No. 754,047. PATENTED MAR. 8, 1904.

J. H. BURT, A. L. ANDERSON & R. C. GROSSMANN.

SHOE TREE.

APPLICATION FILED MAY 14, 1903.

NO MODEL. 2 SHEETS—SHEET 1.

Fig. 1.

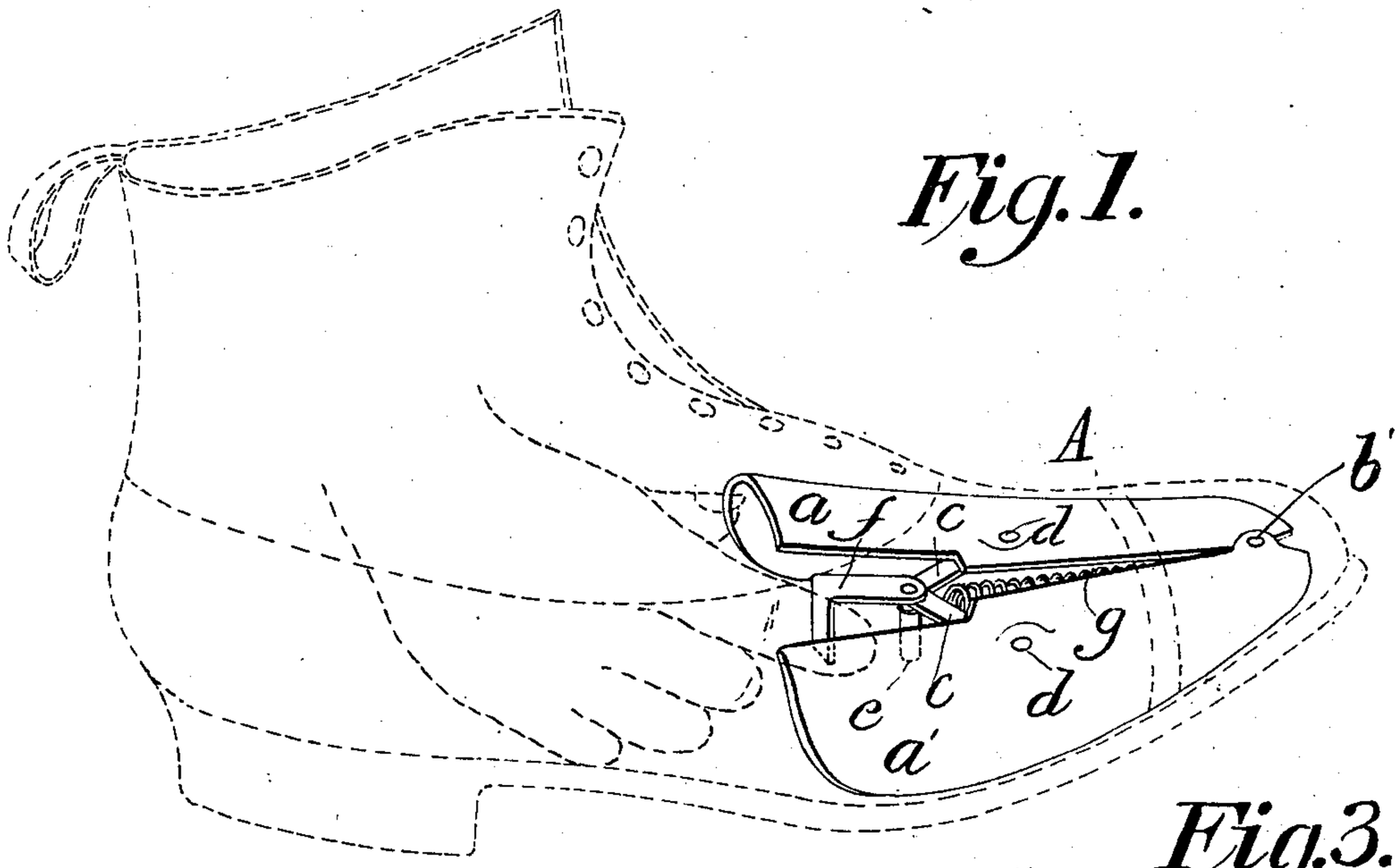

Fig. 3.

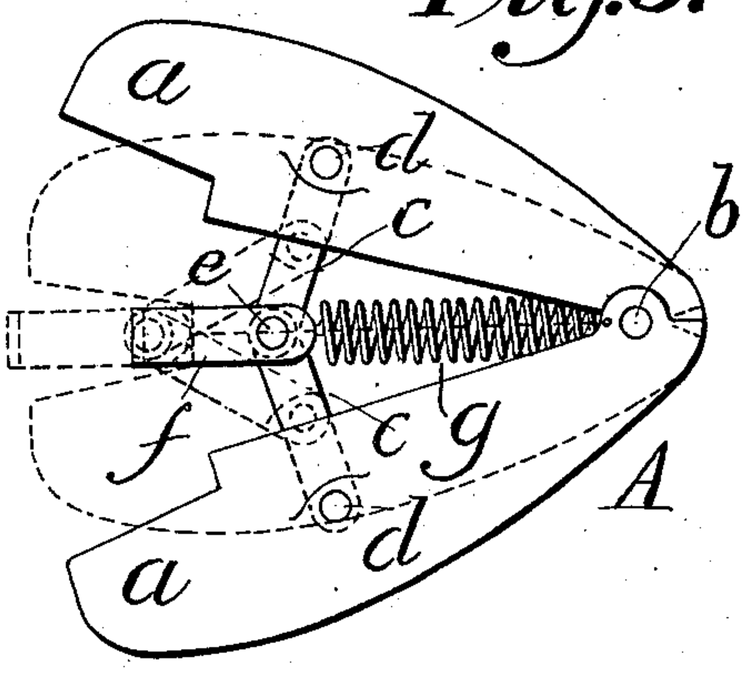

Fig. 2.

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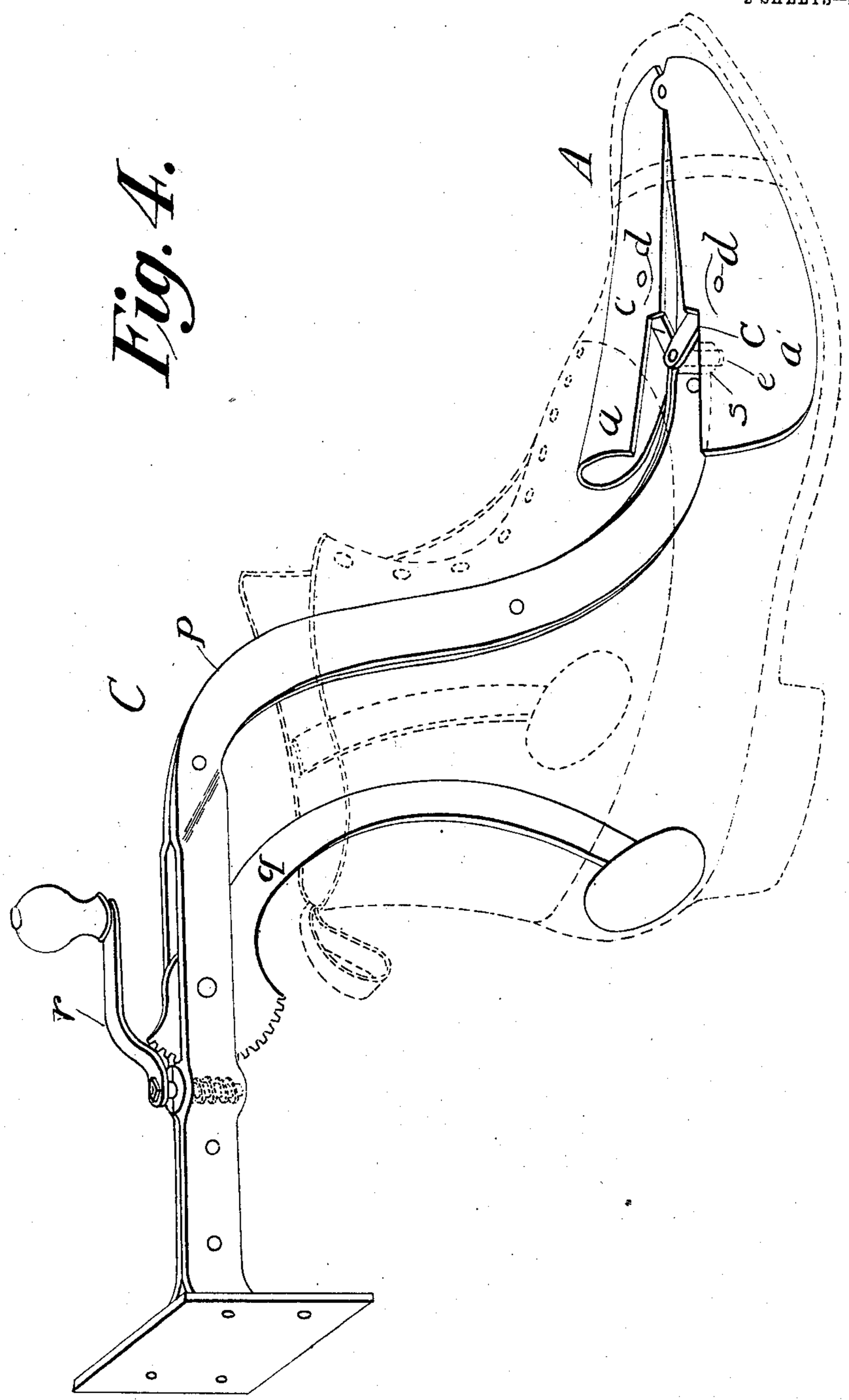
NO MODEL. 2 SHEETS—SHEET 2.

Fig. 4.



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UNITED STATES PATENT OFFICE.

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SHOE-TREE.

SPECIFICATION forming part of Letters Patent No. 754,047, dated March 8, 1904.

Application filed May 14, 1903. Serial No. 157,049. (No model.)

To all whom it may concern:

Be it known that we, JAMES H. BURT, residing at Springfield, in the county of Hampden and Commonwealth of Massachusetts, AUGUSTUS L. ANDERSON, residing at Brooklyn, in the county of Kings and State of New York, and RUDOLPH C. GROSSMANN, residing at Jersey City, in the county of Hudson and State of New Jersey, all citizens of the United States, have invented a new and useful Shoe-Tree, of which the following is a specification.

Our invention relates to improvements in devices designed to be inserted in shoes while not being worn for the purpose of distending them so that they will retain their proper shape, in which we employ a peculiarly-constructed toe-support either with or without other auxiliary parts, as hereinafter set forth; and the objects of our improvement are, first, to provide a light but strong and durable shoe-tree toe-support which is comparatively inexpensive and simple in construction and operation and capable of a number of different applications; second, to furnish an adjustable extension in a shoe-tree; third, to afford adequate means for stretching or distending a shoe, which means may also serve as a toe-support for a shoe-holder, and, fourth, to provide a device which embraces the advantages above noted and is capable of use with shoes of different shapes and sizes, said device being practicable and efficient under a great variety of conditions. We attain these objects by the means illustrated in the accompanying drawings, in which—

Figure 1 is a perspective view of that part of the tree which we term the "toe-support," showing its application to a shoe; Fig. 2, a perspective view of the toe-support and extension, also shown in connection with a shoe; Fig. 3, a plan view of the toe-support shown open in full lines and closed in dotted lines, and Fig. 4 a perspective view of the toe-support as applied to a shoe-holder having a shoe thereon.

The shoes in the drawings are indicated by dotted lines, as is also a hand in Figs. 1 and 2, the forefinger of the hand in the first instance being in the position required to close and detach the toe-support from the shoe, and the fingers and thumb in the second instance grasping the shoe-tree extension as it appears either when about to be pressed down or after being raised in the center, such portions of said extension as are in the grasp of the fingers and thumb being also shown in dotted lines.

Similar letters refer to similar parts throughout the several views.

With few exceptions the different parts of the tree may be stamped out of sheet metal.

The tree consists, essentially, of a toe-support adapted to enter and fill the front part of a shoe, the same being all that is required in some, not to say many, cases; but this may be augmented by an extension that converts the tree into an implement or device extending the whole length of the interior of the shoe. Moreover, the toe-support is all that is needed for use with a shoe-holder. It will be understood that two trees are required for a pair of shoes, either of which may be employed with a shoe-holder to which it is adapted.

Referring to the drawings, particularly Figs. 1 and 3, the toe-support A consists of two shell-like sections *a* and *a'*, having an outward contour conforming more or less closely with the interior of the front part of a shoe. The sections *a* and *a'* have their front terminals pivoted together at *b*, the ends of said sections which extend beyond the pivotal point being adapted to come together when the sections are separated or swung apart to limit such movement. Two links *c* are provided, each having its forward or outer end pivoted at *d* to one of the sections. The rear ends of the links *c* are pivoted together or pivotally attached to a depending stud *e*. An angular lug *f* is connected with the rear ends of the

links *c*, preferably by being mounted to swing on the pivot at this point or the stud *e*. A spiral spring *g* has one end fastened to the stud *e* or to one or both of the links at a point or points adjacent to said stud or pivot and the other end to the pivot *b* or the inside of the toe-support adjacent said pivot.

From the foregoing description it will be seen that the office of the spring *g* is to normally spread the toe-support by separating the sections *a* and *a'*, since it has a tendency to draw the rear ends of the links *c* forward, and thereby straighten the latter. To introduce the toe-support into a shoe, simply grasp the rear ends of the sections *a* and *a'* and force them together sufficiently to enable the toe-support to be inserted until its front end reaches the toe end of the shoe. When said sections are released, they are forced apart by the spring, so as to fill and distend the shoe. When it is desired to remove the toe-support from the shoe, the lug *f* is grasped and drawn backward against the resiliency of the spring *g*, and the sections *a* and *a'* are thus caused to approach each other sufficiently for the withdrawal of the device.

If it be desired to crowd the toe-support into the shoe with more force than can be conveniently exerted with the parts already described and to obtain a bearing at the heel, an extension B may be provided. This extension comprises two links *h*, (although it might be made with one,) having a sleeve *i* and a rack *j*. The sleeve *i* has a lug *k*, extending backward between the front ends of the links *h*, to which it is pivoted at *l*. The rack *j* is provided on its under side with hooks or teeth *m* and at its rear end with an oval heel-bearing *n*. A rod *o* is inserted in holes in the rear ends of the links *h* and serves both as a pivot for the rack *j* and as a handle with which to manipulate the extension B. The rack *j* is adapted to enter between the rear terminals of the links *h* and engage the rod *o* with any one of its teeth *m*. Thus it will be seen that the extension can be made longer or shorter by moving the rack backward or forward, it being possible to adjust it to as many different lengths as there are teeth on said rack. The sleeve *i* is adapted to receive the stud *e*.

In operation the toe-support is connected with the extension B by inserting the stud *e* in the sleeve *i*, and the parts are introduced into the shoe. Then the rack *j* is so adjusted relative to the links *h* that when the heel-bearing *n* rests against the inside of the shoe above the heel and the toe-support contacts with the other end of the shoe the pivotal connection between the rack and links (represented by the rod *o*) will be elevated into a position somewhat as indicated by the dotted lines B'. Now press down the adjacent ends of the rack and links until the rod *o* is in the same horizontal plane with the pivot *l* and the central point of bearing of the part *n* or a little below. If the parts have been properly adjusted, this last movement will crowd the toe-support well into the shoe and spread it with considerable force, since the straightening of the extension B operates strongly on the stud *e*, forcing it forward and the front ends of the links *c* apart. To remove the tree, grasp the rod *o* and draw the same, with its attached members, upward, thus closing the toe-support and permitting all of the members to be taken out of the shoe.

In Fig. 4 we show a shoe-holder C, comprising a shank *p* and a heel-bar *q*, pivotally attached to said shank and actuated by a worm and segment gear, the worm being operated by an arm *r*. A sleeve *s* is formed on the front end of the shank *p* to receive the stud *e* of the toe-support A. Assuming that the toe-support is in place on the front end of the shank *p* and the heel-bar *q* actuated forward, the operation is as follows: Introduce the toe-support, shank *p*, and heel-bar *q* into the shoe. Then actuate said heel-bar backward until a sufficient strain has been put upon the shoe, which strain results in part from the spreading of the sections *a* and *a'*. The sections are separated with force commensurate with the power produced by the heel-bar-actuating mechanism, since the toe of the shoe bearing upon the front ends of said sections and being drawn against them by the heel-bar causes the links *c* to turn upon the stud *e*, held firmly by the shank *p*, and their front ends to separate and forcibly turn the sections outward on the pivot *b*. The shoe is released by again actuating the heel-bar *q* forward and either drawing the shoe from the holder or the holder from the shoe, as the case may be, an action in any event which produces a backward pull on the stud *e* and closes the toe-support.

The toe-support A may be used with any shoe-holder other than the holder C, to which it is adapted. The shoe-holder C is the subject of another application filed on even date herewith. Hence a full and complete explanation of its construction and operation in this application is not deemed necessary.

When the toe-support is used with either the extension or a shoe-holder, the spring *g* is not required and may be disconnected from the stud *e* or omitted entirely. Neither is the lug *f* of use in these connections, and it may be swung to one side out of the way or omitted. It will be seen, too, that when the toe-support is used alone nothing more than a pivot is required where the stud *e* is used; but the presence of said stud is in no wise a hindrance.

The peculiar construction of the toe-support renders it capable of the three uses hereinbefore described, owing to the fact that such construction enables it to be operated in as many different ways, which adds great value to the invention. Briefly, the three modes of operation are as follows: first, by using re-

silient means or the forward pull of a spring to separate the sections; second, by applying force from the rear to separate said sections, and, third, by applying force to the front ends of the sections to separate them, a backward pull being used in each case to cause the sections to approach each other. In connection with the first case it should be noted that by changing the pivotal points *d* from a position in front of a line passing through the point *e* at right angles to the longitudinal center of the toe-support to a position back of such line said toe-support would be opened by the backward thrust of the spring and closed by a forward thrust at the point *e*. This is, however, a mere rearrangement of parts which would occur to one skilled in the art and is not as practicable for most purposes as the first arrangement. By preference the stud *e* is loosely held in either the sleeve *i* or the sleeve *s*, so that the toe-support can swing to the right or left and adapt itself to a right or left shoe.

The wide range of movement permitted to the several parts of our device adapts the same for shoes of a great variety of sizes and shapes.

We desire to include within the scope of our invention such changes in shape, size, and construction as will be required to meet different conditions which fall within the limits prescribed by the claims.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. A toe-support comprising sections pivotally connected at the front, pivotally-connected links in pivotal connection with said sections, and a spring between the link mechanism and front terminal of the sections, one end of said spring being attached to the link-pivot or adjacent thereto and the other end attached to the section-pivot or adjacent thereto.

2. A toe-support comprising sections pivotally connected at the front, pivotally-connected links in pivotal connection with said sections, a spring between the link mechanism and front terminal of the sections, one end of said spring being attached to the link-pivot or adjacent thereto and the other end attached to the section-pivot or adjacent thereto, and a lug attached to said mechanism.

3. A toe-support comprising sections pivotally connected at the front and yielding means consisting of pivotally-attached spring-actuated links pivotally connected with the sections back of their pivot adapted to actuate said sections into normal position and so retain them, the front ends of the sections being cut away to permit of separation at the rear and to limit such separation.

4. A toe-support comprising sections pivotally connected at the front and yielding means consisting of pivotally-attached spring-actuated links pivotally connected with the sections back of their pivot to normally cause said sections to separate and remain separated at the rear, the front ends of the sections being cut away to permit such separation to take place and to determine the amount of the same.

5. A toe-support comprising sections pivotally connected at the front, the parts forward of the pivotal connection being cut away so that they abut only when the sections are separated in the rear, pivotally-connected links in pivotal connection with said sections, and a spring between the link mechanism and front terminal of the sections, one end of said spring being attached to the link-pivot or adjacent thereto and the other end attached to the section-pivot or adjacent thereto.

6. A toe-support comprising shell-like sections pivotally connected at the front, the parts forward of the pivotal connection being cut away so that they abut only when the sections are separated in the rear, pivotally-connected links in pivotal connection with said sections, and a spring between the link mechanism and front terminal of the sections, one end of said spring being attached to the link-pivot or adjacent thereto and the other end attached to the section-pivot or adjacent thereto.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

JAMES H. BURT.
AUGUSTUS L. ANDERSON.
RUDOLPH C. GROSSMANN.

Witnesses:
ALBERT HIGSON,
CHAS. W. OSTROM.