(No Model.) 2 Sheets—Sheet 1.

S. LEAROYD.

APPLIANCE FOR EASING BOOTS OR SHOES.

No. 588,703. Patented Aug. 24, 1897.

Fig. 5.

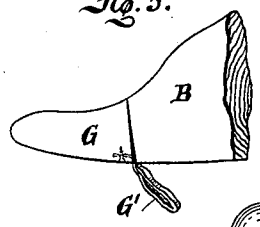


Fig. 1.

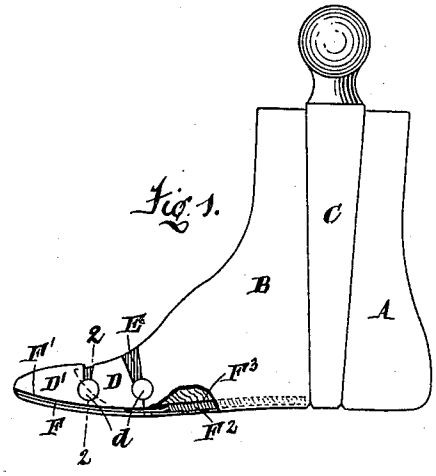


Fig. 3.

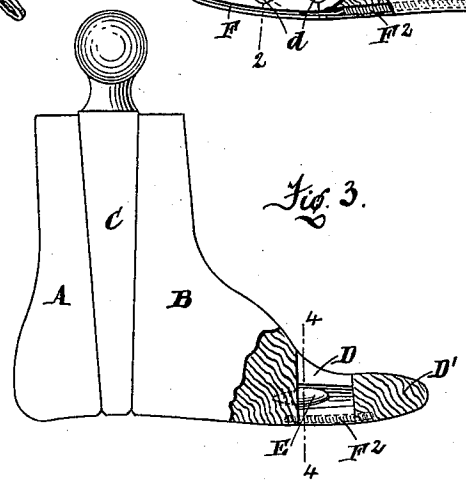


Fig. 4.

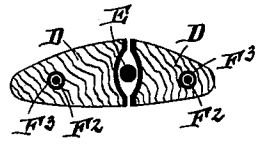
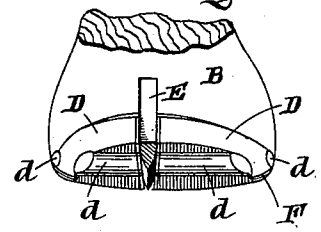


Fig. 2.



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(No Model.) 2 Sheets—Sheet 2.

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Fig. 6.

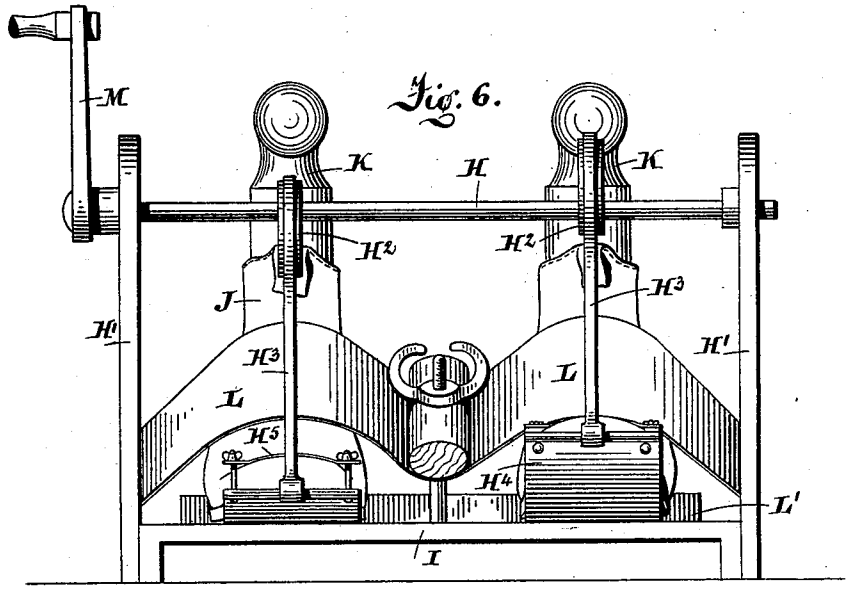
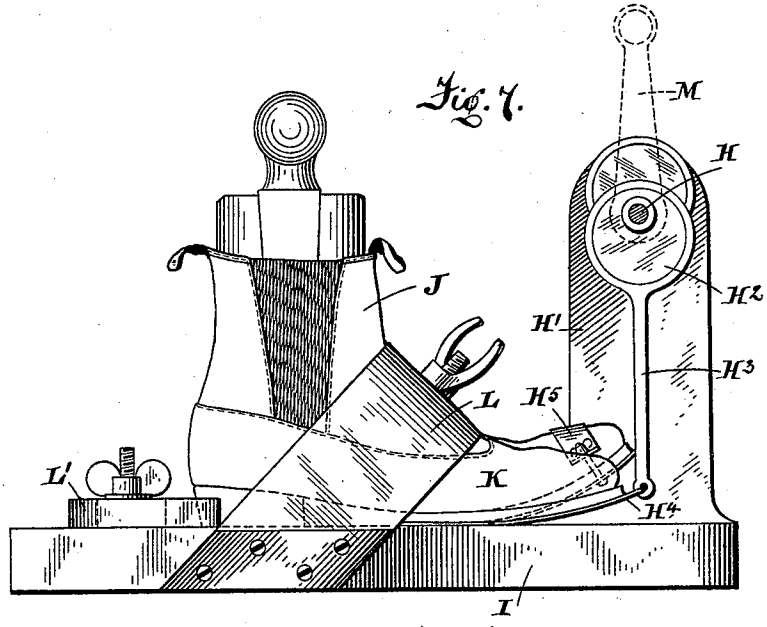


Fig. 7.



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UNITED STATES PATENT OFFICE.

SAMUEL LEAROYD, OF HUDDERSFIELD, ENGLAND.

APPLIANCE FOR EASING BOOTS OR SHOES.

SPECIFICATION forming part of Letters Patent No. 588,703, dated August 24, 1897.

Application filed November 17, 1896. Serial No. 612,453. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL LEAROYD, solicitor, a subject of the Queen of Great Britain, residing at Sherwood House, Huddersfield, in the county of York, England, have invented a new and useful Improvement in Appliances for Making New Boots or Shoes Easy and Comfortable to Wear, of which the following is a specification.

My invention relates to boots and shoes, and has for its object to provide appliances for rendering new boots and shoes easy and comfortable to wear.

Hitherto it has very often occurred that the wearer of new boots or shoes has been put to great suffering and inconvenience, which has sometimes had serious and permanent effects, owing to the fact that the boot or shoe, being stiff and not perfectly fitting the foot, requires wearing for some time before it approximates closely to the shape of the foot and conforms to the movements thereof when the wearer is walking, becoming thereby easy and comfortable.

According to my invention I construct a mechanical foot or last on which a new boot or shoe can be placed, and provide means for bending and flexing the mechanical foot so as to imitate the movements of the human foot. By these means the leather is creased, stretched, and rendered flexible where necessary, so that the boot before being worn has imparted to it the easiness and comfort in wear commonly only associated with boots and shoes which have been worn for a considerable time.

In order that my invention may be clearly understood, I will now proceed to describe the same with reference to the accompanying drawings, which illustrate by way of example various methods of carrying out my invention in practice.

Figure 1 is an elevation, partly sectional, of a last or mechanical foot constructed according to my invention. Fig. 2 is a cross-section on the line 2 2, Fig. 1. Fig. 3 is an elevation, partly sectional, illustrating a modified form of last. Fig. 4 is a section on line 4 4, Fig. 3. Fig. 5 is the elevation of the toe part of a last, illustrating another modification. Fig. 6 is a front elevation, and Fig. 7 is a side elevation, of a machine for using with lasts constructed according to my invention, part being removed.

The mechanical feet or lasts shown in the drawings are constructed of wood in the ordinary way, having a heel part A, a front portion B, and the ordinary wedge C. I have observed that the movement of the toes of the human foot when walking is practically the only movement which stretches and bends the leather of the boot. Consequently the toe portions only of my improved last are made to move.

Referring now to Figs. 1 and 2, the toe portion of the last is made in four parts, D D D′ D′, adapted to move on rounded portions *d* when the toe is to be bent upward. Between the parts D D extends a vertical wedge-shaped plate E, secured to the part B of the last. Said plate E is broader at the top than at the bottom, so that when the toe portion is bent upward the parts D D tend to separate. The parts of the toe portion are maintained in position by a wire F passing round the groove F′, formed on the outside of the parts. The ends of the wire are connected to springs, one of which is shown at Fig. 1 passing through holes or channels F^3 in the part B of the last, being finally secured toward the rear of said part, as shown. The springs F^2 cause the parts of the toe to return to the normal position after being bent upward.

In Figs. 3 and 4 a rather simpler form of mechanical foot is shown, in which the toe is formed of three parts only, D D D′, said parts being connected and maintained in position by springs F^2 passing through orifices F^3 in the parts D D and secured, as shown in Fig. 3, in the parts D′ B of the last. A conical pin E, screwed in the front part B of the last, takes the place of the wedge E in Figs. 1 and 2 and insures parts D D separating when the toe portion is bent upward.

In Fig. 5 the toe part of the last is formed of a piece of vulcanized india-rubber G, which need not be secured to the remaining portion of the last, being maintained in position by the boot or shoe. A loop G′ is provided for extracting the toe part G from the boot when required. The part G may consist of two or more pieces of india-rubber, if desired.

When using my improved mechanical feet or lasts for the purposes of stretching and rendering flexible a boot or shoe, the last is placed in the boot or shoe to be stretched and the toe portion is caused to move up and down, so as to imitate the action of the human foot in walking. By these means transverse creases are formed in the "upper" of the boot or shoe and the sole thereof rendered flexible. Moreover, owing to the action of the wedge E in separating the parts D when the toe is bent upward, the upper of the boot is also considerably stretched. In the case of a last having a toe portion of vulcanized india-rubber, as described with reference to Fig. 5, I have found that the india-rubber when bent upward also spreads laterally, so that the same effect is produced.

For use with mechanical feet or lasts constructed according to my invention, and in order to give an up-and-down motion to the toe portion thereof, I have designed a machine. (Shown in Figs. 6 and 7.) This machine is adapted to work on two boots, the right and left, at once.

H is a shaft adapted to rotate in suitable bearings in uprights H' H'. Secured to the shaft are two eccentrics H^2 H^2, with straps and connecting-rods H^3, to the other end of which are attached flexible plates H^4. The free ends of the plates H^4 are secured to a suitable base I. The boots or shoes J, having mechanical feet or lasts K of a description similar to those hereinabove described, for example, inserted therein, are secured to the base-board in position above the plates H^4 by means of the strap L and heel-piece L'. The toes of the boots may also be secured by clamps, such as H^5, to their respective plates. For the sake of clearness one of said clamps is omitted in Fig. 7. Other means of securing the boots or shoes in position on the plates H^4 may be arranged, provided that sufficient freedom is allowed from the toe portions of the lasts and boots to move upward.

The operation of the machine is as follows: When the shaft H is rotated by suitable means, such as the handle M, the eccentrics H^2 cause those parts of spring-plates H^4 underneath the toes of the boots to alternately rise and fall, thus bending up said toe portions. The rear portions of the lasts and boots are maintained stationary by the strap L. By this up-and-down motion, as hereinabove described, the upper and sole of the boot or shoe is rendered flexible and stretched where necessary.

Although it is desirable that the lasts should imitate as closely as possible the feet of the person for whose boots or shoes they are intended, accurate fitting of the last is not essential for the purpose of my invention, it being sufficient to select from a series of lasts made to stock sizes of boots and shoes that which is nearest to the size of the boots or shoes to be treated. The lasts will obviously require to be made in pairs for right and left boots and shoes.

My improved mechanical feet or lasts can be used for boot-trees, their normal position being the same as that of ordinary lasts.

Although I have hereinabove described various methods of making my improved last and also a machine for use therewith, I wish it understood that I do not confine myself to the precise mechanisn shown, as various details of the construction may be altered without departing from the nature of my invention.

What I claim is—

1. In a last, the combination of a rigid rear portion, a laterally-expansible and vertically-flexible toe portion and means for causing said toe portion to spread laterally when it is bent upward, substantially as and for the purpose specified.

2. In a last, the combination of a rigid rear portion, a toe portion consisting of sections divided longitudinally, and flexibly connected to the rear portion so as to bend vertically, and means for causing said sections to separate laterally when the toe portion is bent upward substantially as and for the purpose specified.

3. In a last, the combination of a rigid rear portion, a toe portion consisting of sections divided along the median line, and a wedge secured to the rear portion and projecting in the median line between the sections forming the toe portion, substantially as and for the purpose specified.

4. In a last, the combination of a rigid rear portion, a toe portion consisting of sections pivotally attached to the said rear portion and to each other and divided along the median line, and a wedge secured to the rear portion and projecting in the median line between the sections forming the toe portion, substantially as and for the purpose specified.

5. In a last, the combination of a rigid rear portion, a toe portion consisting of sections divided in the median line, and a conical pin secured in the rear portion and projecting in the median line between the sections forming the toe portion, substantially as described.

6. In a last the combination of a rigid rear portion, a toe portion consisting of sections divided along the median line, means for causing said sections to spread laterally when the toe portion is bent upward, and springs securing the toe portion to the rear part of the last, substantially as described.

7. In a machine for use with lasts having a flexible toe portion, the combination of means for holding the rear portion of the last rigid with means for imparting an alternate up-and-down movement to the flexible toe portion of the last, for the purpose specified.

8. In a machine for use with lasts having a flexible toe portion the combination of a base, means for securing the rear portion of the last rigidly to said base, a spring-plate

passing under the sole of the last and secured at one end of the base near the heel thereof, and means for moving the free end of said plate up and down, substantially as and for the purpose specified.

9. In a machine for use with lasts having a flexible toe portion, the combination of a base, means for securing the rear portion of the last rigidly to said base, a spring-plate passing under the sole of the last and secured to the base near the heel thereof a rod pivoted at one end to the free end of said spring-plate and connected at the other end to an eccentric and means for rotating the eccentric so as to give an up-and-down motion to the connecting-rod, substantially as and for the purpose specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

SAMUEL LEAROYD.

Witnesses:
JNO. RAMSDEN,
C. E. CRAVEN.