

**Feb. 28, 1939.**

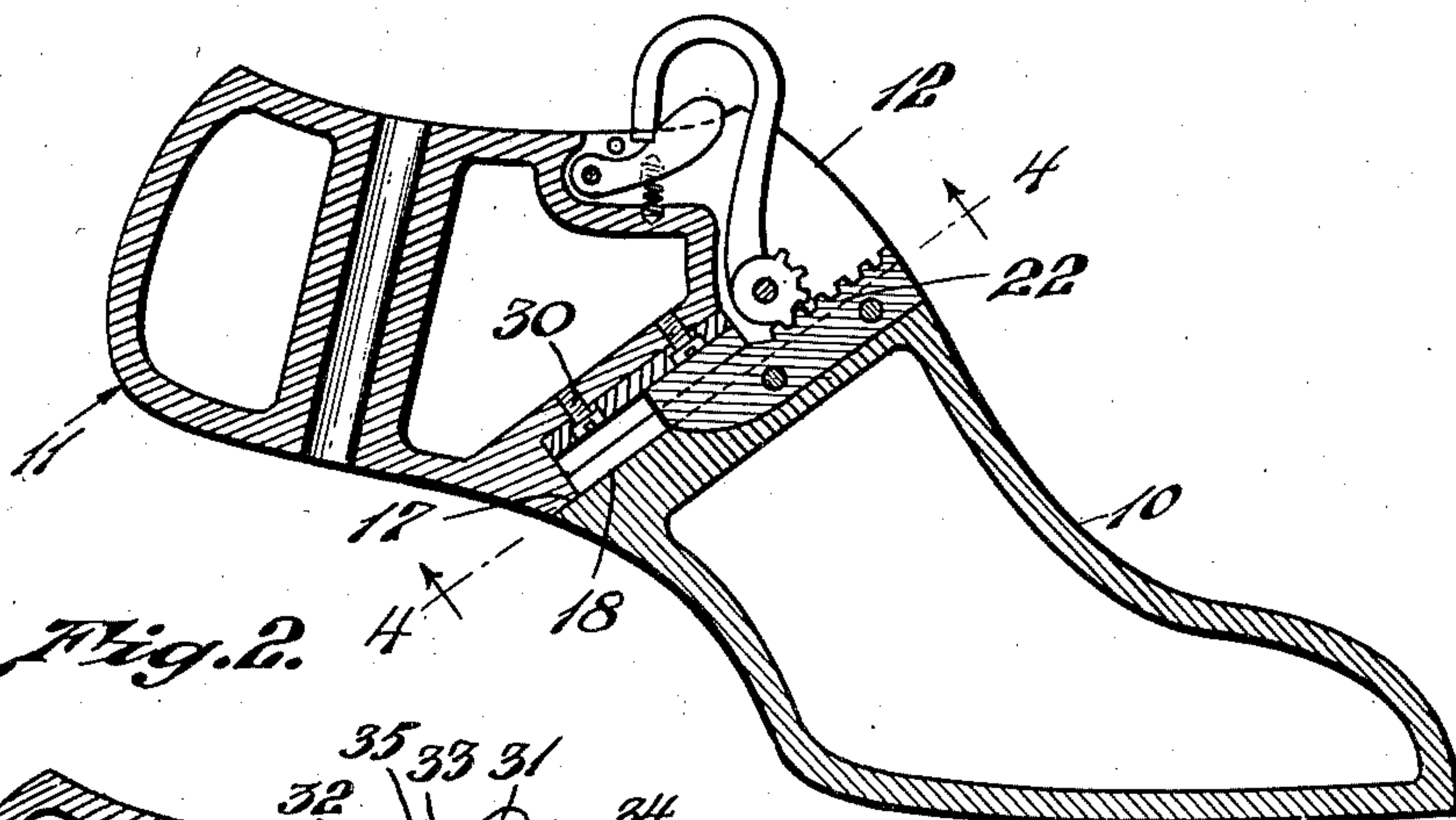
J. H. STONE

**2,148,512**

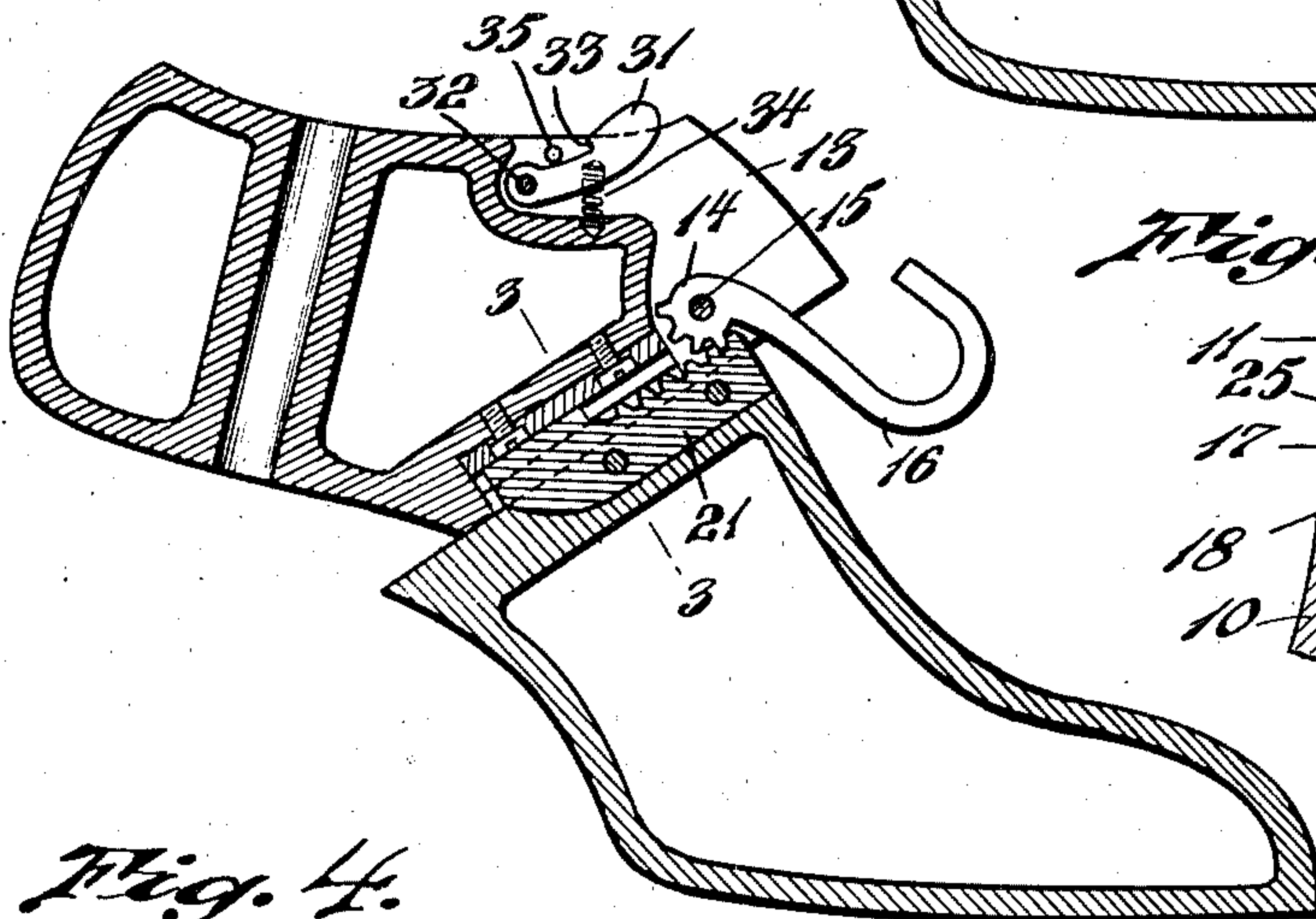
SHOE LAST

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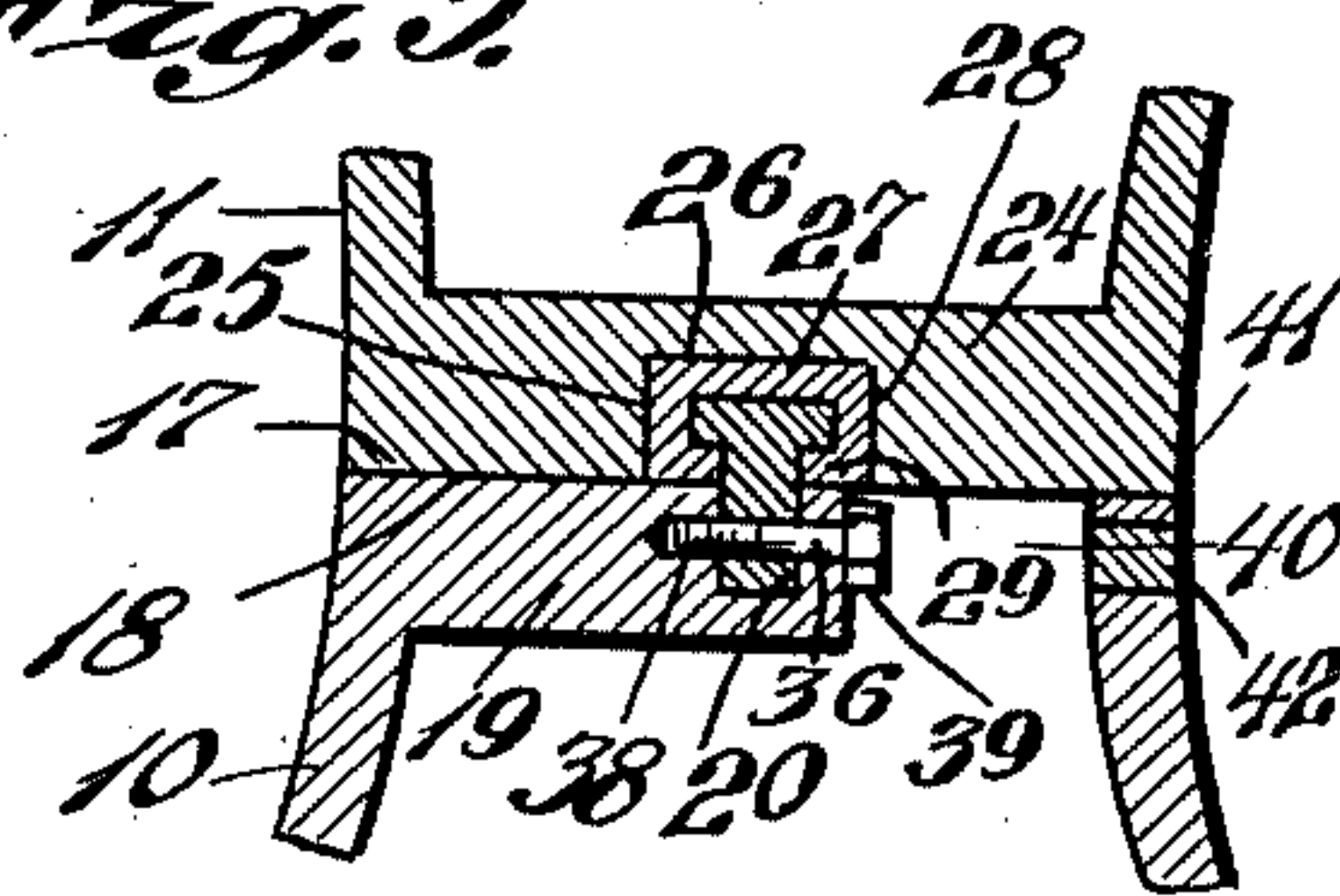
*Fig. 1.*



*Fig. 2.*



*Fig. 3.*



*Fig. 4.*

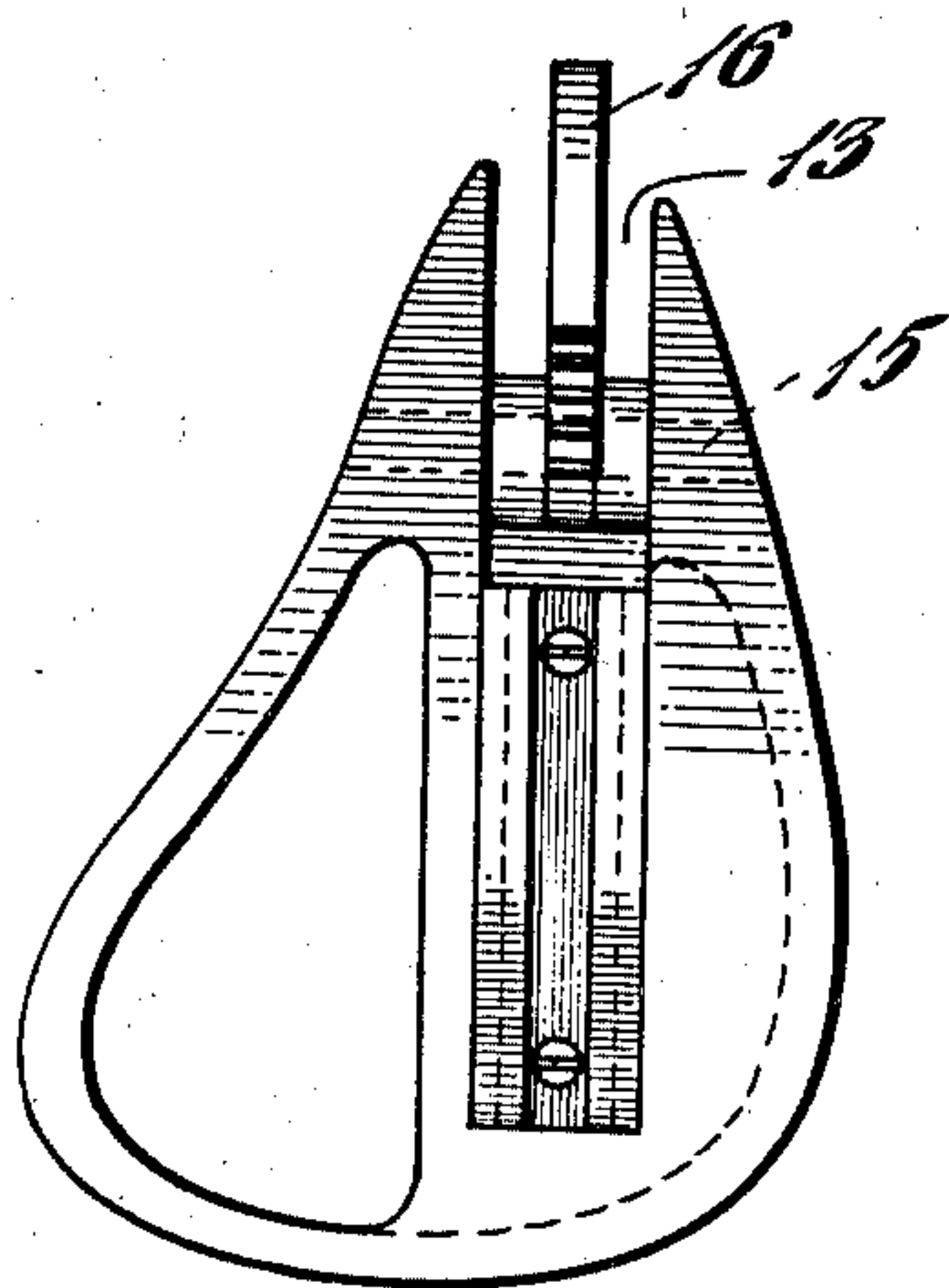
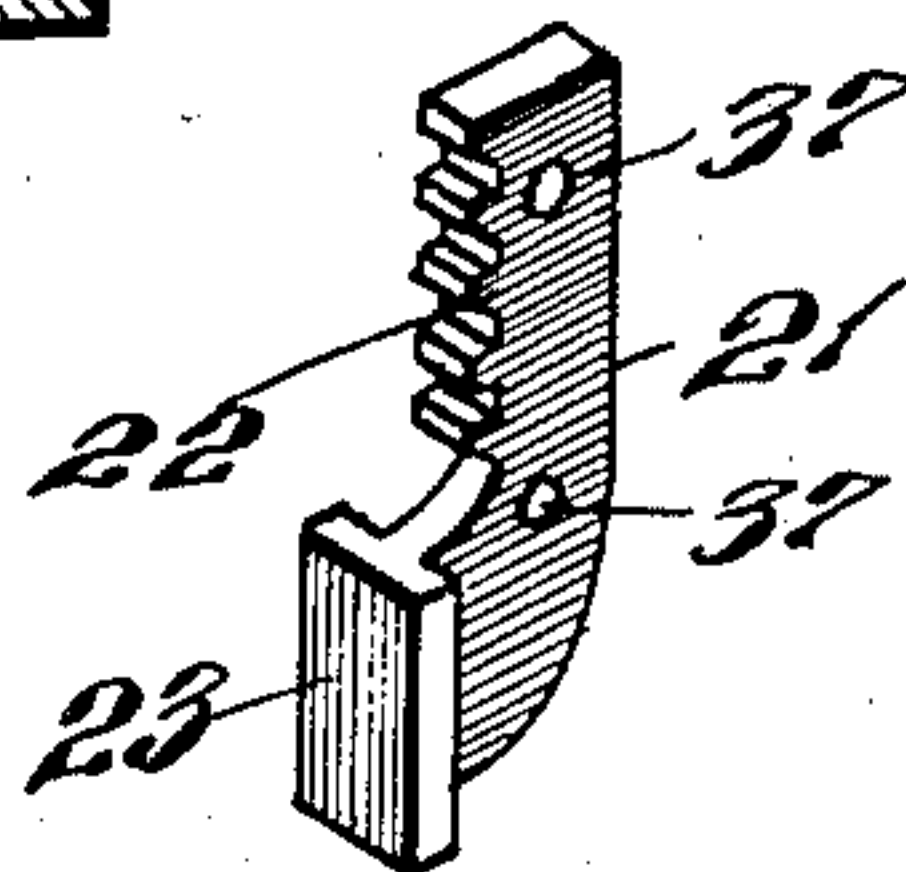


Fig. 5.



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## UNITED STATES PATENT OFFICE

2,148,512

## SHOE LAST

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13 Claims. (Cl. 12—135)

This invention relates to a shoe last and has for one of its objects a simple and efficient means for manipulating the last to remove it from the shoe after the shoe has been assembled thereon.

Another object of the invention is the provision of a mechanical means whereby the effective manual power may be increased so that the operator may easily effect a manipulation of the last.

A more specific object of the invention is the provision of a last having relatively sliding parts with an accessible means for causing these parts to slide one on the other for removing the last from the shoe.

A still further and more specific object of the invention is the provision of a rack on one part of the last and a gear operated by a long lever or handle on the other part of the last and located in the cone portion thereof, so that the handle may be readily accessible for movement to cause a sliding of the two parts of the last one on the other for removing the last from the shoe.

A further object of the invention is the provision of a rack part which may be readily removed for replacement or repair.

With these and other objects in view, the invention consists of certain novel features of construction, as will be more fully described, and particularly pointed out in the appended claims.

In the accompanying drawing:

Fig. 1 is a sectional view of the last with its movable parts located in working position.

Fig. 2 is a view similar to Fig. 1 showing the last parts relatively moved by manipulation of the mechanical contrivance for operating it.

Fig. 3 is a section view on line 3—3 of Fig. 2.

Fig. 4 is a section view on line 4—4 of Fig. 1.

Fig. 5 is a perspective view of the rack portion which is fixed to one part of the last.

Shoe lasts which have heretofore been used have largely been of wood with the fore part and heel part of the last hinged together so that when the parts are moved about the hinge the last may be more readily removed from the shoe after it has been assembled about the last. Other mechanical contrivances for effecting a removal of the last from the shoe have been had, usually requiring tools or some handle insertable into the last for operating the mechanical contrivance. Metal lasts are being used to some extent in shoes particularly in cemented shoes, and I have utilized a metal last, although of a hollow structure, which affords the required strength of support for mounting a manipulatable part of a mechanical contrivance in the cone of the last

where it is readily accessible and I have utilized a metal insert or part in the other portion of the last which may cooperate with the mechanical contrivance in the cone of the last for effecting a relative movement or a contraction in size for removing the last from the shoe. It will, of course, be realized that this last may be used for nailed shoes where suitable means for receiving the nails are provided, and the following is a more detailed description of the present embodiment of this invention, illustrating the preferred means by which these advantageous results may be accomplished.

With reference to the drawing, 10 designates the fore part of the last and 11 the heel part of the last. These are each shown as of a hollow cast-metal construction, and by suitable core holes making the inside of the last accessible for purposes as will presently appear. The cone part 12 of the last is carried by the heel part 11 and is suitably slotted as at 13 to receive the gear 14 which is pivoted on a pin 15 passing through the opposite walls of the slot.

A handle 16 is fixed to this gear 14 and may be swung in the slot about the pivot pin 15 as a center. When the handle is so located as to cause the parts to be in their working position the handle is largely housed within the slot 13, there being but a slight extension suitable to be engaged for its manipulation. The engaging surfaces between the heel part and the fore part of the last are represented as at 17 and 18, which are generally in the same plane and are smooth to contact and slide one on the other.

A skeleton wall portion 19 provides a large part of this surface 18 and there is provided in this wall a groove 20 which extends from the upper portion of the fore part 10 inwardly for a length less than the length of the wall 19. This groove 20 receives a guide member 21 which snugly fits in the groove 20 and has a rack portion 22 projecting outwardly beyond this groove, and also an undercut portion 23 which may be of dovetail or T shaped cross section as shown extending outwardly beyond this groove and beyond the face 18 of the juncture between the parts 10 and 11. The member 21 is removably held in the slot 20 by bolts 36 passing through openings 37 in the member and threaded into the wall 19 at 38 which is suitably tapped to receive these bolts. The head 39 of the bolt is accessible through the core opening 40 in the fore part of the last. The hole in wall 19 for the bolt 36 is formed by drilling through the side of the last as at 41 which is afterward plugged as at 42.



In the heel part 11 the skeleton wall portion 24 is provided with a groove 25 which receives a channel member 26 having a bottom wall 27, side walls 28, and inturned lips 29, thus forming the complemental part of the T shaped head 23 and receiving this head and providing a sliding connection between the fore part 10 and heel part 11 of the last. This channel 26 is held in place in the groove 25 by suitably threaded members 30, engaging the wall 24 of the heel part of the last. This channel 25 extends but a portion of the length of the wall and only sufficiently to permit of the desired movement. Thus there is no showing of the channel part or its insert at the bottom of the last.

The gear 14 meshes with the rack 22 in such position that when the handle is located as in Fig. 1 the juncture of the surfaces 17 and 18 of the last at the bottom will be flush. In this position a latch 31 pivoted as at 32 is provided with a portion 33 to engage a suitable catch in the handle and hold the handle in the position shown in Fig. 1. This holding is assisted by the spring 34 acting on the latch 31, a pin 35 limits the movement of the latch in its action with the spring about the pivot 32 so as to hold it always in a position to be engaged by catch of the handle when swung over into engagement with it.

For removing the last from the shoe the latch 31 is released and while released the handle lever swung about its pivot 15 which rotates the gear 14 meshing with its rack 22 to lift the heel part or slide it relative to the fore part of the last and lift it out of the shoe. The handle is shown in a position in Fig. 2 in which the fragmental gear engages the last tooth in the rack for effecting movement. Lesser movements, however, may be permissive of suitable contraction for effecting a removal of the last from the shoe.

The fore and heel parts of the last may be separated by removing the pin 15 and the gear 14 and sliding the fore part out of the upper side of the heel part. By reason of this arrangement different fore parts may be assembled with the same heel part for providing different size or shape lasts with a single heel part and its mechanical mechanism. The member 21 may be removed by means of the bolts 36 for repair or replaced by a similar part or variations in the particular shapes of a part such as 21 may be made without departing from the invention.

The foregoing description is directed solely towards the construction illustrated, but I desire it to be understood that I reserve the privilege of resorting to all the mechanical changes to which the device is susceptible, the invention being defined and limited only by the terms of the appended claims.

I claim:

1. A shoe last comprising a fore part and a heel part movably associated together, one part carrying the cone of the last, a gear mounted in one part of the cone of the last, a rack in the other part engageable with said gear, means to lock the gear against movement to hold the parts in fixed relation, and means for moving the gear to relatively move the last parts.

2. A shoe last comprising a fore part and a heel part movably associated together, one part carrying the cone of the last and being slotted, a gear mounted in the slot in the cone of the last, a rack in the other part engageable with said gear, and means for moving the gear to relatively move the last parts.

3. A shoe last comprising a heel part carrying

the cone of the last and a fore part slidably connected therewith, a handle pivoted in the cone of the last, a gear operable thereby and a rack on the fore part of the last engageable with said gear to slide one last part on the other.

4. A shoe last comprising a heel part carrying the cone of the last and a fore part having a dovetail connection therewith whereby there may be a relative sliding of the parts, a rack on the fore part of the last, a gear mounted in the cone of the last and meshing with said rack, and a handle accessible at all times for operating said gear.

5. A shoe last comprising a fore part and a heel part movably associated together, a handle movably mounted on one part, and means cooperating with said parts and responsive to the movement of said handle to relatively move the heel and fore parts of the last and means for locking said handle to hold the last parts in working position.

6. A shoe last having a heel part carrying the cone of the last and a fore part slidably connected therewith, a handle pivoted in the cone of the last, a gear operable thereby and a rack on the fore part of the last engageable with said gear to slide one last part on the other, and a spring lock for holding the handle in a predetermined position.

7. A shoe last comprising a fore part and a heel part movably connected together, one part carrying the cone of the last, means for releasably locking the said fore and heel parts against relative movement, a control member for said means located in the cone of the last, and a spring for urging said control member into locking position, said member being movable against the action of said spring to release said locking means.

8. A shoe last comprising a fore part and a heel part movably connected together, one part being of metal and carrying the cone of the last, means for releasably locking the said fore and heel parts against relative movement, a manually movable control member for said means located in the cone of the last, and a spring for urging said control member into locking position, said member being movable against the action of said spring to release said locking means.

9. A shoe last comprising a fore part and a heel part movably connected together, one part carrying the cone of the last, means for releasably locking the said fore and heel parts against relative movement, a permanently mounted swingable control member located in the cone of the last and connected to said locking means to release the same, and a spring for urging said control member into locking position, said member being movable against the action of said spring to release said locking means.

10. A shoe last comprising a fore part and a heel part movably connected together, one part being of metal and carrying the cone of the last, means for releasably locking the said fore and heel parts against relative movement, a permanently mounted swingable control member located in the cone of the last and connected to said locking means to release the same, and a spring for urging said control member into locking position, said member being movable against the action of said spring to release said locking means.

11. A shoe last comprising a fore part and a heel part movably associated together, a latch movably mounted on one part, a spring for urging said latch in one direction, means engaged by said latch and maintained in engagement by said spring to lock the heel and fore parts of the last



against movement, said parts being released by movement of the latch against the action of said spring, said latch having a portion positioned adjacent to the outer surface of said last for manipulation thereof.

5 12. A shoe last comprising a fore part and a heel part movably associated together, a latch swingably mounted on one part, a spring for urging said latch in one direction, means engaged by said latch and maintained in engagement by said spring to lock the heel and fore parts of the last against movement, said parts being released by movement of the latch against the action of  
10 said spring, said latch having a portion positioned

adjacent to the outer surface of the heel part for manipulation thereof.

13. A shoe last comprising a fore part and a heel part movably associated together, a latch pivotally mounted on the cone of one part, a  
5 spring for urging said latch in one direction, means engaged by said latch and maintained in engagement by said spring to lock the heel and fore parts of the last against movement, said parts being released by movement of the latch against  
10 the action of said spring, said latch having a portion positioned adjacent to the outer surface of the heel part to be readily accessible for manipulation thereof.

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