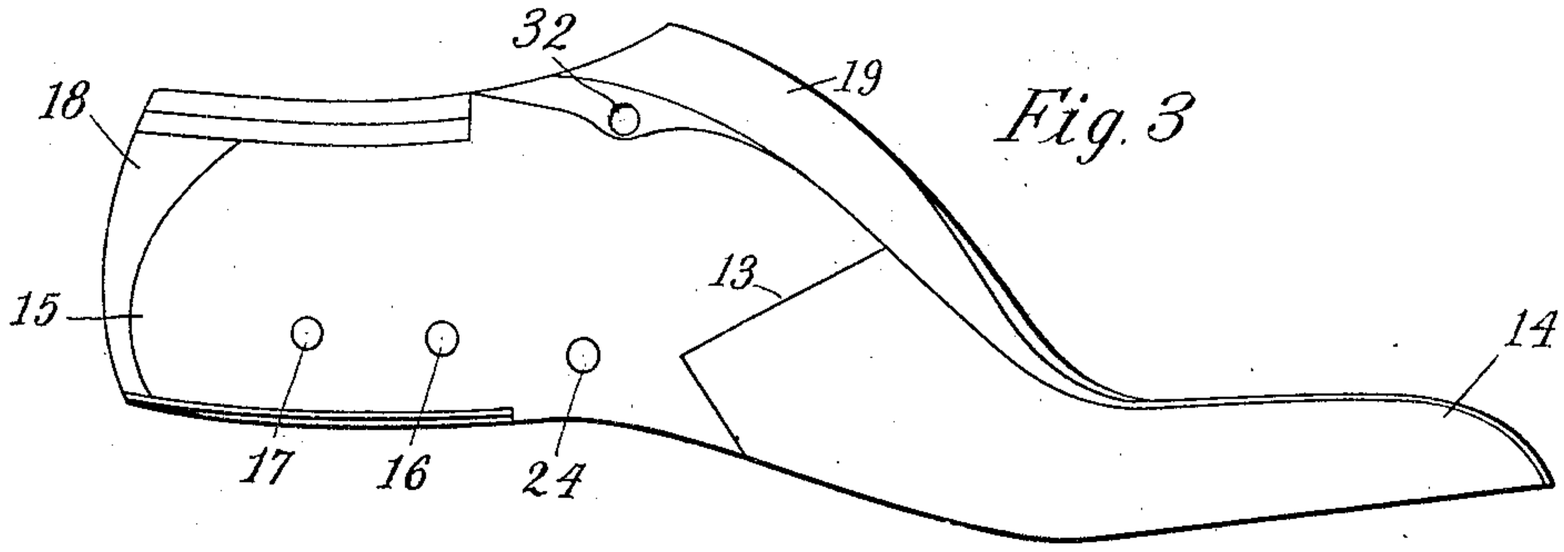
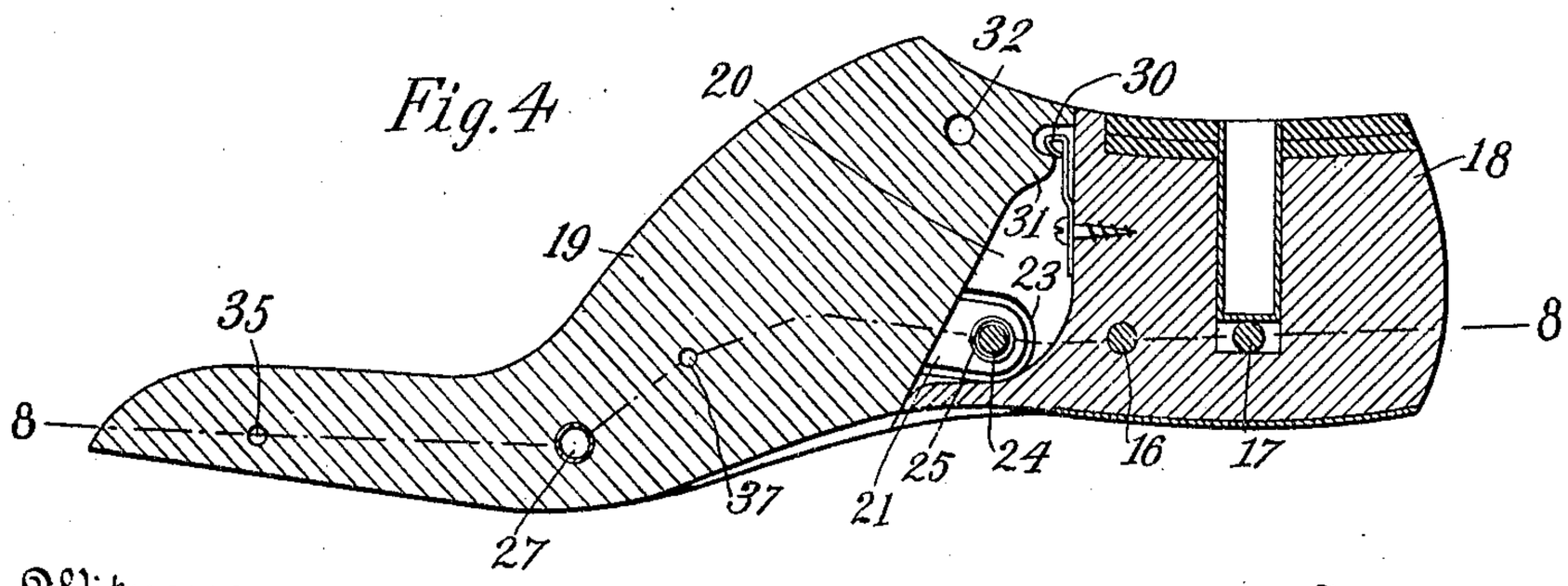


Fig. 4



Witnesses
Raphael Netter
J. Blake

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2 SHEETS—SHEET 2.

Fig. 5

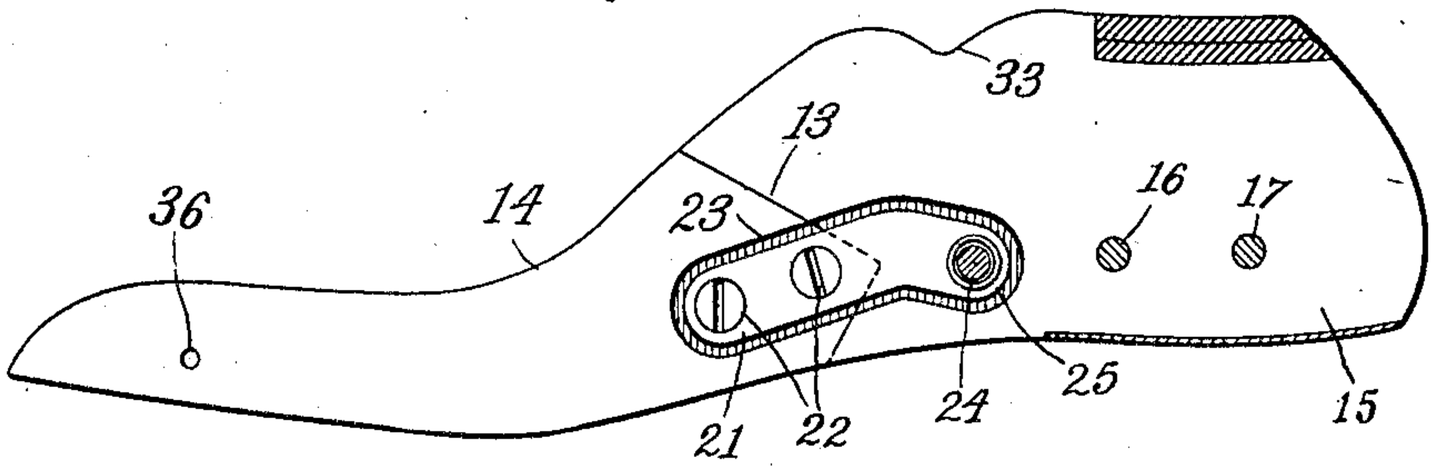

Fig. 6

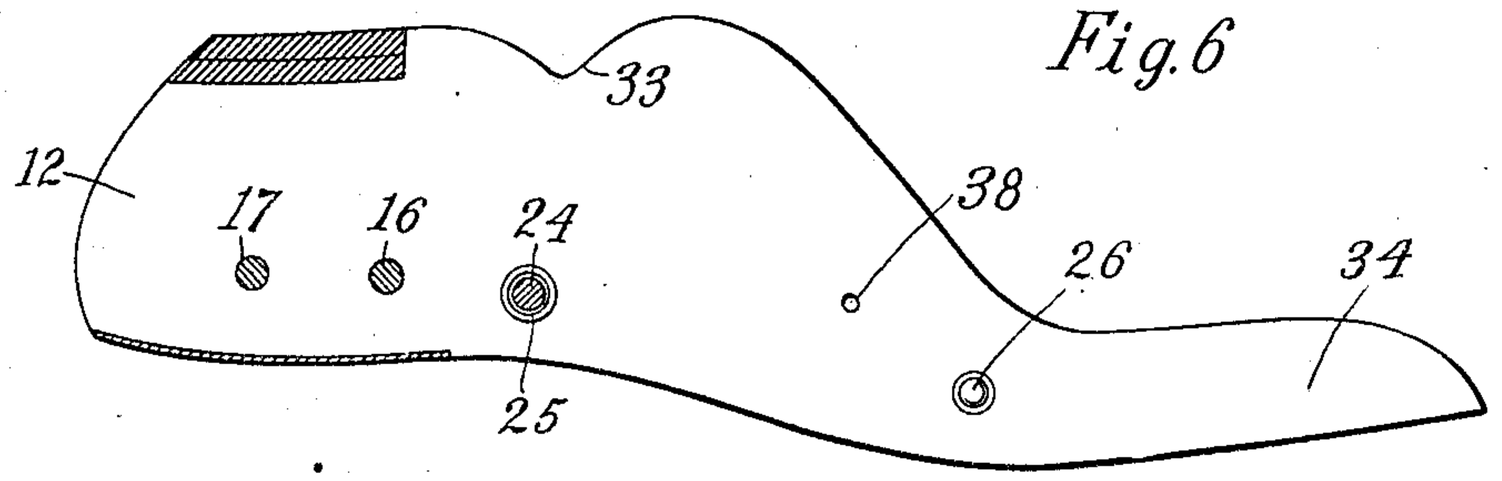

Fig. 7

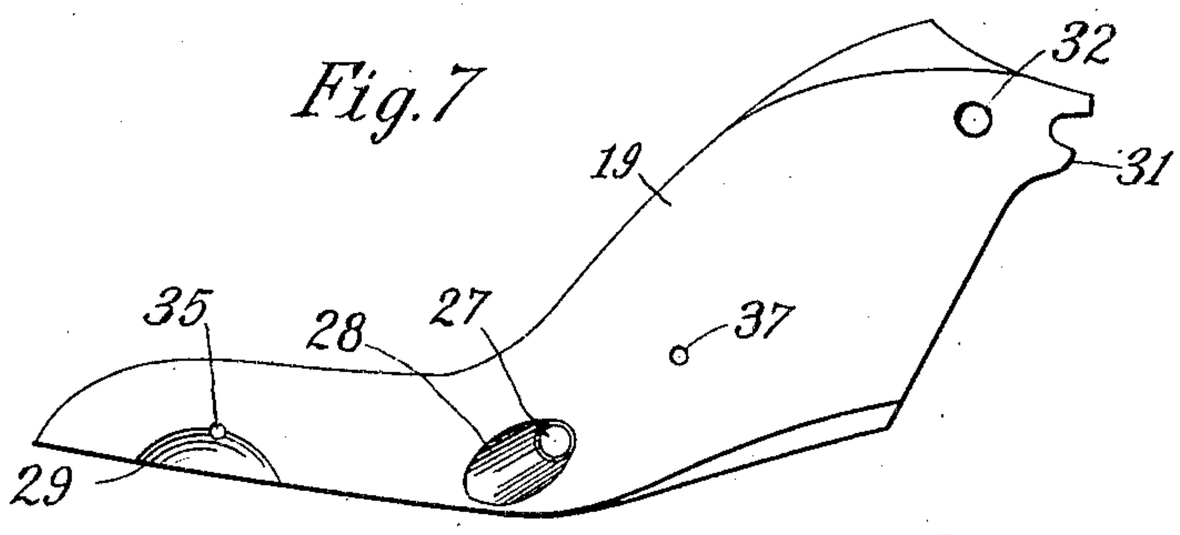

Fig. 8

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UNITED STATES PATENT OFFICE.

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

CONTRACTING LAST.

No. 871,150. Specification of Letters Patent. Patented Nov. 19, 1907.

Application filed December 8, 1906. Serial No. 346,851.

To all whom it may concern:

Be it known that I, JOSEPH J. SMITH, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Contracting Lasts, of which the following is a specification.

This invention relates to lasts for boot and shoe making, of the type which is divided longitudinally in the fore-part and provided with fore-part sections relatively movable with respect to each other to contract the ball portion, the said last having an adjustable filler adapted to be inserted in and removed from the last through the shoe opening, whereby the last may be placed in and withdrawn from the shoe in a contracted condition and made solid within the shoe in an expanded condition by the insertion of the filler. My present invention is an improvement on a last of the above character described and claimed in my Patent No. 841,732.

The objects of the present improvement are first, to strengthen the last, particularly with regard to the laterally-adjustable fore-part section which I now support on the heel-part more firmly than heretofore; secondly, to so construct the last that its process of manufacture may be more cheaply and quickly carried out; and thirdly, to provide an improved attaching means for the removable filler.

In the particular embodiment hereinafter described, the heel-part of the last is made on the sectional or built-up plan with a center-piece which is a separate continuation of the removable filler, the two being originally one piece sawed out from the middle of the last which is divided along two planes throughout its entire length. The sectional construction affords an opportunity for making a V-shaped saw-cut on one of the side-pieces whereby the adjustable fore-part section is separated from the heel-part, but when the last is in its normal shape the adjustable fore-part section is supported on the heel-part section against vertical strains in both directions. These two parts have a sliding connection formed by a pin and an apertured slide-plate, which latter I am enabled to mount in a recess on the inner face of one of the side-pieces by reason of the division of the last throughout its length. The pin is tapered so that it draws the adjustable fore-part section and the heel-part into contact when driven in, and the V-shaped cleft between the fore and heel parts is cut at a slight angle to the transverse axis so as to readily clear itself when pressed inwardly to contract the last. The division of the last enables the original center-piece to be used for the filler without a reduction in last width due to the saw cuts, by introducing a process of second turning. I further prefer to construct the last so that the removable filler-piece extends from top to bottom of the last throughout its length, whereby the friction of an instep-block on the shoe is avoided, and provide suitable spring catches for this filler to retain it in place in the last.

Of the accompanying drawings, Figure 1 represents a top plan view of a last constructed according to my invention. Fig. 2 represents an elevation of the inner side. Fig. 3 represents an elevation of the outer side. Figs. 4, 5, and 6 represent sections on the correspondingly-numbered lines of Fig. 1. Fig. 7 represents an elevation of the removable filler. Fig. 8 represents a horizontal section on the line 8—8 of Fig. 4.

The same reference characters indicate the same parts in all the views.

As best seen in Fig. 1, the last is split throughout its length on the lines 10, 11, leaving two side-pieces and a middle piece. The inner side-piece 12 is continuous from heel to toe, and the outer side-piece is divided by a V-shaped cleft 13 into a fore-part section 14 which is made laterally adjustable to contract and expand the ball portion of the last, and a heel-part section 15, which is united to the inner side-piece 12 by dowels 16, 17. Between the two sides of the heel-part is fixed the heel-part 18 of the center-piece, through which the dowels 16, 17 extend, the three heel-parts being also united by glue. 19 is the fore part of the middle-piece which constitutes a removable filler for holding the last in a solid expanded condition when it is in place and permitting the contraction of the fore-part when the filler is removed, the filler being preferably slightly tapered or wedge-shaped so that it may be more readily inserted and removed. For convenience in manufacture this taper is continued in the heel-part 18. During the process of manufacture the center-piece is sawed across from top to bottom to separate its heel and fore parts, as best indicated in Fig. 4, and then one of the pieces is resawed to make

a recess 20 for the reception and play of parts hereinafter described.

The adjustable fore-part section 14 is tied to and guided on the body of the last by means of a slide-plate 21 secured by screws 22 in a recess 23 formed in the inner face of the outer side-piece and having a hole in its projecting rear end occupied by a tapered pin 24 which is driven transversely through the last from one side to the other and crosses the recess 20. A spring 25 surrounding this pin between the slide plate 21 and the inner face of the inner side piece 12 presses the slide plate and the adjustable fore-part section in an outward di ection tending to expand the last The purpose of tapering the pin 24 is two-fold. First, when driven into place, its taper engages the rear edge of the hole in slide-plate 21 and draws the adjustable fore-part section 14 back to a tight seat on the heel-part 15 when the fore-part is expanded; and secondly, this taper relieves the friction of the slide-plate on the pin when the adjustable fore part section 14 is pressed inwardly to contract the last. A further means of relieving that friction and enabling the fore-part section 14 to clear itself from its seat when pressed inwardly consists in making the cleft 13 at a slight angle to the transverse axis of the last, as seen in Fig. 8.

The filler 19, shown in elevation in Fig. 7, is continuous and of the same thickness from top to bottom of the last without any surmounting instep block. Although the main features of my present invention would apply to a filler attached to the lower side of an instep-block as described in my prior application above-mentioned, I prefer to dispense with the instep block and thus do away with a great part of the friction against the lining of the shoe caused by the insertion and withdrawal of such a block The vertical position of the filler in the last is prese ved when the last is in use by reason of its tight fit within the shoe, but in order to maintain this filler in proper position when the last is out of the shoe I have shown two forms of spring catch engaging the filler at different po nts. One of these catches is a spring bolt 26 sunk in the inner face of the inner side-piece 12 and projecting slightly beyond said face to engage a socket-piece 27 in the adjoining face of the filler. The main purpose of this catch is to limit forward motion of the filler-piece. To guide the socket-piece 27 onto the spring bolt when the filler is being inserted I form a recess or bevel 28 (Fig. 7) in the filler and socket piece extending from about the middle of the socket-piece toward the toe of the filler. I also slightly recess or bevel the same face of the filler at 29 near its lower edge at the toe-portion, to enable the filler more readily to be inserted past the spring bolt 26. The other catch is a leaf spring 30 secured to the forward edge of the heel-part 18 of the center-piece and engaging a projection 31 formed on the rear edge of the filler near its upper end. The purpose of this catch is to limit upward and backward motion of the filler. The filler may be removed by pulling it out with a last hook inserted in a hole 32 near the upper end of the filler or a permanent cord loop may be strung through said hole for that purpose. The side-pieces of the last are recessed at 33 to a point below this hole. Bo.h catches yield automatically in locking and unlocking.

The V-shaped cleft 13 in combination with slide-plate 21 and pin 24 affords a simple guiding connection between the heel-part and the adjustable fore-part of the last and also gives support to the fore-part 14 against vertical strains both up and down when the last is expanded. The faces of the cleft 13 take the bulk of this strain and relieve the pin 24 and slide-plate 21. This cleft could not well be made by a sawing operation unless either one or the other of the side-pieces were removed during the process of manufacture either for part or the whole of its length. This removal I accomplish by dividing the last throughout its length, and am thereby also enabled more readily to form the recess 23 and attach the sliding connection within the interior of the last. Furthermore by thus dividing the last in two places and removing an entire center-piece, then dividing this piece to make the removable filler and the middle section of the heel-part, I am enabled to form the cavity or recess 20 for the reception of interior parts and to give this recess top and bottom walls integral with one or the other of the halves, which would be a difficult matter under any other process of manufacture. When the center-piece is replaced in the last after sawing it out, the last will be reduced in width by the thickness of the two saw-cuts, and as this would make it too small if originally turned to size, I prefer to first turn the last to an excess size before sawing it and then re-turn it to its ultimate size after the saw-cuts are made. This second turning preferably takes place after the manufacture of the last is otherwise completed, with but few exceptions, such as the final placing of the pin 24.

34, 35, 36, 37, 38 represent holes for a pair of temporary wood-screws which secure the fore-parts rigidly together during the second turning.

The process thus briefly outlined I have claimed in a separate application Serial No. 346,852. My present article of manufacture, though preferably produced by such a process, is not to be understood as being inseparably related thereto.

I claim:—

1. A last comprising a middle-piece composed of a removable fore-part and a heel-

part inclosing a cavity between them, separate side-pieces united at their heel-parts to the heel-part of the middle-piece and including a laterally-adjustable fore-part section, and means connecting said section and the heel-portion of the last and occupying said cavity.

2. A last composed of a body portion, and a laterally-adjustable fore-part section having a supporting joint with the body portion comprising complemental salient and reentrant portions.

3. A last composed of a body portion, and a laterally-adjustable fore-part section divided from said body portion by a substantially V-shaped cleft whose faces form a supporting joint between the body portion and fore-part section.

4. A last composed of a body portion, an adjustable fore-part section having a supporting joint with said body portion composed of complemental salient and reëntrant members, and a guiding connection between said body and fore-part section which ties them together and permits lateral movement of the fore-part section.

5. A last composed of a body portion, and a laterally-adjustable fore-part section divided from the body portion by a cleft slanted at an angle to the path of said section, which cleft provides a clearance when the fore-part section is forced inwardly and provides a supporting joint between the parts in their normal relation, together with a transverse sliding guide-connection between said body portion and fore-part section.

6. A last composed of a body portion having an internal cavity, a laterally-adjustable fore-part section, a transverse guide-pin in the body portion crossing said cavity, and a slide-plate on the fore-part section extending rearwardly into said cavity and having a guiding engagement with said pin.

7. A last composed of a body portion, a laterally-adjustable fore-part section having an apertured slide-plate, and a transverse tapered pin in said body portion occupying the aperture in said slide-plate.

8. A last composed of a body portion, a laterally-adjustable fore-part section divided from the body portion by a transverse interlocking cleft, and a separate side-piece included in the body portion and located opposite the inner end of said cleft.

9. A last divided longitudinally from heel to toe along two planes forming two side-pieces and a middle-piece and divided transversely in one of said side-pieces to form a laterally-adjustable fore-part section, a slide-plate let into a recess on the inner face of the fore and heel part sections of the divided side-piece, and fastened to the fore-part section thereof, and a transverse pin in the heel-portion of the last, engaging said slide-plate.

10. A last divided along two vertical planes extending throughout its length from top to bottom thereof to form side-pieces and a middle-piece, said middle-piece being divided into a heel-part and a fore-part, which latter forms a removable filler between the forward side-parts extending from top to bottom of the last, the heel parts of said side and middle pieces being permanently united.

11. A last divided longitudinally in its fore-part to form fore-part sections which are relatively-adjustable in a horizontal direction, a removable filler between the fore-part sections, and a spring catch connecting said filler with one of the fore-part sections.

12. A last divided in its ball portion into two fore-part sections which are relatively-adjustable in a horizontal direction, a removable filler between the fore-part sections extending from top to bottom of the last throughout the length of said filler, and a spring catch connecting the upper rear end-portion of said filler with the body of the last.

13. A longitudinally-divided last having a removable vertical filler in its fore-part, a spring catch connecting said filler with one of the side sections of the fore-part, and a second spring catch connecting the rear upper end of the filler with the heel portion of the last.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses, the 8th day of November, 1906.

JOSEPH J. SMITH.

Witnesses:
G. W. HOPKINS,
G. BLAKE.