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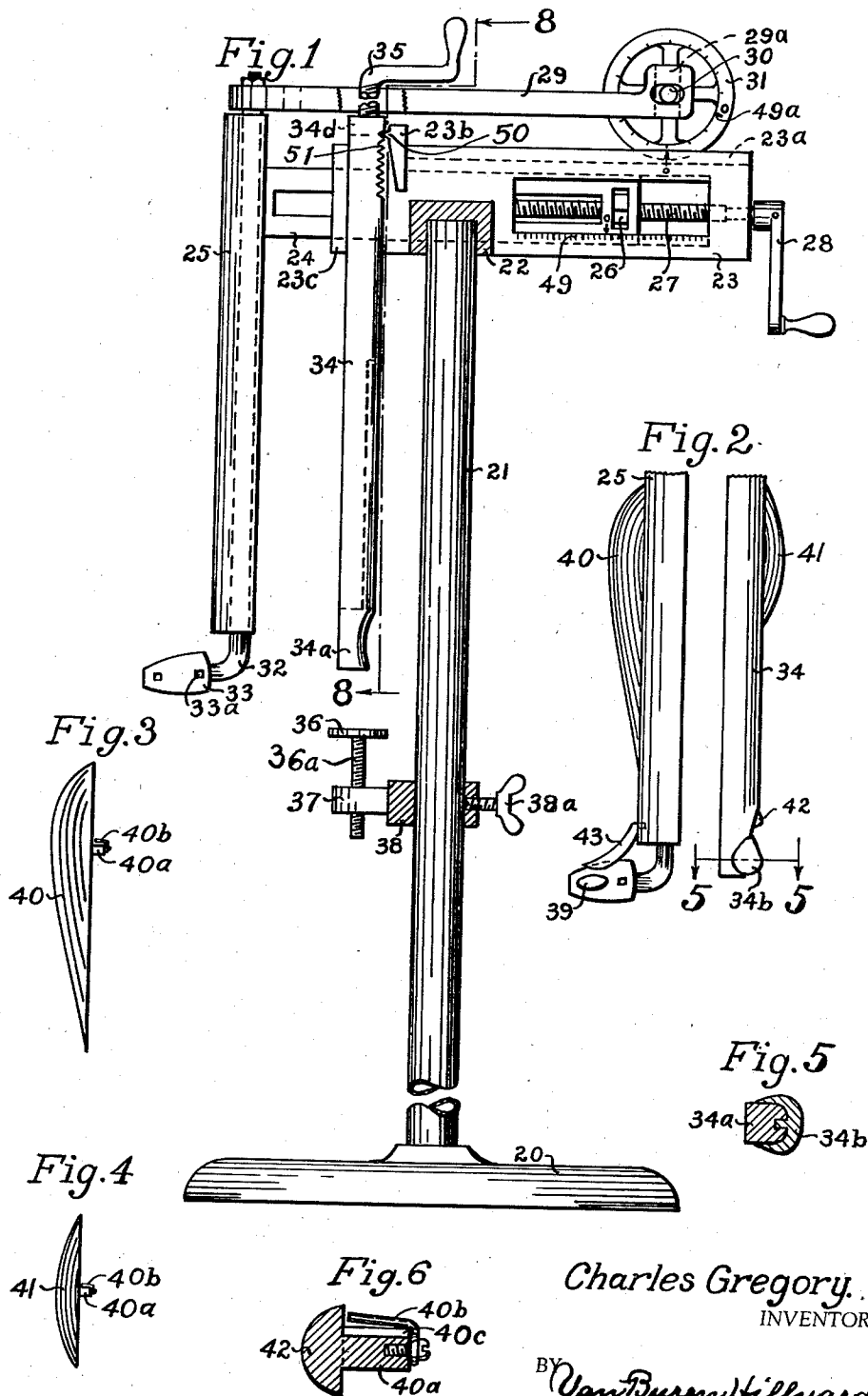
C. GREGORY

2,170,754

COMBINATION BOOT AND SHOE STRETCHING AND LENGTHENING DEVICE

Filed Dec. 15, 1936

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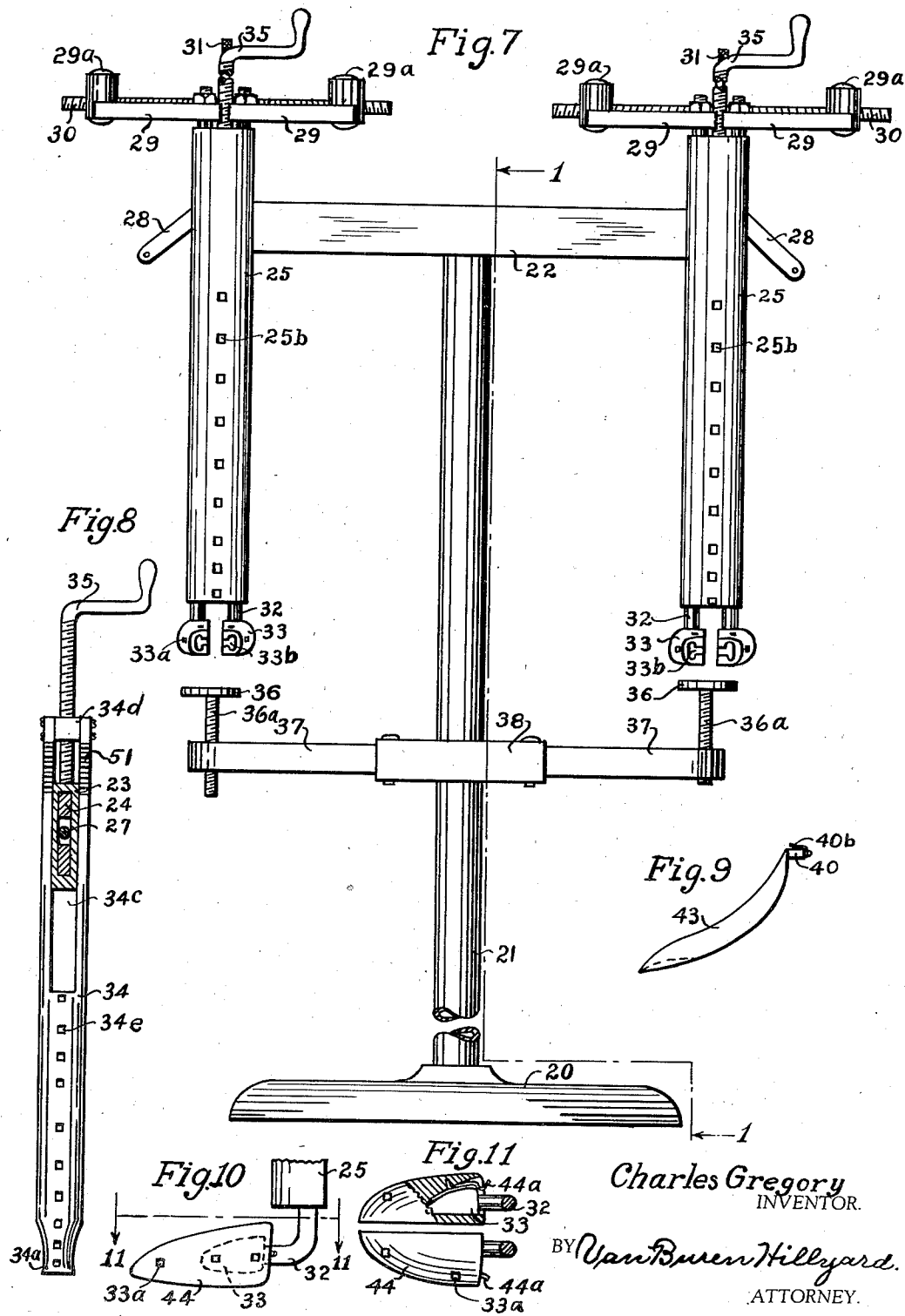
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COMBINATION BOOT AND SHOE STRETCHING AND LENGTHENING DEVICE

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Fig. 12

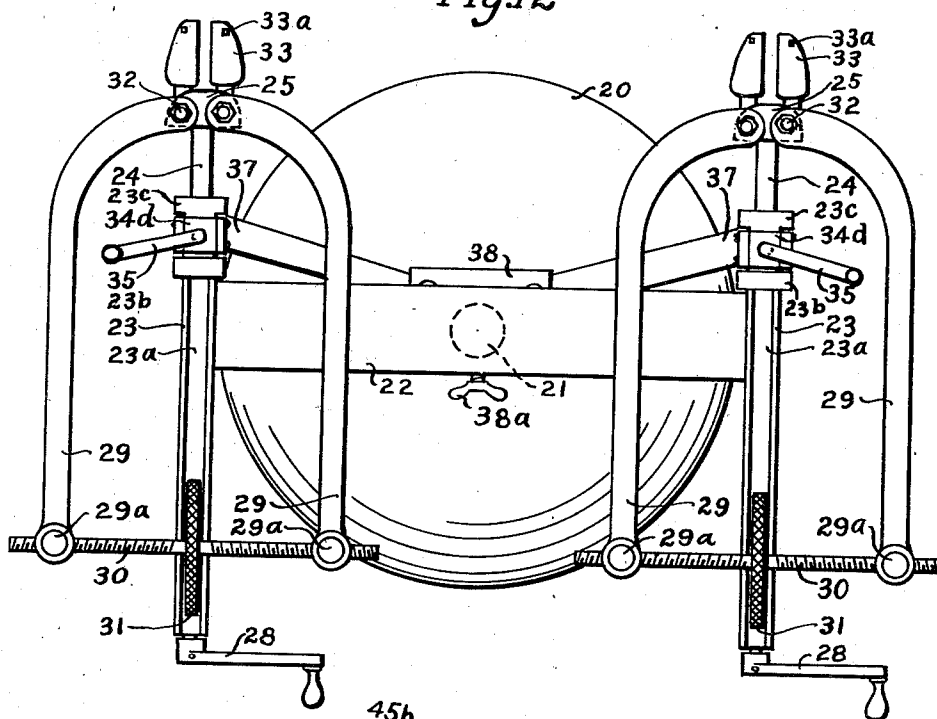


Fig. 13

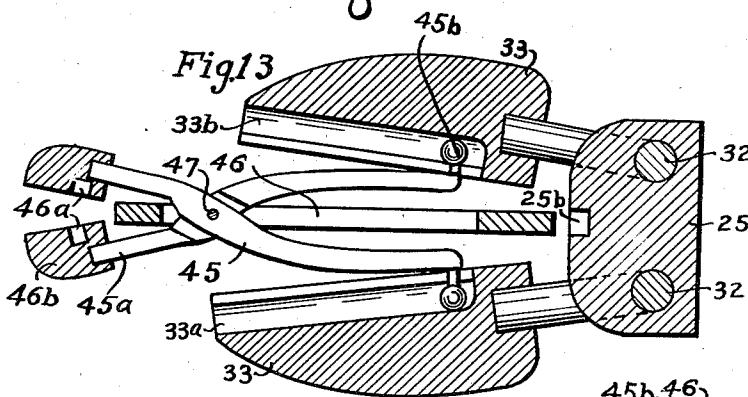
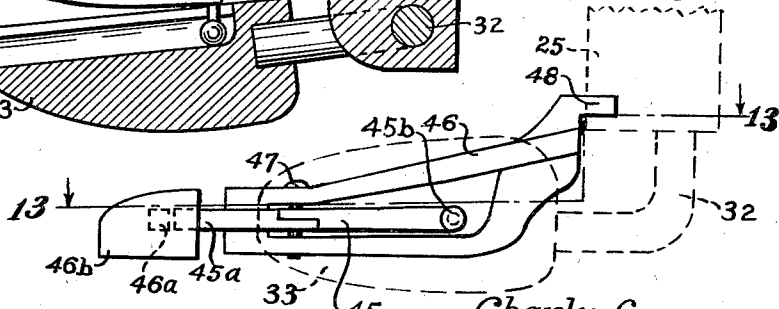


Fig. 14



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UNITED STATES PATENT OFFICE

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COMBINATION BOOT AND SHOE STRETCH-
ING AND LENGTHENING DEVICE

Charles Gregory, Amarillo, Tex.

Application December 15, 1936, Serial No. 116,006

21 Claims. (Cl. 12—128.6)

This invention relates to improvements in shoe and boot stretchers and lengtheners. Due to the normal variations in the shape of the human foot and to abnormalities, and to the various lasts upon which boots and shoes are built, it is found that many boots and shoes need to be stretched to conform to the wearer's foot and leg.

It is to be understood that hereinafter the term "shoe" is used in its most general sense to apply to any type of footwear capable of being lengthened or stretched mechanically.

This machine is designed to do any particular stretching or lengthening of a shoe or boot that is necessary and within the yieldability of the material of which the shoe or boot is made. The machine is so designed that each operation may be accomplished independently of the other operations, or several operations may be carried on at the same time. This greatly expedites the work of adjusting shoes over the practice used heretofore.

The primary object of this invention is to provide in one machine means for stretching and lengthening any or all foot parts of boots or shoes and means for stretching the legs of boots. These functions may be accomplished simultaneously or any one function may be accomplished independently of the others.

Another object of this invention is to provide a machine that will hold a boot or shoe firmly in position, regardless of the height of the heel, while any of the operations are being performed.

Still another object of the invention is to provide a machine that has removable accessory parts for stretching any particular spot or portion either in the foot of a boot or shoe or in the leg of a boot.

A further object of the invention is to provide a shoe and boot stretcher that will accommodate a variety of sizes and shapes by providing auxiliary foot and heel pieces in a variety of sizes and shapes.

A still further object of the invention is to provide a shoe and boot stretching device upon which compound leverage may be exerted in order to widen or to raise the point of a narrow toe.

While the drawings illustrate a preferred embodiment of the invention, it is to be understood that in adapting the same to meet specific needs and requirements, the design may be varied and changes in the minor details of construction resorted to within the scope of the invention as claimed without departing from the spirit thereof.

For a full understanding of the invention and the merits thereof, reference is to be had to the

following description and to the drawings hereto attached, in which like reference characters designate like parts in the several views.

In the drawings:

Figure 1 is a side elevation of an embodiment of the invention, partly in section taken on the line 1—1 of Fig. 7.

Figure 2 is a fragmentary detail view showing accessory parts as attached to the leg, to the heel and to the foot pieces, respectively, that various boot and shoe stretching operations may be accommodated.

Figure 3 is a view showing a boot leg stretching accessory.

Figure 4 is a view similar to Figure 3 showing form of boot leg shaping accessory.

Figure 5 is a section taken on the line 5—5 of Figure 2.

Figure 6 is an enlarged sectional detail view of a spot stretcher.

Figure 7 is a front elevation of the machine showing stretchers mounted thereon for right and left shoes or boots.

Figure 8 is a vertical section taken on the line 8—8 of Figure 1.

Figure 9 is an enlarged detail view of the vamp and instep stretcher.

Figure 10 is a fragmentary view showing accessory foot pieces as installed over regular foot pieces.

Figure 11 is a sectional view taken on the line 11—11 of Figure 10, with parts broken away.

Figure 12 is a top plan view of the device.

Figure 13 is a sectional view taken on the line 13—13 of Figure 14.

Figure 14 is an enlarged elevational view of the toe stretcher and lifter, the dotted line indicating its position relative to the foot and leg pieces of the stretcher.

With more detailed reference to the drawings, the numeral 20 indicates the base upon which a standard 21 is mounted. A cross arm 22 is disposed at the top of the standard 21. A body 23 is provided at each end of the cross arm 22 and receives a member 24 which is slidably mounted therein. A screw 27 is mounted in each of the bodies 23 and has a crank 28 attached thereto. A nut 26 carried by the member 24 coacts with the screw 27 to provide longitudinal adjustment. Rotation of the crank 28 causes the member 24 to slide within the body 23.

A right and left screw 30, which receives nuts 29a thereon, is mounted between the arms 29 and provides for the equal regulation of arms 29 by the turning of hand wheel 31. The hand 55

wheel 31 may be operated in connection with any other operation as it is free to move longitudinally in a channel or groove 23a in the body 23. This groove 23a prevents transverse motion of hand wheel 31 and hand wheel 31 is held in central relation with respect to arms 29 and body 23, likewise foot pieces 33 are spread equidistance from the leg member 25 during the stretching operation. The member 23b serves as a stop for hand wheel 31 thereby preventing screw 27 from disengaging nut 26, and member 23b also serves as a guide for vertically adjustable leg extension member 34 on each side of the device. The arms 29 are secured to shafts 32 either by providing a square shoulder on each shaft with a nut to hold the arm in position, or in any desired or convenient manner.

A foot piece 33 is firmly secured to each of the shafts 32 and has holes 33a therein to receive spot stretchers such as might be required to shape a shoe to a corn or bunion, as shown in Figs. 10 and 11. Leg extension 34 is vertically adjustable within the range of slot 34c by a screw member 35 coacting with threaded member 34d. The guides 23c are integral with body 23. The faces of the guides 23c that contact leg extension member 34 hold the leg extension member 34 in a vertical position while it is in operation. These guide members 23c serve to hold the leg extension member 34 in a fixed relation to the body 23. The relation of these guides 23c to the body 23 is best illustrated in Figures 1 and 12. A tongue 50 on stop 23b coacts with notches 51 on the leg extension member 34. After screw 36a is adjusted to proper position and leg extension member 34 is lowered into the rear portion of the shoe that is to be stretched, the pieces 33 being in the toe portion thereof, pressure may be applied by means of hand wheel 31 to accomplish the desired stretching. During this operation there is a tendency on the part of leg extension member 34 to slip up into the heel counter of the shoe. To counteract this tendency, notches 51 on leg extension member 34 are provided to coact with tongue 50 on stop 23b, thus the member 34 is held rigid in the heel of the shoe. A loose fit is provided between guide member 23c and stop 23b so that by swinging leg extension member 34 to the rear, tongue 50 disengages notches 51 and leg extension member 34 is then free to move upward. A forward movement of leg extension member 34 automatically causes the engagement of tongue 50 with notches 51. Raising the leg extension member 34 permits the foot pieces 33 to be easily inserted into the boot or shoe. After insertion of the foot pieces 33 into the shoe or boot, the leg member 34, which has the lower end thereof shaped to fit certain types of heel portions and designated as 34a, is lowered into the shoe or boot to the proper position by a screw 35 to allow the shoe to take the same position as it would if worn on the human foot. Counters that do not conform to the heel member 34a may be stretched to the desired shape by inserting accessory heel pieces 34b. A heel rest plate 36 is adjustable by screw 36a against the bottom of the shoe heel, thus the shoe heel is held in desired position while the stretching operation is being performed. While the shoe or boot is being placed on the stretcher, the heel rest plate 36 is swung out of the way by swinging arm 37 on its pivot. The shoe or boot being properly placed, the heel rest plate 36 is moved back to position and adjusted to hold the shoe or boot in adjusted position while the stretching

or lengthening operation is being performed. The arms 37 are horizontally pivoted on a member 38 which is slidably mounted upon the standard 21. A set screw 38a holds the slidable member 38 in the desired adjusted position. The particular advantage of the individually adjustable heel rests 36 is, that two shoes having different heel heights and being of different sizes may be stretched or conformed on the respective units of the machine simultaneously, as each stretching operation may be performed independently.

The leg piece 25 has a series of holes 25b, preferably square down the front face thereof, and the opposing leg extension piece 34 has a series of holes 34c extending down the rear side, any of the holes will accommodate any of the standard accessories to be attached for localized spot stretching; for example, leg stretcher 40 or 41 which may be interchangeably placed or reversed to accommodate the stretching of the boot leg to conform to any shape of leg. The various localized spot stretchers are provided with a projection 40a, preferably square and with a recess 40c to accommodate a tension member 40b. This removably secures the various localized spot stretchers in the particular hole in which it is to function. Localized spot stretchers 39 and 42 are provided in various sizes to accommodate bunions, corns, and the like and are positioned at desired points such as holes 33a and 34c. It is to be understood that these localized spot stretchers are indicative of a process which may be applied to any localized spot stretcher to be applied to any foot portion of the boot or shoe and to the leg of the boot, and are not confined to stretchers for corns and bunions.

A vamp and instep stretcher 43, as shown in Figures 2 and 9, may be adjustably attached in the lower of the series of holes 25b of the leg piece 25. By attaching the instep stretcher 43 in the lowermost hole, a different stretching effect is realized than when the attachment is placed in one of the upper holes, the place of attaching being governed by the effect desired.

From the foregoing, it may be readily seen that the instep or vamp may be stretched to conform snugly to the outline of the foot. To use this vamp stretcher, the shoe or boot is secured in normal position between the members 34a and 36, then, upon turning the crank 28, the foot member 33 and leg member 25 are moved forward. Thus, the vamp and instep stretcher 43 is able to engage the desired parts of the shoe according to its adjustment. At the same time, the toe of the shoe may be stretched by turning the hand wheel 31.

Accessory foot pieces 44 are provided which may be slipped over the standard foot pieces 33. By the use of these accessory foot pieces 44 a wide range of sizes may be accommodated. A spring 44a is provided to secure the accessory foot pieces 44 in position when attached.

It is often desirable to either widen or raise the toes of narrow pointed shoes or boots and for this purpose accessory attachment is provided comprising a pivoted arm member 45 which has preferably square ends 45a. At the other end of each handle or arm member, a ball member 45b is provided within a recess 33b in the foot piece 33. A central guide body 46 is provided and has a pivot 47 passing through the arms 45 and the guide body 46. A projection 48 is provided to register with one of the lower holes 25b in the leg member 75

25. Detachable toe pieces 46b are provided with holes 46a to engage square ends 45a of the arms 45. These detachable toe pieces present a narrow, high profile when adjusted in one position and a flat, broad profile when adjusted in another. Then by manipulation of the widening screw 30, the foot pieces 33 are spread, thus causing a compound leverage action upon the handles or arms 45 of the toe stretcher and lifter. The handles 45 are held in engagement with the foot pieces 33 by balls 45b within slots 33b. The lengthening screw 27 may be used to lengthen the shoe and at the same time the toe may be raised or widened or both, by the use of the combination toe lifting device.

It may be readily seen from the above description that a shoe or boot may be made to conform to almost any foot, within the elastic limits of the material from which the shoe or boot is made. It is to be noted that by holding the shoe rigidly in place in the natural walking position, and the operations of lengthening and widening performed while the shoe is in this position, that the shoe is stretched to conform to the foot with great precision and with noted accuracy. Scales 49 and 49a may be provided on the body 23 and hand wheel 31 respectively to determine the position of the coacting parts.

It is to be further noted that particular parts of the boot or shoe may be stretched or lengthened independently of the other operations, although several or all of the operations may be carried out simultaneously without impairing the effectiveness of any.

Having thus described the invention, what is claimed is:

1. In a combination shoe and boot stretcher and lengthener, a base, a supporting member, a body mounted upon said supporting member, a slidable member coacting with said body and slidable longitudinally thereof and carrying foot members and means for actuating the foot members.

2. In a combination shoe and boot stretcher and lengthener, a base, a supporting member, a body mounted upon said supporting member, a slidable member coacting with said body and slidable longitudinally thereof and carrying extension members with foot stretching elements mounted thereon, rotatable shafts for actuating the foot members, arms attached to said shaft and having adjusting means therebetween, and a leg extension member to extend through boot legs, carrying a heel piece associated therewith.

3. In a combination shoe and boot stretcher and lengthener, a base, a supporting member, a body mounted upon said supporting member, a slidable member coacting with said body and carrying foot members, rotatable shafts for actuating the foot members, arms attached to said shafts and having adjusting means therebetween, and a leg extension member to extend through boot legs carrying a heel piece associated therewith and having vertical adjustment, notches upon said leg extension member, and a tongue to engage said notches so that said leg extension member may be held in a fixed position.

4. In a combination shoe and boot stretcher and lengthener, a base, a supporting member, a body mounted upon said supporting member, a slidable member coacting with said body and slidable longitudinally thereof and carrying foot members, rotatable shafts for actuating the foot members, arms attached to said shafts and having adjusting means therebetween, and an aux-

iliary stretcher attachable to the foot pieces and operable in conjunction therewith.

5. A boot and shoe stretcher comprising leg members adjustably mounted for movement towards and away from one another, means for simultaneously adjusting both members in the same general direction, a leg extension member, means for adjusting the members toward and away from the leg extension member, and other means for adjusting the leg extension member lengthwise of the companion member.

6. A boot and shoe stretcher comprising a leg member having foot members adjustably mounted for movement towards and away from one another, means for simultaneously adjusting both foot members in the same general direction, a second leg member, and independent means for adjusting one of the leg members lengthwise of the other leg member.

7. A boot and shoe stretcher comprising a leg member to extend into the leg of a boot or shoe, shafts mounted in the leg member and provided with foot pieces, arms projecting from the shafts, and means for adjusting the arms to turn the shafts for adjustment of the foot pieces toward and away from one another.

8. A boot and shoe stretcher comprising a leg member to extend into the leg of a boot or shoe, shafts mounted in the leg member and provided with foot pieces, arms secured at one end to said shaft and projecting laterally therefrom, and a right and left screw in threaded engagement with the other end of the arms to effect adjustment thereof and of the foot pieces.

9. A stretcher for footwear comprising a support, foot pieces carried by said support for relative lateral movement, and a laterally expansible toe accessory adjustably and pivotally connected with the foot pieces and movable relative thereto for stretching the toe portion of the footwear.

10. A boot and shoe stretcher comprising shafts having offset portions, stretchers applied to said offset portions, crossing arms pivoted at the crossing and having engagement at one end with said stretchers, and toe stretchers fitted to the other ends of the arms.

11. A boot and shoe stretcher comprising shafts having offset portions, stretchers applied to said offset portions, crossing arms pivoted at the crossing and having sliding engagement at one end with said stretchers, and toe stretchers adjustably fitted to the other ends of said arms.

12. A stretcher for footwear comprising a body, a member slidable on the body, a leg member secured to said slidable member and carrying foot pieces, and means for adjusting said foot pieces.

13. A stretcher for footwear comprising an elongated body, a member slidable longitudinally on said body, a leg member fixed to said slidable member and carrying foot pieces, and means for adjusting said foot pieces.

14. A boot and shoe stretcher comprising a supporting arm, a body carried by the supporting arm, a member slidable on the body, a leg member fixed to said slidable member and carrying foot pieces, and means for adjusting said foot pieces.

15. A boot and shoe stretcher comprising a supporting arm, a body carried by the supporting arm, a member slidable on the body, a leg member fixed to said slidable member and carrying foot pieces, means for adjusting the slidable member, and other means for adjusting said foot

pieces on the leg member independently of the slidable member.

16. A boot and shoe stretcher comprising a supporting arm, a body carried by the supporting arm, a member slidable on the body, a leg member fixed to said slidable member to extend into the leg of a boot, and carrying foot pieces, means for adjusting slidable member, means for adjusting said foot pieces, a second leg member mounted on said body to extend into a boot leg, and means for adjusting said leg member, and means for horizontally moving the first mentioned leg member to enable the stretching of boot legs.

17. A boot and shoe stretcher comprising a standard, a cross arm on the standard, a body at an end of the cross arm, a slide for the body, a screw for adjusting the slide, a fixed leg member secured to the slide, an adjustable leg member mounted on the body, means for adjusting the last mentioned leg member, shafts for the fixed leg member, arms projecting from the shafts, means for pivotally adjusting the arms, stretcher members carried by said shafts, and a heel rest adjustable on the standard and adapted to coact with said adjustable leg member, and means to secure the adjustable leg member in position while in operation.

18. A boot and shoe stretcher comprising an upright standard, a cross arm carried by the

standard, means carried by the cross arm for stretching a shoe, and means carried by the standard and extending laterally thereof approximately parallel with the cross arm and forming resting means for a shoe on the stretching means.

19. In a boot and shoe stretcher, the combination of a leg member and a leg extension member, means for adjusting said members toward and away from each other, foot pieces disposed upon said leg member, and means for adjusting said foot pieces independently of said leg member.

20. In a boot and shoe stretcher, the combination of a leg member and a leg extension member, means for moving leg member toward and away from said leg extension member, foot pieces disposed upon said movable leg member and having means for adjusting said foot pieces independently of said leg member, and independent means for adjusting said leg extension member lengthwise thereof.

21. In a boot and shoe stretcher, the combination of a supporting member, movable foot stretching members carried by said supporting member, and a toe widening accessory carried by said supporting member and operable by the movement of said foot stretching members.

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