Oct. 2, 1928. 1,685,783

W. A. KRENTLER

LAST

Filed Sept. 24, 1927

FIG. 1.

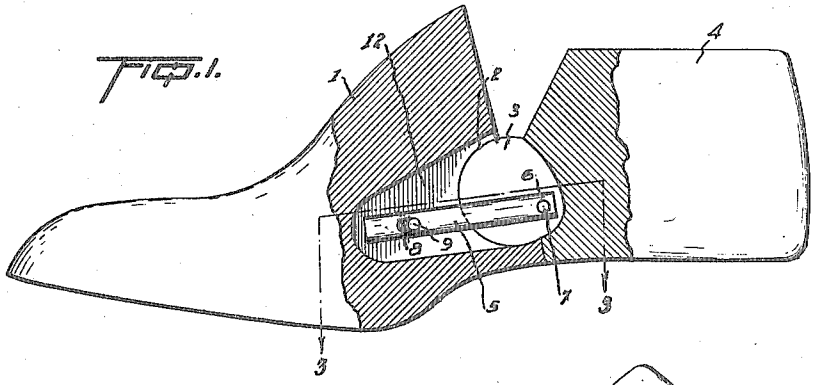
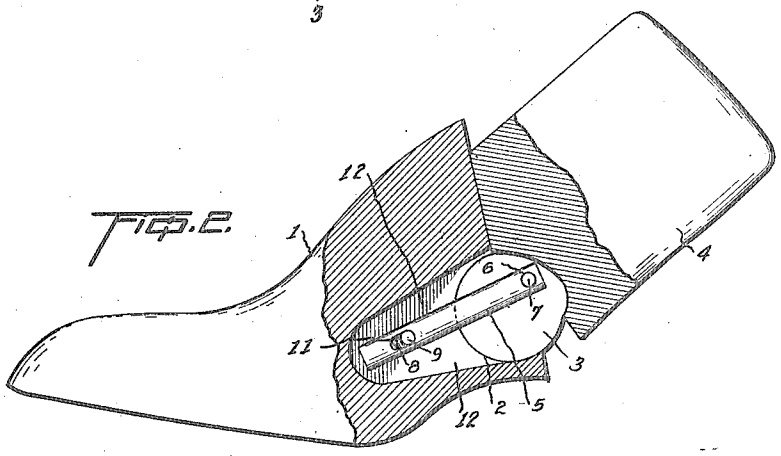


FIG. 2.



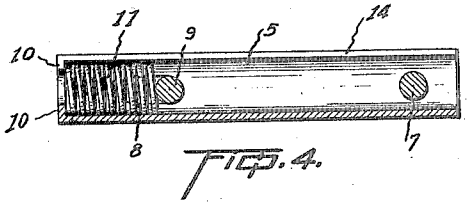


FIG. 4.

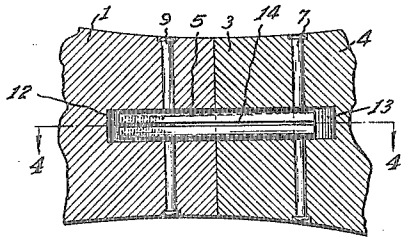


FIG. 3.

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UNITED STATES PATENT OFFICE.

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LAST.

Application filed September 24, 1927. Serial No. 221,830.

This invention relates to a shoe last and more particularly to a hinge construction for lasts wherein the heel part and the toe part may be relatively turned to collapse the last for its insertion and withdrawal from a shoe.

An object of the invention is to provide a device for the purpose having a minimum number of parts of simple construction, thereby reducing the cost of manufacture to a minimum. It is also an object to provide a pivotal connecting device embodying yielding means arranged to exert a force tending to hold the last parts in contact with each other at all times, thus providing a take up for wear and holding the parts rigidly together against relative lateral movement. It is also an object to provide a connecting device, the construction of which is such as to facilitate the assembly of the device within the last and when so assembled is concealed within the last parts and provides a very strong connection therebetween adapted to effectually resist the strains to which the last is subjected during the leveling, heeling and truing operations in the manufacture of shoes by present day methods. It is also an object to secure the several advantages inherent in the particular construction, all as hereinafter more fully set forth.

With the above and other ends in view the invention consists in providing a single connecting member arranged to house a coil spring, with pivot members passing through said connecting member and into the last parts and with the spring acting upon one of said pivot members to move the connecting member longitudinally and exert a force tending to move the pivot members toward each other and hold the last parts in firm seating contact, one upon the other. The invention further consists in the novel construction and arrangement of the connecting device, all as hereinafter more fully described and more particularly pointed out in the appended claims, reference being had to the accompanying drawing in which—

Figure 1 is a side elevation of a last with portions broken away and in section to show a connecting device illustrative of the present invention in operative position relative to the last parts, which last parts are shown in extended position;

Fig. 2 is a view similar to that of Fig. 1 showing the last parts in contracted or folded position;

Fig. 3 is a horizontal section substantially upon the line 3—3 of Fig. 1; and

Fig. 4 is a sectional detail of the connecting device detached.

In the drawing a particular construction of last is illustrated but it will be understood that the connecting device to which the present invention relates, may be applied to other forms of hinged lasts, the form shown being of an old and well known construction embodying a toe portion 1 which is formed at its rear end with a socket 2 to receive a knuckle portion 3 formed integral with the heel portion 4 of the last. The knuckle 3 is adapted to seat within the socket 2 and turn freely therein, but the device is devoid of a central pivot for positively preventing the separation of the heel and toe portions of the last. The connecting device which comprises a tubular member 5 has a transverse opening 6 at one end to receive a pivot pin 7 and a longitudinal slot 8 intermediate its ends through which slot a second pivot pin 9 extends, said pivot pin 9, in the assembly of the last, being inserted in an opening in the toe portion of the last well forward of the socket 2 to pivotally connect the member 5 to the toe portion of the last, and the pivot pin 7 engages a transverse opening in the heel portion of the last well to the rear of the knuckle 3 and thus pivotally connects this end of the member 5 to the heel portion of the last.

The wall of the tube 5 is formed inwardly at one end of the tube, thus forming an end flange 10 at the end of the tube and this flange provides a seat for one end of a coil spring 11 inserted in the tube between said seat and the pivot pin 9. When the parts are assembled this spring is put under compression by the insertion of the pivot pin 9 through the slots 8 in the tube and thus said spring normally exerts a force tending to hold the tube moved endwise with the pin 9 engaged with the end of the slot, and when the connecting device is assembled in the last, this spring will therefore exert a force tending to pull the heel portion of the last toward the toe portion and hold the knuckle firmly to its seat 2 in the toe portion.

The openings in the heel and toe portions of the last to receive the pins 7 and 9, are so located relative to the axis of turning movement of the knuckle 3, that when the last is extended with the heel portion in the position

shown in Fig. 1, the connecting device will lie below said axis of the knuckle and when the heel portion is turned to the position shown in Fig. 2, said connecting device will be swung thereby to a position above said axis of the knuckle, and therefore in swinging from one position to the other the distance between the centers of the pins 7 and 9 increases as the device swings past the axis of the knuckle, and such increase is provided for by the slots 8 in the tube 5 and by the yielding action of the spring 11.

The spring 11 being under compression at all times will hold the knuckle of the heel portion firmly seated in its socket on the toe portion and will exert a force to yieldingly hold the heel part in either of its extended or contracted positions and with sufficient force to prevent collapsing of the last during the pulling over and lasting operations.

The toe portion of the last is provided with a forwardly extending cut or recess 12 to receive the forward end of the connecting device and permit the swinging movement thereof, and the heel portion of the last is formed with a cut or recess 13 extending transversely of the knuckle 3 and in alignment with the recess 12 to receive the rear end of the connecting device. These cuts or recesses are located midway of the width of the last and extend well into the body of each last part, so that the pivot pins 7 and 9 are located within the solid portion of the body where they will not tend to weaken the same and cause the last parts to split or crack under the strains to which the last is subjected. The width of each of the recesses 12 and 13 transversely of the last is substantially equal to the diameter of the tube 5 and therefore said tube is guided in its swinging movement by the side walls of the recesses, and the tube therefore strengthens and stiffens the hinge of the last and prevents relative lateral movement between the toe and heel portions.

As shown in the drawings, the tube 5 is preferably formed from a strip of sheet metal which is rolled up into tubular form with the edges of the sheet in substantially abutting relation, forming a seam or longitudinal opening 14 extending the full length of the tube. The flange 10 may be formed at the end of this tube in any suitable manner as by forming inwardly the end of the wall. This construction provides a connecting device which is extremely simple and is very cheap to manufacture. Further the tube forms a housing for the spring which may be inserted in the tube before the connecting device is connected to the last parts and therefore the assembly is greatly facilitated.

Obviously the form of the connecting member 5 may be changed to suit the conditions of use, and this member may be of tubular stock or may be formed up in any suitable manner to give the desired strength and rigidity, the tubular form being preferable however as this form is very strong and rigid and at the same time light in weight and provides a housing for the spring 11. Such changes as fall within the scope of the appended claims are contemplated, and I do not therefore wish to limit myself to the particular construction shown.

Having thus fully described my invention, what I claim is:—

1. A connecting device for hinged lasts comprising a single non-flexible member having an opening adjacent one end to receive a pivot pin and a longitudinal slot intermediate its ends to receive a second pivot pin, and yielding means for yieldingly holding said member moved longitudinally with one of said pivot pins in engagement with the inner end of the slot in the member.

2. A connecting device for hinged lasts comprising a laterally non-yielding and a longitudinally non-extensible member having an opening adjacent one end to receive a pivot pin for pivotally connecting said end to the heel portion of a last and having a longitudinal slot intermediate its ends to receive a transverse pivot pin for connecting the opposite end of said member to the toe portion of a last, and a spring seated at one end upon the toe end of said member and adapted to seat at its opposite end against the pivot pin extending through said slot, said spring exerting a force to normally hold said member with said pivot pin in engagement with the inner end of said slot and the last parts in yielding engagement with each other.

3. A connecting device for hinged lasts comprising a tubular member having a transverse opening adjacent one end to receive a pivot pin for connecting said end to a last part and having a longitudinal slot intermediate its ends to receive a transverse pivot pin for connecting the member to another last part, and a coil spring within said tubular member under compression between the toe end thereof and the pivot pin extending through said slot.

4. A connecting device for hinged lasts comprising a tubular member formed with an opening adjacent one end to receive a pivot pin and formed with longitudinal slots in its sides to receive a second pivot pin, said tubular member being also formed with an inwardly projecting end flange, and a coil spring within said tube seated at one end upon said flange and engaging at its opposite end the pivot pin within said slots, said spring being under compression.

In testimony whereof I affix my signature.

WALTER A. KRENTLER.