C. OLIVER.

PEDIMETER.

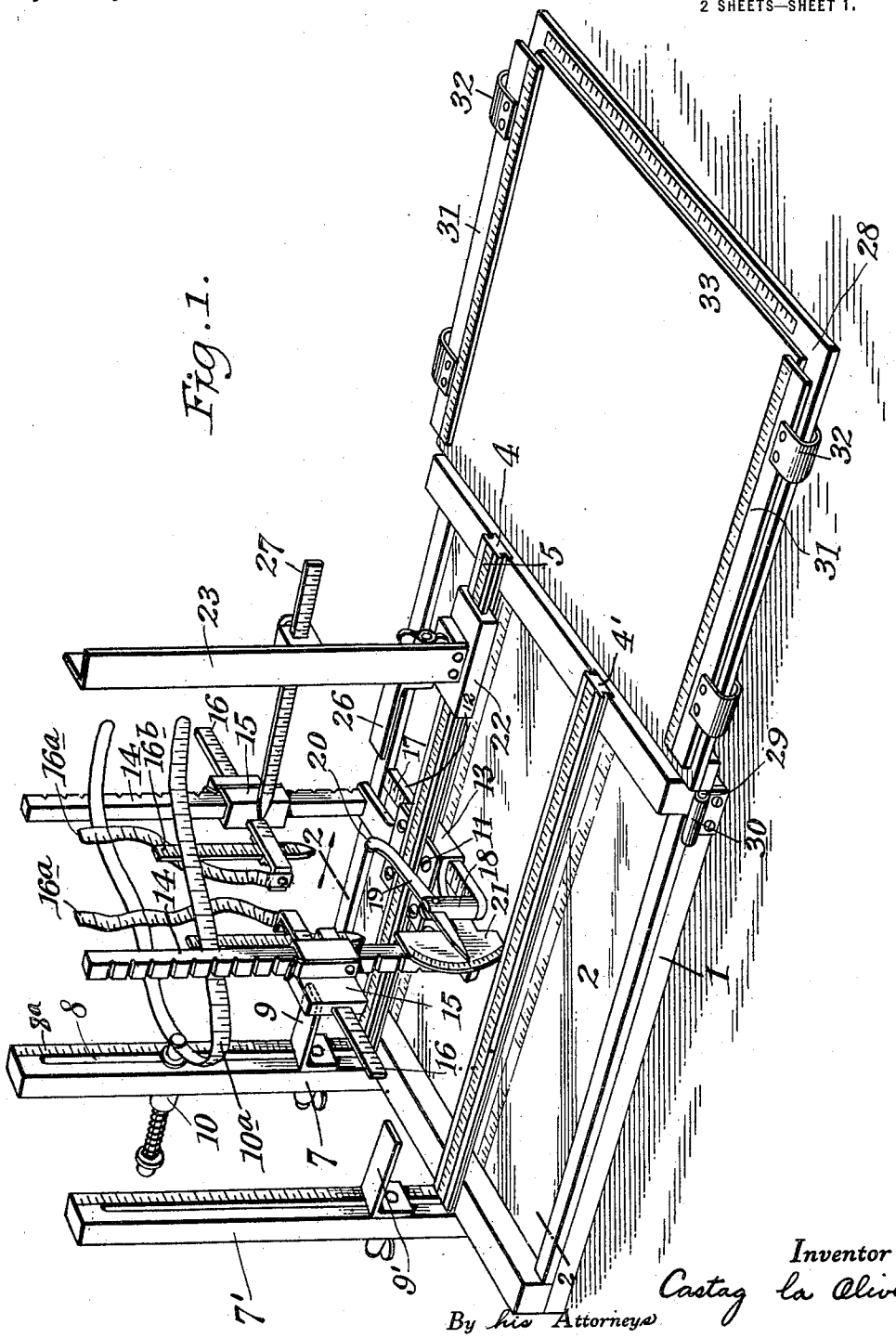
APPLICATION FILED OCT. 6, 1919.

1,375,969.

Patented Apr. 26, 1921.

2 SHEETS—SHEET 1.

Fig. 1.



Inventor

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2 SHEETS—SHEET 2.

Fig. 2.

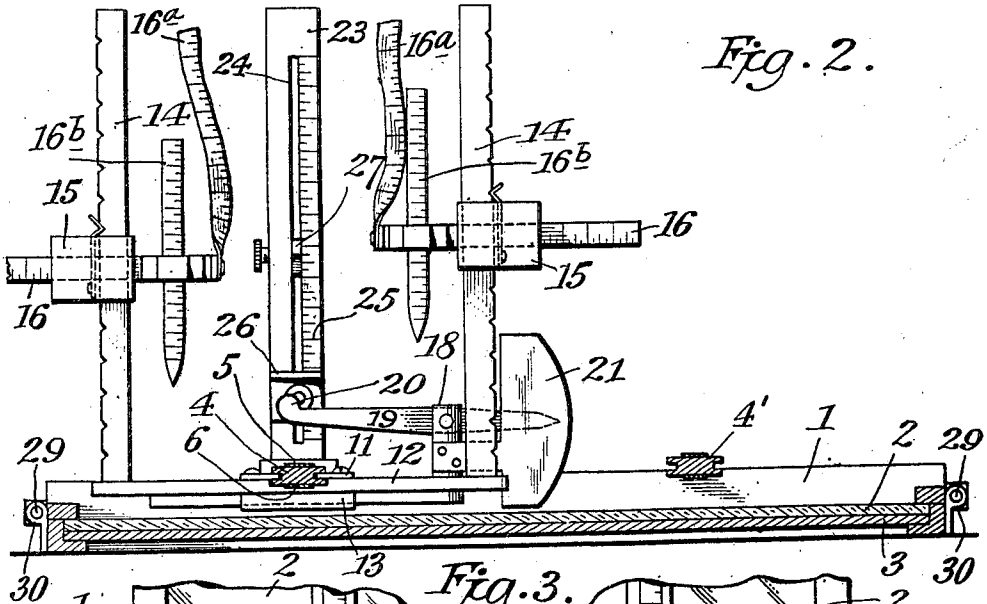
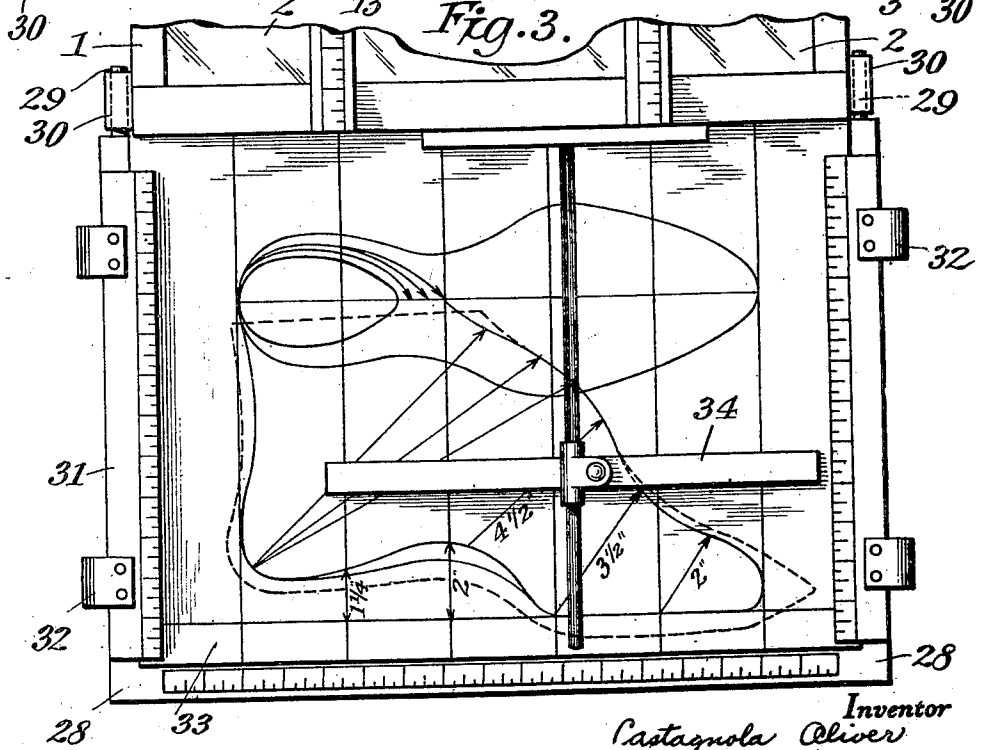


Fig. 3.



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UNITED STATES PATENT OFFICE.

CASTAGNOLA OLIVER, OF BROOKLYN, NEW YORK.

PEDIMETER.

1,375,969. Specification of Letters Patent. Patented Apr. 26, 1921.

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To all whom it may concern:

Be it known that I, CASTAGNOLA OLIVER, of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Pedimeters, of which the following is a full and clear description.

My invention relates to the art of providing proper shoes for deformed feet.

As is well known, a deformed human foot is not only very irregular in shape, but its position with respect to the ground when walking is commonly such that the stresses are not distributed so as to be within the comfortable limits. Moreover, the abnormal position of the foot often throws undue stresses on portions of the shoe when the person is walking, thus distorting the shoe and causing discomfort as well as causing undue wear of the shoe.

It is the principal object of my invention to provide means whereby measurements of deformed feet may be made in walking position which will enable a skilful shoemaker to construct a proper shoe for the persons from whose feet the measurements were made.

The novel features of my invention are pointed out with particularity in the appended claims. The invention itself, however, together with further objects and advantages, will best be understood from the following description taken in connection with the accompanying drawing in which—

Figure 1 is a perspective view of a device according to my invention.

Fig. 2 is a section taken on the line 2—2 of Fig. 1.

Fig. 3 is a plan view of a part of the apparatus shown in Figs. 1 and 2 illustrating a drawing of a deformed foot such as would be made from data obtained by operating my apparatus for the use of the last-maker.

Referring to the drawing more in detail, 1 is a framework in which a mirror 2 is supported by a suitable plate 3, the framework being preferably horizontal and the reflecting surface of the mirror being exposed from above when the apparatus is in use. Mounted on the frame above mirror 2 and spaced therefrom is a bar such as 4 which extends parallel to the surface of the mirror. Bar 4 has graduated scale members 5 and 6 fixed to its top and bottom surfaces, although the top and bottom surfaces of the bar may have the graduations placed directly thereon if desired. The bar 4 has a number of appliances associated therewith whereby the desired measurements may be obtained. These appliances comprise a vertical standard such as 7 which is slotted as at 8 to permit the ready adjustment of the heel rest 9 in a vertical direction. A carrier 10 for the tape 10^a is also adjustably mounted in the slot 8. Standard 7 is graduated at the side of slot 8 as shown at 8^a, so that the height of the rest 9 on the standard 7 above bar 4 can be easily noted. Slidably mounted on bar 4 are plates such as 11 to which are fastened a horizontal cross-bar 12 and a block 13. At the ends of bar 12 are upright standards such as 14 on which are vertically adjustable blocks such as 15 in which are mounted horizontally adjustable graduated scale or caliper members, such as 16, at the ends of which are fastened tapes such as 16^a. Near the ends of members 16 are mounted vertically adjustable graduated caliper members such as 16^b. In block 13 is a horizontally adjustable bar 17 at one end of which is a post 18 mounted to turn on its central vertical axis and at the upper end of post 18 is a horizontal shaft on which is pivoted a caliper member in the form of an exploring lever 19. The end of lever 19, which is designed to extend toward the foot, is formed with an upturned tip 20 for use in determining the position and form of protuberances on the bottom of the foot. The other end of lever 19 is shaped as a pointer and coöperates with a vertical scale on a plate 21, indicating the height of tip 20, the plate 21 being fixed to post 18. The bar 4 also carries a horizontally adjustable block 22 on which is a vertical standard 23 having a vertical slot 24 therein, the standard 23 being graduated along the edge of slot 24 as shown at 25 (Fig. 2). Adjustably mounted in the slot 24 is a toe rest 26 and also a graduated caliper member 27.

Parallel to the bar 4 on the framework is a bar 4′. At the end of bar 4 is a standard 7′ carrying a heel rest 9′. It will be understood that the bar 4′ and standard 7′ are provided with the tape holder, side caliper members, toe rest, and end caliper member, all as described in connection with bar 4, but that these parts are omitted from the drawing for convenience of illustration.

In the operation of my device, bar 4 and its adjuncts are used for obtaining meas-

urements of the left foot; and bar 4' and its adjuncts, those of the right foot. The center line of the foot is placed on the center line of the bar, such as 4, and the heel rest, such as 9, or toe rest, such as 26, adjusted so the foot is in the position taken when the person is standing with weight on the foot in question. The outline of the foot around its maximum perimeter is then obtained by the caliper members such as 16^b, readings of the horizontal and vertical positions of members 16^b being taken for various positions of the block 13 on the bar 4. The vertical and horizontal position of points on the center line of the foot on its front surface are taken by caliper member 27. The points above the heel of the foot on the center line thereof are not so important as those on the front face, and the position of such points can be obtained by one of the members 16 by moving block 13 to its extreme position on bar 4. The positions of blocks 13 and 22, and consequently the position of the vertical parts carried thereby, are easily read even when the foot is on the bar 4, owing to the reflection of parts 13, 22, and the scale on the under side of bar 4 in mirror 2. The mirror also assists materially in discovering protuberances. These, when discovered, are explored and plotted in an obvious manner by aid of member 19, the end 20 of which can be brought against the protuberance and its outline determined by rectilinear movements of parts 13 and 17, and swinging movements of part 19 on the vertical axis of post 18, the angular position of part 19 on its horizontal axis being noted on the scale on plate 21 and changed as found necessary in conjunction with the changes in position of the block 13 and bar 17. Circumferential measurements are obtained by tapes, such as 10^a and 16^a, tape 10^a being particularly convenient for obtaining the circumferential measurements above the heel.

For convenience in platting the data obtained by the use of the apparatus above described, I prefer to combine therewith a square board 28 having two parallel pins, such as 29, fixed thereto, and projecting therefrom near adjacent corners and arranged so that they may be inserted into clips such as 30 on the framework 1. The edges of board 28 parallel to pins 29 carry clamping bars such as 31 which are attached to board 28 by spring members such as 32, so that bars 31 may be readily lifted enough to insert a sheet 33 to be drawn upon under the bars 31, such sheet will then be held firmly in place after it has been inserted thereunder. Any convenient form of drawing instrument, such as the square 34, may be used in transferring the data obtained by use of the pedimeter to the drawing sheet. One edge of board 28 and the clamping members 31 are preferably graduated to facilitate the drafting operations.

Having thus described my invention, I claim:

1. A pedimeter comprising in combination means whereby the vertical distance from a base plane may be determined of any given point on a patient's foot when the foot is in the position assumed by it when standing, and means whereby the projection of said point on said plane may be determined.

2. A pedimeter comprising in combination a vertically adjustable heel rest, a vertically adjustable toe rest, and means whereby the vertical distance may be determined between means establishing a base plane and a given point on the bottom of the patient's foot resting on said heel and toe rests.

3. A pedimeter comprising in combination a vertically adjustable heel rest, a vertically adjustable toe rest, means whereby the vertical distance may be determined between means establishing a base plane and a given point on the bottom of the patient's foot resting on said heel and toe rests, and means whereby the projection of such point on said base plane may be determined.

4. An apparatus for measuring feet comprising in combination a bar adapted to have the foot placed longitudinally thereover, a heel rest and a toe rest both vertically adjustable in the plane of said bar, and an exploring lever mounted to pivot on a horizontal axis and adjustable longitudinally and transversely of said bar, said lever being arranged to permit its end to contact with the bottom of a foot placed on said heel and toe rests.

5. An apparatus for measuring feet comprising in combination a bar adapted to have the foot placed longitudinally thereover, a heel rest associated with said bar and vertically adjustable with relation thereto, caliper members adjustable relatively to said bar for obtaining the position of points on the foot with relation to the bar, and a horizontal mirror below and parallel to said bar and spaced therefrom.

6. An apparatus for measuring feet comprising in combinaton a bar adapted to have the foot placed longitudinally thereover, a toe rest associated with said bar and vertically adjustable with relation thereto, caliper members adjustable relatively to said bar for obtaining the position of points on the foot with relation to the bar, and a horizontal mirror below and parallel to said bar and spaced therefrom.

7. An apparatus for measuring feet comprising in combination a bar adapted to have the foot placed longitudinally thereover, a heel rest adjustable in the same vertical

plane as said bar, and an exploring lever adjustable longitudinally of said bar and mounted to pivot on both vertical and horizontal axes.

8. An apparatus for measuring feet comprising in combination a bar adapted to have the foot placed longitudinally thereover, a heel rest adjustable in the same vertical plane as said bar, an exploring lever adjustable longitudinally of said bar and mounted to pivot on both vertical and horizontal axes, and a horizontal mirror beneath said bar.

9. An apparatus for measuring feet comprising in combination a bar adapted to have the foot placed longitudinally thereover, a toe rest adjustable in the same vertical plane as said bar, and an exploring lever adjustable longitulinally of said bar and mounted to pivot on both vertical and horizontal axes.

10. An apparatus for measuring feet comprising in combination a bar adapted to have the foot placed longitudinally thereover, a heel rest adjustable in the same vertical plane as said bar, an exploring lever adjustable longitudinally of said bar and mounted to pivot on both vertical and horizontal axes, a horizontal mirror beneath said bar, and caliper members adjustable longitudinally and transversely of said bar for obtaining the position of points on the foot with respect to said bar.

11. An apparatus for measuring feet comprising in combination a bar adapted to have the foot placed longitudinally thereover, a heel rest adjustable in the same vertical plane as said bar, an exploring lever adjustable longitudinally of said bar and mounted to pivot on both vertical and horizontal axes, a horizontal mirror beneath said bar, and a caliper member adjustable in the same vertical plane as said bar and also longitudinally of said bar for obtaining the position of points on the foot with reference to the bar.

12. An apparatus for measuring feet comprising in combination a bar adapted to have the foot placed longitudinally thereover, a toe rest adjustable in the same vertical plane as said bar, an exploring lever adjustable longitudinally of said bar and mounted to pivot on both vertical and horizontal axes, a mirror beneath said bar, and caliper members adjustable longitudinally and trausversely of said bar for obtaining the position of points on the foot with respect to said bar.

13. An apparatus for measuring feet comprising in combination a bar adapted to have the foot placed longitudinally thereover, a toe rest adjustable in the same vertical plane as said bar, an exploring lever adjustable longitudinally of said bar and mounted to pivot on both vertical and horizontal axes, a mirror beneath said bar, and a caliper member adjustable in the same vertical plane as said bar and also longitudinally of said bar for obtaining the position of points on the foot with reference to the bar.

14. An apparatus for measuring feet comprising a bar adapted to have the foot placed longitudinally thereover, and an exploring lever mounted on a horizontal axis and arranged for adjustment longitudinally and transversely of said bar.

15. An apparatus for measuring feet comprising means determining a base plane adapted to have the foot placed thereabove, and a caliper member arranged for obtaining the position of points on the bottom of said foot with relation to said plane, said caliper member being mounted for movement in three directions relatively to said plane.

16. An apparatus for measuring feet comprising means determining a base plane adapted to have the foot to be measured placed thereabove, a caliper member arranged for contacting with points on the bottom of said foot, said caliper member being mounted for movement in three directions relatively to said plane, and means whereby the position of a point with which said caliper member is in contact may be determined with relation to said plane.

17. An apparatus for measuring feet comprising means determining a base plane adapted to have the foot to be measured place thereabove, an exploring lever mounted for movement in three directions relatively to said plane and having an offset tip adapted for contacting with points on the bottom of said foot, and means whereby the position of a point with which said tip is in contact may be determined with relation to said plane.

18. An apparatus for measuring feet comprising means determining a base plane adapted to have the foot to be measured placed thereabove, an exploring lever mounted to pivot on an axis perpendicular to said plane, said lever being also mounted to move rectilinearly in two directions parallel to said plane as well as to pivot on a horizontal axis intersecting said vertical axis, and means whereby the position of a point with which said tip is in contact may be determined with relation to said plane.

CASTAGNOLA OLIVER.