Oct. 3, 1939. N. HACK ET AL 2,175,116

FOOT-MEASURING DEVICE

Filed Sept. 28, 1936 3 Sheets-Sheet 1

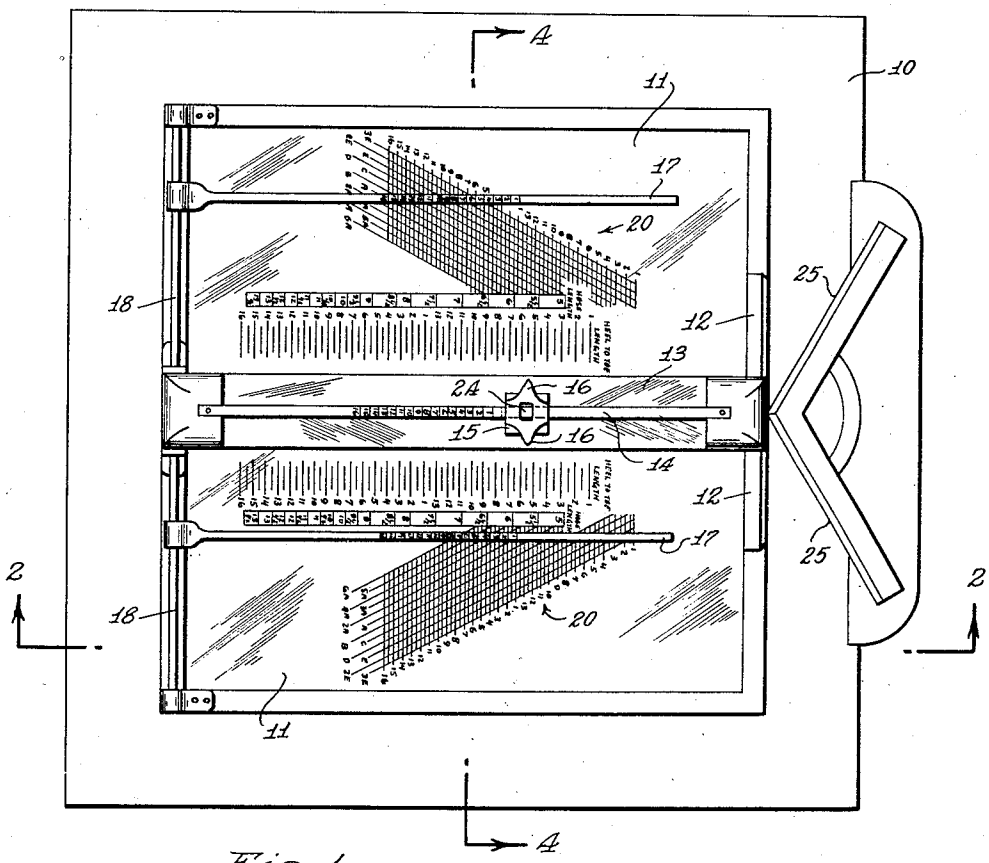


Fig. 1.

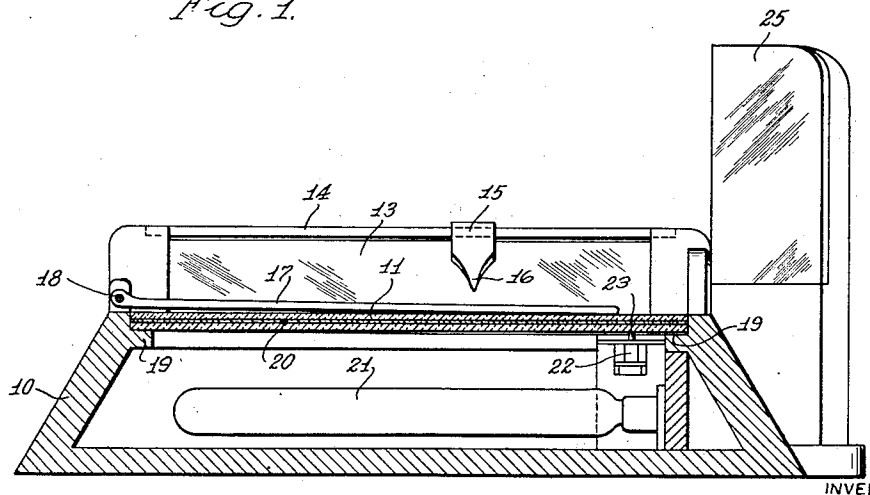


Fig. 2.

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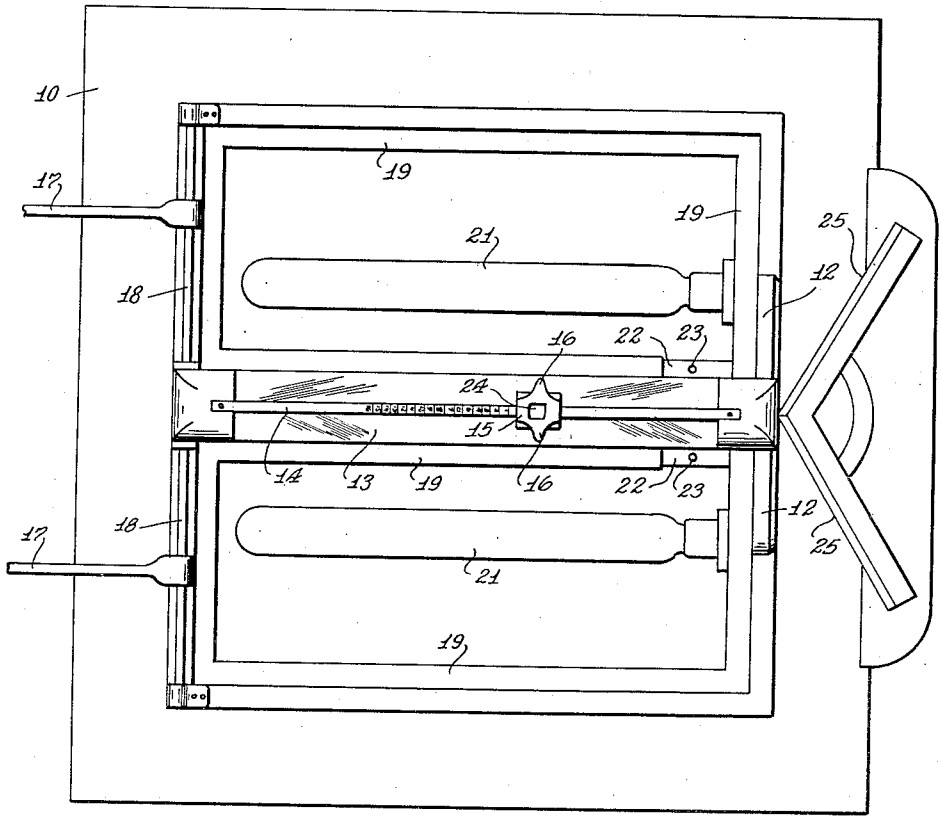


Fig. 3.

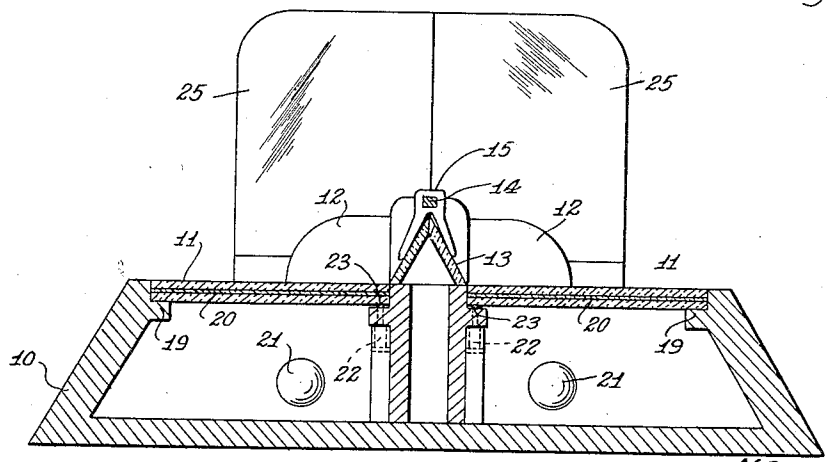


Fig. 4.

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Filed Sept. 28, 1936 3 Sheets-Sheet 3

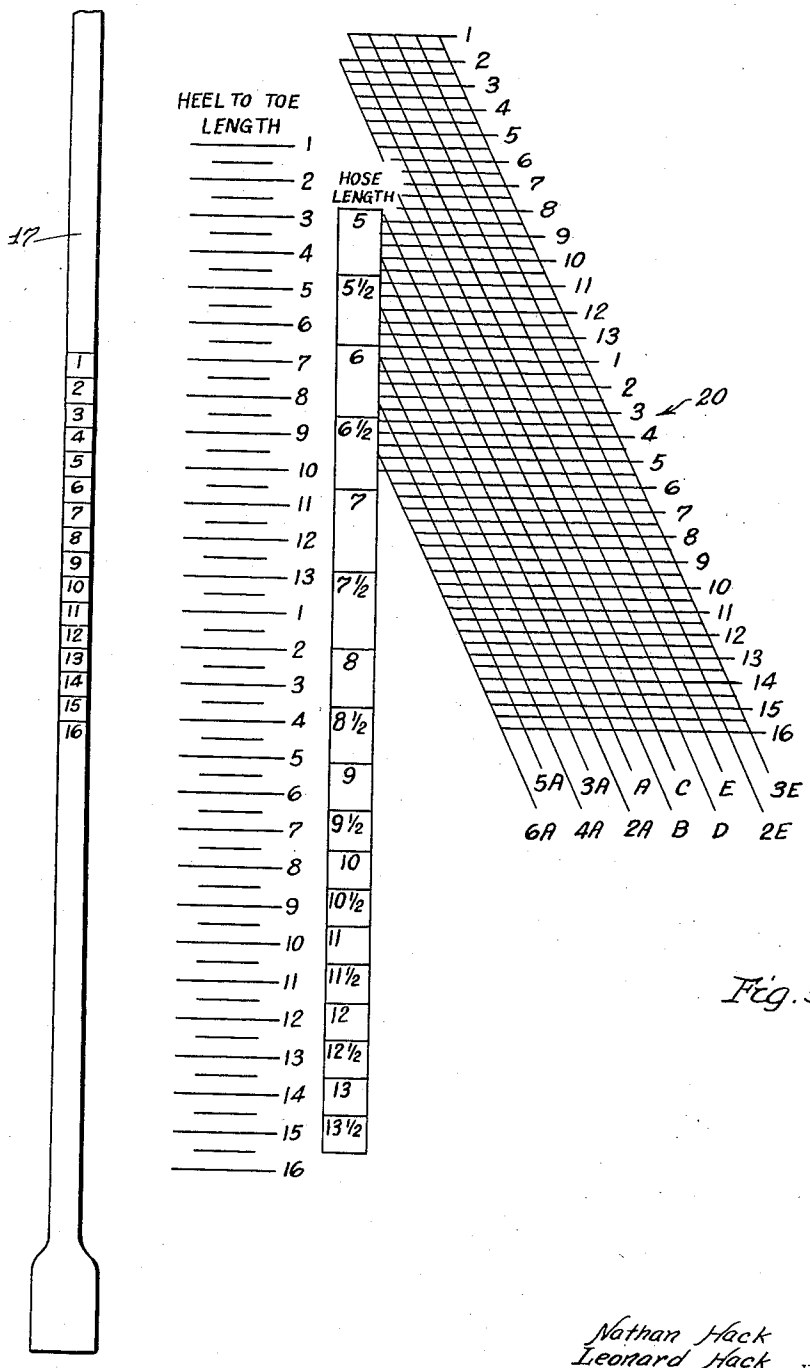


Fig. 5.

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2,175,116

UNITED STATES PATENT OFFICE

2,175,116

FOOT-MEASURING DEVICE

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Application September 28, 1936, Serial No. 102,938

3 Claims. (Cl. 33—3)

This invention relates to foot measuring devices to be used in determining the proper size and shape of shoe to be fitted to the foot and has as one of its principal objects to provide a means for simultaneously ascertaining several dimensions of the foot whereby a correlation of all dimensions may be obtained at a single examination. More particularly, it is an object of this invention to provide means for simultaneously measuring the length and width of the foot and the relative positions of the heads of the metatarsals on each side of the foot.

The head of the first metatarsal lies approximately at the ball or widest place on the inside of the foot and the head of the fifth metatarsal lies approximately at the widest place on the outside of the foot. The relative longitudinal positions of these two points varies in different feet, and this variation must be taken into account in the accurate fitting of shoes. In the average foot, the head of the fifth metatarsal lies a little in back of the head of the first, that is, the foot has a small amount of what is termed outflare. Individual feet vary from the average, some having a large amount of outflare, that is, having the head of the fifth metatarsal far in back of the head of the first. Other feet have little or no outflare, that is, have the heads of the metatarsals about opposite each other, while some feet have what is called inflare, that is, have the head of the fifth metatarsal ahead of the head of the first. Most feet have a flare near the average and will be comfortable in a shoe of the ordinary length and width and shaped to fit an average foot. If the flare differs much from the average, however, shoes made to fit feet with that amount of flare are necessary. To provide an accurate and convenient means of measuring the amount of flare is an important object of this invention.

Another object is to provide means for inspecting the longitudinal arches of both feet while also inspecting the heel for pronation. In this way, it can be readily determined whether a flat or low arch is caused by weakness of the arch or by rotation of the heel.

Another object is to provide a device having utility as above described which is equipped with proper illuminating means so that accurate readings may be obtained and so that, in addition, the positions of rest of the toes may be inspected, as an indication of the condition of the metatarsal arch of each foot.

Other objects and advantages will become hereinafter more fully apparent as reference is had to the accompanying drawings wherein our invention is illustrated by way of example.

In the drawings, which illustrate a preferred embodiment of the invention

Figure 1 is a plan view.

Figure 2 is a sectional view on the line 2—2 of Figure 1, taken in the direction of the arrows.

Figure 3 is a plan view with certain elements removed to show the interior of the device.

Figure 4 is a sectional view on the line 4—4 of Figure 1, taken in the direction of the arrows, and Fig. 5 is an enlarged view of the measuring chart.

The embodiment of the invention shown in the drawings is in the form of a platform upon which a person stands while his feet are being measured. The platform comprises a hollow base 10 with its upper surface formed by a pair of glass panels 11, one for each foot. A vertical heel board 12 extends up at one end of the platform and a narrow inverted V-shaped stile 13 extends down the center. The heel board 12 and the stile 13 are the means for locating the feet on the platform when they are to be measured, the back of the heels being placed against the heel board 12 and the inner sides of the feet being placed against the stile 13.

A square rod or slide 14 extends along the center of the platform above the stile 13 and carries a slider 15 with a finger or pointer 16 extending down on each side of the stile 13. Each side of the platform is provided with a side bar or rod 17 which is parallel to the stile 13 and slidable sideways above the glass panel 11 towards and away from the stile 13, being guided by a slide 18 at the front of the platform. The glass panels 11, which are supported around their edges by a rabbet 19 in the top of the base 10, are each made of two superposed plates 11*a* and 11*b* having a translucent chart 20, seen in Figure 1, between them. Each chart 20 is illuminated from below by an electric light 21 arranged to be turned on whenever pressure, as by the weight of a foot, is exerted on the panel 11. The light 21 is controlled automatically by a plunger actuated switch 22 placed so that the extended plunger 23 holds the panel 11 raised slightly from its rabbet. When a foot is placed upon the panel 11, the weight of the foot pushes the panel 11 down into place, closing the switch 22 and turning on the light 21. When the foot is removed, a spring in the switch 22 raises the plunger 23 and the panel 11 and opens the switch 22, turning off the light 21.

When the device is to be used, the person whose

feet are to be measured stands upon the glass panels 11 with his feet touching the heel board 12 and the stile 13 as described above. The slider is positioned so that the pointers or fingers 16 carried by it touch the ball or the widest part of the inside of the feet where the heads of the first metatarsals are located. Then the side bars 17 are slid towards the center until they just touch the outside of the feet. The measurements can then be read off.

The length of the feet is shown by the straight "heel to toe length" scales on the charts 20 alongside of the stile 13. The position of the heads of the first metatarsals is shown by a numeral on the top of the slide 14 appearing through an aperture 24 in the slider 15. The position of the heads of the fifth metatarsals is measured by scales on the side bars 17. The scales are made so that, for an average foot which will be fitted perfectly by a standard shoe, the numerical value of these three measurements will be the same. For most feet, however, they will differ more or less and the amount of the difference will enable an experienced person to readily determine whether special shoes are necessary. The difference between the two side measurements, which shows how much the flare of the foot differs from the average, is especially important in this connection.

After the proper length of the shoe has been determined, generally by choosing the number indicated by position of the slider 15, the width of the shoe can be read off the chart 20. The outer edge of the foot intersects at right angles a set of lines numbered according to shoe lengths. The diagonal line which is closest to the intersection with the line having the number of the correct length bears a letter which indicates the correct width.

In the embodiment of the invention illustrated, an additional scale has been provided along the foot length scale on each side for indicating the proper size of hose according to the length of the foot. Also, the stile 13 is made of two mirrors, and their angle is such that the arches of the feet can be readily seen by looking down on the mirrors. The use of mirrors which are looked straight down upon ensures that the arches of all feet measured by the device will be examined from the same angle so that the user of the device will quickly acquire skill in judging the height of arches. At the back of the device is a pair of vertical mirrors 25 placed at an angle to enable the feet to be seen from the back by a person in front of the device. The amount of pronation or tilting of the foot can thus be readily estimated. The vertical mirrors 25 are carried by a pair of boards 26 which slide down into place on the base 10 and are readily removable, allowing them to be taken off of the device and kept out of the way when a person is stepping up onto the platform and to be quickly replaced as soon as the feet are to be examined and measured.

What we claim is:

1. In a foot measuring device, a horizontal surface upon which the soles of both feet are adapted to be placed, an inverted V-shaped mirror above and dividing said surface, said mirror forming a foot positioning element adapted to be engaged by both feet of a person standing on said surface, said mirror having its sides extending at an angle whereby the arches of both feet may be viewed simultaneously, and means cooperating with said mirror for measuring said foot.

2. In a foot measuring device, a horizontal surface upon which the soles of both feet are adapted to be placed, a mirror above and dividing said surface, said mirror forming a foot positioning element for both feet simultaneously, said mirror having sides inclined at such an angle to the vertical that the arches of both feet may be examined at one time, a heel board perpendicular to said surface and to said mirror, and means laterally adjustable with respect to said mirror for measuring distances from said mirror.

3. In a foot measuring device, a surface upon which the soles of the feet are adapted to be placed and a mirror above and dividing said surface, said mirror forming a foot positioning element for both feet of a person standing upon said surface, and having its opposite surfaces converging upwardly and serving as an aid in the examination of the arch whereby the arches of both feet may be examined simultaneously.

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