

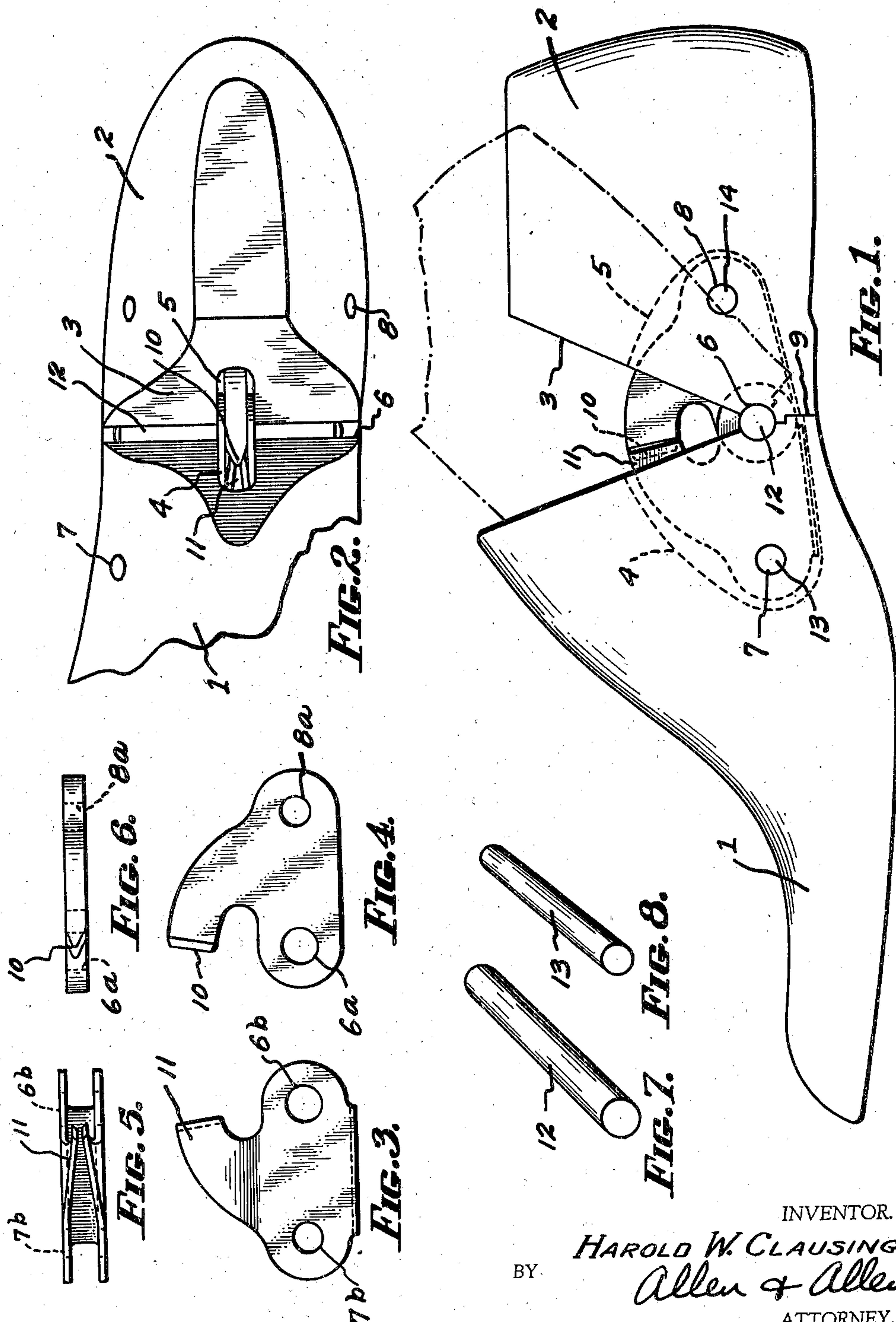
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HINGED SHOE LAST AND HINGE THEREFOR

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HINGED SHOE LAST AND HINGE THEREFOR

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My invention relates to a novel type of shoe last hinge and to the last having the hinge associated and incorporated in it.

The hinging of shoe lasts is necessary because the shoe upper is formed on the last and if the toe and heel portion of the last were not separately hinged so that they could be swiveled, one with relation to the other called "breaking", the last could not be removed from the shoe.

There are three features of last hinging which are important. First the hinge point should be, as far as the hinge construction permits, close to the bottom of the last so that the heel portion of the last describes as abrupt an arc as possible, when swinging from its extended to its contracted position.

This is so that the outwardly bulged portion of the heel will not stretch the contoured upper edge of the shoe at the back, when the last is broken down to permit the removal of the shoe therefrom.

Secondly, the tension of the spring action of the hinge should be greatest when the last is opened out to its fullest extent, in which position the shoe upper is formed about it. Some shoe lasts have a dead center position of maximum spring tension in a half opened or closed position so that when the last is fully opened out there is some play between the heel and toe portion of the last. The present invention entirely overcomes this weakness of many types of lasts as they are made today.

Lastly, the hinge, usually of metal, should be exposed, at the bottom of the last near the transverse break line between the toe and heel portion, as little as possible so that tacks may be inserted into the last without danger of splitting the wood and so that as much of the wood should be free to receive tacks as possible.

Broadly, it is the object of my invention to provide a last hinge and a last incorporating such hinge which, as far as I am advised, present a successful solution to the difficulties now experienced in connection with the three features above set forth and which, approximates a closer approach to a theoretically perfectly hinged last than has heretofore been possible with former constructions. The mechanical principle involved is in a way similar to that of a knife type electric switch.

The above objects and other objects such as inexpensiveness of construction, ease of installation, and permanence and durability, I accomplish by that certain combination and arrangement of parts of which I have shown a preferred modification.

Referring to the drawing:

Figure 1 is a side elevation of a shoe last incorporating my invention.

Figure 2 is a plan view of the last.

Figures 3 and 4 are respectively side elevations of the toe portion of the hinge and the heel portion.

Figures 5 and 6 are respectively plan views of the toe and heel portions of the hinge shown in side elevation in Figures 3 and 4.

Figure 7 is a perspective view of the hinge pin.

Figure 8 is a perspective view of the pin for securing the attachment portions of the hinge to the toe and heel portion of the last.

Shoe lasts are ordinarily formed on a last lathe and the operations which make the last ready for use consist in cutting away laterally a sector shaped portion from the heel and boring openings for the hinge pintle and for the pins which secure the attaching portions of the hinge to the toe and heel portions of the last. Lengthwise slots are also provided for accommodating the hinge.

In the last illustrated, the toe portion is indicated at 1 and the heel portion at 2. The heel portion is cut away transversely as indicated at 3. A slot 4 is formed in the toe portion and a slot 5 in the heel portion to accommodate the hinge. The hole 6 is bored at the break line before the heel and fore parts are severed one from the other and holes 7 and 8 are bored for attaching the hinge to the toe and heel portion of the last.

It is conventional practice to have the break line between the axis of the hinge and the bottom of the last cut on a zigzag as indicated at 9. It will be noted, however, that the spaced break lines are only slightly more than $\frac{1}{16}$ inch apart which decreases the area of the last bottom where the insertion of tacks is likely to split the wood.

In installing my hinges in the last it will be apparent that the axis of the hinge is close to the last bottom so that the arc of swing of the heel portion of the last is quite abrupt. In my preferred modification the axis of the pintle is only one half inch from the farthest removed bottom surface of the last. This permits a much sharper break than where the axis of the hinge is from $\frac{3}{4}$ inch to one inch removed from the bottom surface of the last.

The hinge is formed of two pieces of metal, that secured in the heel portion of the last being a flat piece of metal formed with apertures 6a, 3a for receiving the hinge pintle and the attaching stud. The upper portion of the hinge which is secured to the heel is curved arcuately ending in a sharpened edge 10 or tongue.

The hinge part which is secured in the toe portion of the last is formed from a flat blank of metal bent medially forming an open channel with spaced sides. The sides have registering openings 6b, 7b and the spaced sides extend upwardly and are inwardly bowed as indicated at 11. The lips of the hinge are so spaced that they will be spread apart slightly when the edge 10 is received between them. As indicated in Figure 2 the release of the sharpened edge 10 occurs at the position when the last is spread apart at its fullest extent. That is to say, at the instant the last parts reach their extreme extended position the two inwardly bowed ears shown at 11 bend inwardly along the side faces of the edge 10 of the tongue and lock the last in its extended position.

The hinge pintle 12 may be secured in position after the hinge studs 13, 14 are secured in position in the last toe and heel parts or any other desirable plan of assembly may be used. There is no necessity of having the hinge under tension at the time of assembly as when other types of hinges are used.

It will be observed that a last incorporating my hinge construction will have a fast break, it will be tensioned when fully extended and the bottom of the last will be free and open for receiving the tacks necessary in shoe building where a last is employed.

While I have shown that part of the hinge having the tongue as secured in the heel portion of the last and that part of the hinge having the tensioned receiving lips as secured to the toe portion of the last it will be obvious that these parts may be interchangeable and the tongue member may be mounted in the toe part of the last.

It will be understood also that the invention may be applied to types of hinged lasts other than that illustrated and described herein, such as that type in which male and female trunnions are formed of the material of the last itself to supplant the metallic hinge pintle 12.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:—

1. A hinge for a last comprising a member having a tongue, a cooperating member comprising a channeled member having resiliently tensioned lips for receiving said tongue and means for

securing said hinge to the heel and toe portions of a shoe last.

2. In a last having a heel and fore part hinged one upon the other, a hinge mechanism comprising a pair of interengaging last locking members secured respectively in said fore and heel parts and having a common pivot point at the hinge axis, spring fingers on one of said locking members, a tongue on the other of said locking members received between said fingers when the last parts are contracted, said fingers acting forcibly to eject said tongue from between said fingers at the instant the last parts assume their extreme extended position, thereby to lock the last in extended position.

3. In a last having a fore and heel part hinged one upon the other, a hinge mechanism comprising a pair of spring fingers upon one of said last parts, a co-acting tongue member secured upon the other of said parts, said tongue moving between said fingers when the last is moved into contracted position, said spring fingers acting when the last parts reach their extended position to lock said tongue against relative movement with the said fingers thereby to lock the last in extended position.

4. In a shoe last having a toe and heel part hinged one upon the other, a hinge mechanism comprising a pair of interengaging locking members each secured upon one of the last parts and pivoted together at the hinge axis closely adjacent the bottom of the last, a tongue on one of said locking members having a wedge shaped face, a pair of spring fingers on the other locking member between which said tongue is received when the last is contracted, said fingers springing into position with their outer ends against said wedge shaped face on said tongue when the last is extended, thereby locking the last with its parts in extended relation.

5. In a shoe last having a fore part and a heel part hinged together, a hinge pintle situated closely adjacent the last bottom, the hinge mechanism associated with said pintle comprising a member having a tongue and a co-operating member having spaced lips for embracing said tongue, said lips being tensioned to co-act with said tongue to lock the last parts in their extended relation.

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