

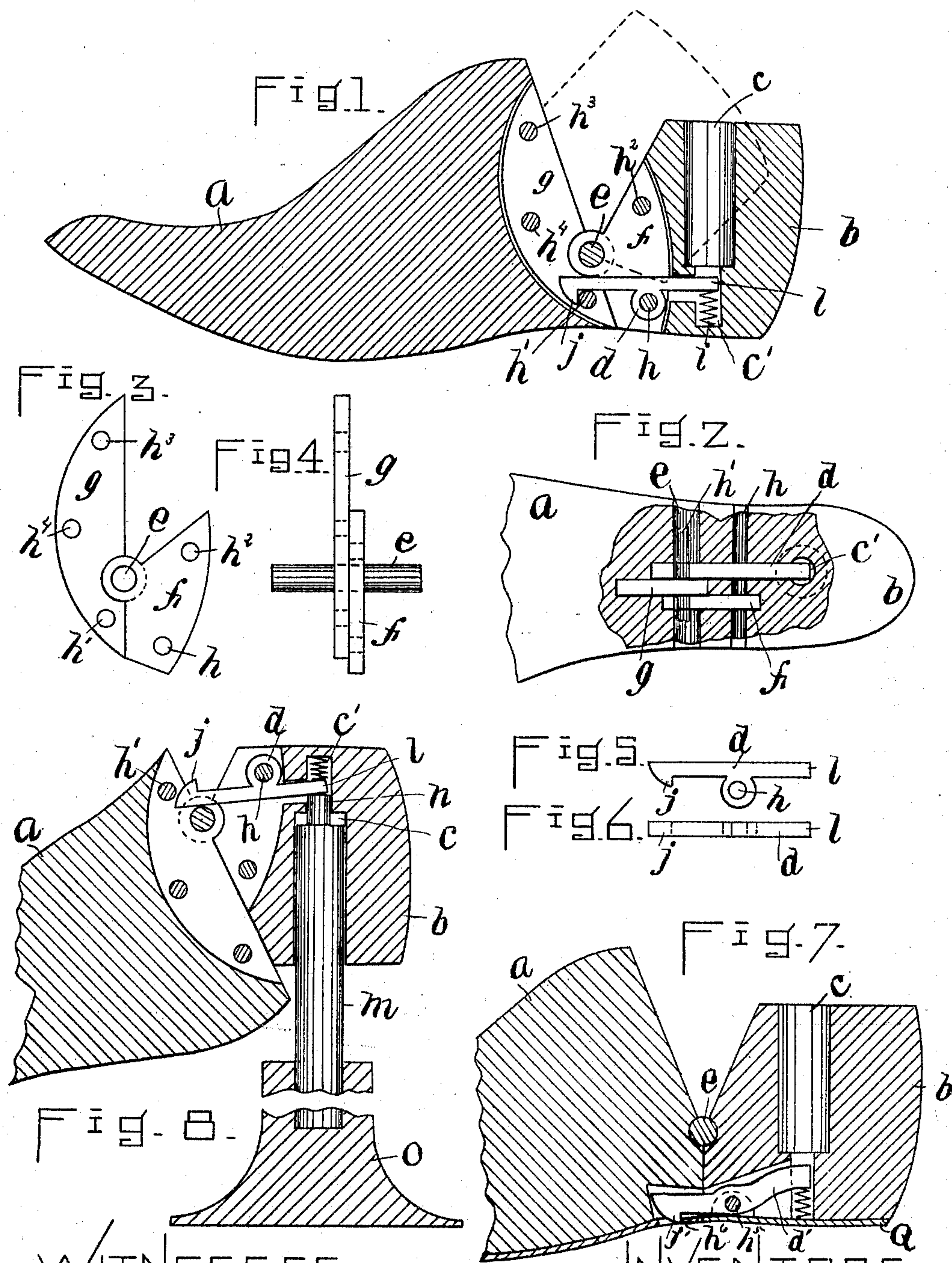
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A. H. BRIGHAM & W. E. TRUFANT.
LAST.

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NO MODEL.



WITNESSES.

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LAST.

SPECIFICATION forming part of Letters Patent No. 760,055, dated May 17, 1904.

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To all whom it may concern:

Be it known that we, ALBERT H. BRIGHAM and WALTER E. TRUFANT, citizens of the United States of America, residing at Whitman, in the county of Plymouth and State of Massachusetts, have invented certain new and useful Improvements in Lasts, of which the following is a specification, reference being had to the accompanying drawings, forming a part of this specification.

Our invention relates to lasts which are divided transversely into a toe-section and a heel-section, the sections being hinged together, and has for its object the production of a last particularly strong at its joint or union, where we provide a construction which strengthens the last instead of weakening it, as the hinges do which are now in common use, our invention also including means for holding or locking the sections in their lengthened or operative relation.

The sections of hinged lasts are sometimes connected by anchor-hinges, as shown and mentioned in Patent No. 645,906, sometimes by plate connections, as shown in Patent No. 468,006, and otherwise—for instance, as shown in Patents Nos. 535,315 and 609,244—and in all of these constructions, particularly all excepting the first mentioned above, when used as first lasts in the heavy operations, such as leveling, there is liability of the heel-section to twist or shift on the forward section and get out of alinement or even break the hinge, the latter in such cases being called upon to withstand all the strains, both vertical and twisting strains. This necessitates the use of heavy and expensive constructions and also occasions a large amount of breakage. Accordingly a leading feature of our invention resides in providing the connection or union which hinges the two parts together with an alining-bar or projecting rod or pintle located to occupy a groove or bed provided for it at the bottom of the gap or opening at the joint in the last, varying according to the kind of connection and cut of last with which it may be employed, some of which are enu-

merated above, this alining-bar cooperating with the groove or pocket provided for it in the abutting ends or walls of the fore part or toe-section and the heel part or heel-section to relieve the hinge of strain and to prevent shifting or twisting of the heel part on the fore part and materially strengthen the general construction. To make this feature of our invention more clearly understood, take, for example, the common kind of construction first alluded to above, in which a hinge is provided consisting of a pintle and two leaves having cylindrical hinge-eyes, one inclosing both ends of the pintle and the other grasping the pintle nearer the center, the pintle being headed at each end to secure it in place and the groove in the last being simply to accommodate the hinge-eye and not the pintle, where it will be seen that the bearing to hold the parts in alinement is not only confined to the hinge-leaves, but to the width of that portion of the leaf which grasps the pintle in the center, as the other leaf simply holds the pintle, whereas in our construction substantially the entire length of the pintle (or, as it should be more properly termed, the "alining-bar") engages in direct contact from one side of the last to the other with the wood of the sections, thereby interlocking therewith for resisting twisting and downward strains or pressures when the last is bottom up and the sections are in their lengthened position. We prefer to employ a bar resting in two segmental grooves and retained, preferably, at its middle part by plates or holding means, as this construction is inexpensive, practical, and readily applied; but, as already intimated, we do not restrict this feature of our invention to the location or form of retaining or carrying means, the idea, broadly stated, being to form in the last, between the abutting walls thereof, a recess and providing the connecting device or union with a laterally-projecting alining-bar, which may occupy said recess for resisting twisting strains and aiding the hinge in supporting the last when extended in use. Further definitions of this feature of our inven-

tion will be found in the claims, and this and other features of our invention (such as the locking arrangement) will be more fully explained and the advantages thereof pointed
5 out in the course of the following description.

In the drawings, Figure 1 is a longitudinal vertical section of a last containing our improvements. Fig. 2 is a plan of the rear part of the bottom of the last with a part of the
10 bottom broken away to show the parts in position. Figs. 3 and 4 are views of the plates and pintle of our improved hinge or union. Figs. 5 and 6 are views of our latch. Fig. 7 shows our latch applied to an iron-bottom last and other slight modifications; Fig. 8, a last
15 in its shortened position for removing the shoe and our improved spindle for tripping the latch.

The underlying feature of that part of our invention which relates to the strength-giving union or connection resides in a last divided transversely and having transverse grooves formed in the abutting faces and a hinge or union joining the last parts and carrying a
25 bar resting in the grooves and extending beyond the sides of the carrying-union. The object of this construction is to provide a novel hinging means for the sections of the last which will afford great rigidity and strength
30 to prevent twisting and bending of the members of the last when subjected to the strains incidental to the lasting and other operations performed in connection therewith.

More specifically stated, the invention also
35 consists in the provision of a bar to fit the grooves above referred to in the last-section and hinge-plates provided with eyes for the reception of the bar, said plates extending transversely of the bar and the latter extend-
40 ed laterally on each side of the plates or hinge members.

We have shown our invention applied to a hinged last of the kind shown in the first-mentioned patent above, in which the heel
45 part or section *b* is permitted to turn on the fore part or section *a* by reason of a V-shaped gap provided therefor, in the bottom of which rests the alining-bar or pintle-like bracing member *e*, carried by the hinge. The
50 form of hinge which we prefer and have herein shown consists of two plates *f* and *g*, carried in vertical kerfs or saw-cuts extending perpendicularly to the grooves or bed in which the alining-bar *e* rests, said plates being se-
55 cured in any convenient manner, as by rivets or pins *h h' h² h³ h⁴*.

From the foregoing description it will be readily understood that when the last is in use (at which time its normal position is bot-
60 tom upward, so that the leveling and other pressures come downward from the bottom toward the top of the last) the contacting portions of the abutting walls or ends of the last parts *a b* between the alining-bar *e* and
65 the bottom of the last mutually lap over and

engage said alining-bar, so as to get material support therefrom, or, in other words, the hinge or union, or whatever the connecting device may be called, which joins the fore part and heel part together and which carries said
70 alining-bar, maintains the latter in proper position so that the wood of the last at the bottom of the V-shaped gap rests directly on top of said alining-bar at each side of the union, and hence the wood, alining-bar, and
75 union all cooperate to resist any twisting tendency and to give mutual support and stability to the parts in use. The hinge is provided with said transverse alining-bar projecting out at each side to occupy the groove
80 at the bottom of the gap in the last for performing the double function of strengthening the vertical hinge and preventing distortion or twisting of the last parts on each other, said alining-bar giving a brace to the hinge
85 and providing accurate alinement by having these projections extend from said hinge at the bottom of the V-gap and rest on the bottom of the cooperating grooves, which contact
90 with said alining-bar sufficiently to take up all lateral thrust thereon of the last parts in whatever direction it may come when the last is in use. The seat for said bar is partly
95 on one side and partly on the other side of the division-line between the last parts in order to give the greatest sustaining force to both parts one on the other, and the hinge may be constructed in any convenient form, provided it is adapted to carry a transverse pintle or bar extending beyond the union at either side. 100

As herein shown, we have provided locking means for retaining the last parts in lengthened or operative position, said means comprising a metal member (shown as a latch or lever *d*) mounted on the pin *h*, carried by the
105 portion of the union in the heel part and adapted to engage at its forward end the pin *h'* at the point where the latter projects from the opposite portion of the union in the fore part, said pivoted plates and the pins which
110 project therefrom into the wood constituting the union or connection joining the last parts together. The rear end *l* of the lever preferably projects beneath the spindle-socket *c*, where a recess *c'* is provided therefor, said lever being normally held in locking position
115 by a spring *i*, to be engaged by a projection *n* of a jack-spindle *m*, carried by base *o*, for unlocking the last parts.

When a shoe is made on our last, the sections are in their lengthened relation, as shown in Fig. 1, the sections being held firmly in position by the hinge and latch, as above described. During the process of manufacturing the shoe the last is used on ordinary square-end spindles, which fit the socket *c*, and after the shoe is completed or at any time when it is desired to remove the last from the shoe the last is placed on our improved spindle, the reduced portion *n* of which enters the recess 130

d' and coming in contact with the latch d at l forces the catch j out of engagement with the pin h' , which allows the section of the last to swing on the pintle e , thus bringing the last into its shortened relation to be readily removed from the shoe. After the last is removed from the shoe it is brought into its lengthened relation, when the latch automatically engages with the rivet h' and the last is ready for another shoe. It will be readily seen that in the position which our latch occupies it is out of the way, cannot be accidentally tripped during the operation of making the shoe, and is not liable to be injured or get out of order.

In Fig. 7 we show a modification of our latch adapted to be used on lasts with iron bottoms. d' is the latch, pivoted at h^5 to ears or lugs carried by the iron bottom of the last. The catch j' engages with the bottom at h^6 .

We have here shown the pintle as a cylindrical bar and adapted to fit into and rest in a correspondingly-shaped groove or recess formed partly in each section, as we consider this the preferable construction; but it is obvious that the groove in one or both sections may be of other shapes in cross-section so long as it serves to receive the alining-bar for alining the sections, thereby insuring permanency and strength of position as said bar rests in this alining-groove, the said groove and bar cooperating to prevent twisting or shifting of the heel part on the fore part and also cooperating to give strength to the union, as well as assist the latter in withstanding vertical strains, such as leveling pressure, &c.

As already intimated, we do not limit our invention otherwise than as expressed in the claims, as many changes in form and arrangement may be resorted to without departing from the spirit and scope of our invention, which resides, mainly, in joining the last parts by a hinged connection, (which may be of any kind and called by any name,) said hinge carrying as a part of it a bar or rod which projects out at the opposite sides of the hinge and which when the last is in lengthened position bottom up in use gives direct support along its then upper side to the wood of the last, which overlaps it between said bar or rod and the bottom of the last.

Having described our invention, what we claim, and desire to secure by Letters Patent, is—

1. The combination, in a last transversely divided into a toe-section and a heel-section, of means connecting said sections so as to allow a relative movement of the sections to shorten the last, said connecting means intermediate its ends carrying an alining-bar between the adjacent ends of said sections and extending some distance laterally from said connecting means, said sections below said bar abutting against each other and bearing directly on said bar when the last is in length-

ened or operative position, for keeping the parts in alinement and strengthening the last in use.

2. The combination, in a last transversely divided into a toe-section and a heel-section, each section having a groove across its face, of an alining-bar fitting said groove, and a hinge or union connecting said sections to turn on each other, said alining-bar being carried by said hinge or union and extending beyond the same on each side thereof to hold the sections in alinement and brace the union.

3. The combination, in a last transversely divided into a toe-section and a heel-section, each section having a groove across its face, of a hinge or union occupying a vertical position in said last and secured within said respective sections for maintaining them in proper position to swing relatively to each other, said union carrying an alining-bar extending rigidly out therefrom and perpendicularly thereto on the opposite sides thereof into said groove for cooperating with the groove when the last is in lengthened position in giving bracing rigidity and strength and in preventing twisting or displacement of the sections.

4. A last divided transversely by lines of cut forming an open space at the top and abutting surfaces below said open space, a transversely-bending union having its ends anchored in the fore and heel parts respectively and carrying a pintle circular in cross-section and extending transversely beyond the vertical walls of said union and a circular transverse hole in the last at the bottom of said open space, of a diameter equal to the diameter of said pintle, the lines of cut forming the open space when extended intersecting at a point below the periphery of said hole, whereby said pintle is entirely embedded in the wood of the last except a small portion at the top.

5. The combination, in a last transversely divided into a toe-section and a heel-section, each section having a groove across its face, of a hinge-eye secured to each of said sections in a line with said groove, and a pintle to fit said groove and passing through said hinge-eyes, said pintle extending in said groove beyond said hinge-eyes to hold the sections in alinement, the parts together forming a hinge.

6. The combination, in a last transversely divided into a toe-section and a heel-section, each section containing a groove across its face, of a rearwardly-projecting plate fastened to the toe-section, and a forwardly-projecting plate fastened to the heel-section, a bar to fit said groove and passing through the said plates, said plates being in a plane substantially at right angles to the axis of said bar, said plates holding the sections and bar in contact, the sections, bar and plates together serving as a hinge.

7. The combination, in a last transversely

divided into a toe-section and a heel-section, each section containing across its face a groove, of a bar to fit said groove, plates secured to the sections and connected with said bar to hold the said bar and sections in contact, the plates and bar together serving as a hinge, and a latch pivoted to one of said plates and adapted to connect with the plate in the other section to hold the said sections in their lengthened relation.

8. In a hinged last, transversely divided into a toe-section and a heel-section, a rigid latch fastened to one section having a catch to automatically and positively engage the other section, one of the sections being provided with an opening through which a tool may be introduced to disengage the latch.

9. In a hinged last, transversely divided into a toe-section and heel-section, a locking device for locking the parts of the last in extended position, said last having a spindle-socket in its heel part, and said locking device extending into the bottom of said spindle-socket and being operable by a downward movement of an unlocking-tool in said spindle-socket.

10. In a hinged last, transversely divided into a toe-section and a heel-section, a connection for joining said sections together, said connection being provided with means for locking the two sections of the last in extended position, and a hole extending into said heel-section to receive a tool for operating said lock.

11. The combination, with a last trans-

versely divided into a toe-section and a heel-section and hinged together, of a latch pivoted to one section and having a catch to engage the other section to lock the sections in lengthened relation, one end of said latch extending into the spindle-socket of the last and adapted to be acted on to disengage the catch from the said last-section.

12. The combination, of a last transversely divided into a toe-section and a heel-section and hinged together, the heel-section containing a spindle-socket with a reduced lower portion, and a latch pivoted to one section having one end adapted to engage the other section, the other end of said latch extending into the reduced portion of the spindle-socket.

13. The combination, in a last transversely divided into a toe-section and a heel-section and hinged together, of a latch pivoted to one section, one end of which is adapted to engage the other section, the other end of said latch extending into the spindle-socket, and a spring tending to keep the latch in position to hold the sections in their extended relation.

In testimony whereof we have signed our names to this specification, in the presence of two subscribing witnesses, this 15th day of March, A. D. 1898.

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WALTER E. TRUFANT.

Witnesses:

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ALLSTON D. GURNEY.