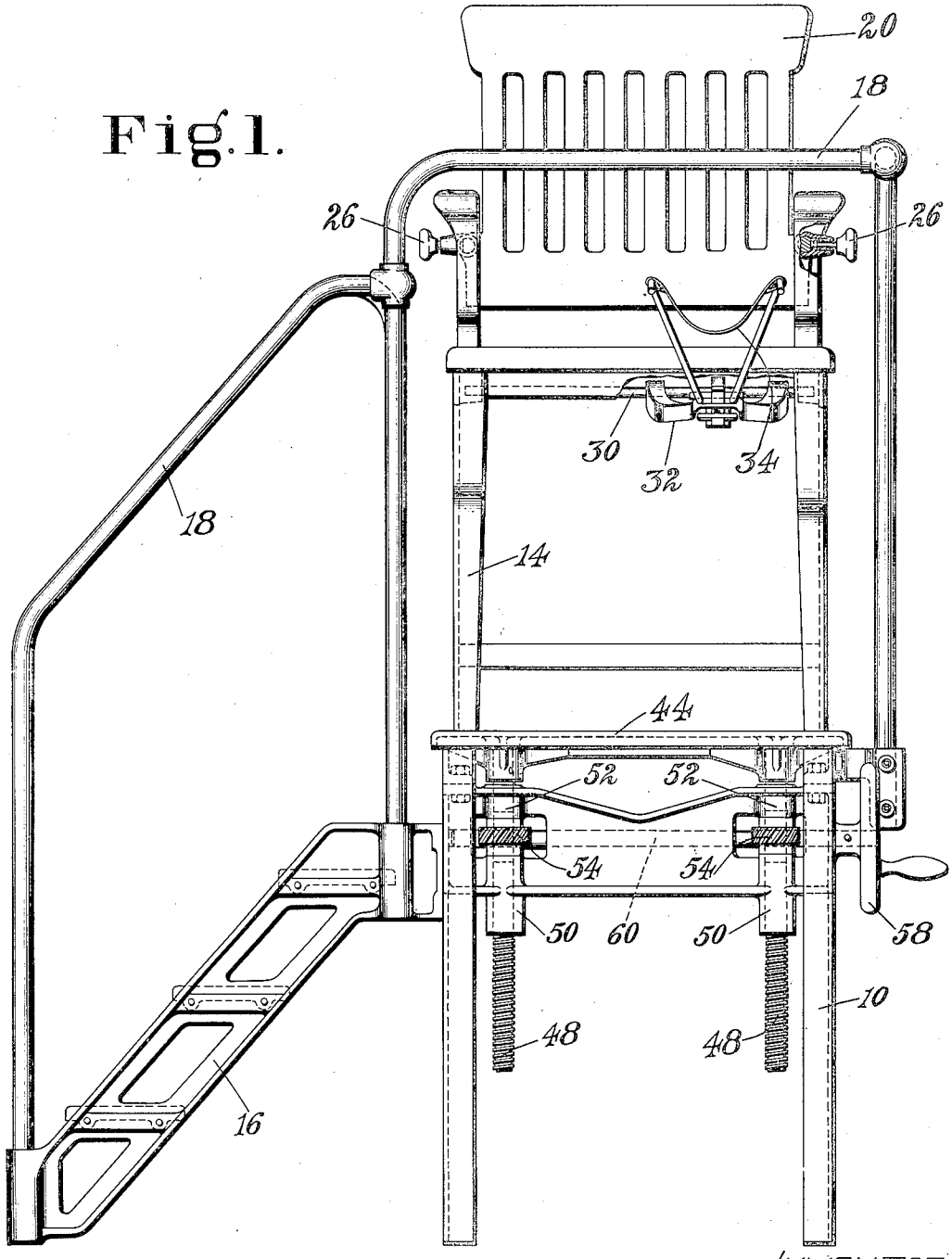
Nov. 27, 1934. W. L. BAXTER 1,981,941

APPARATUS FOR USE IN TAKING IMPRESSIONS OF FEET

Filed Dec. 27, 1930 3 Sheets-Sheet 1

Fig. 1.



INVENTOR

William L. Baxter

By his Attorney,

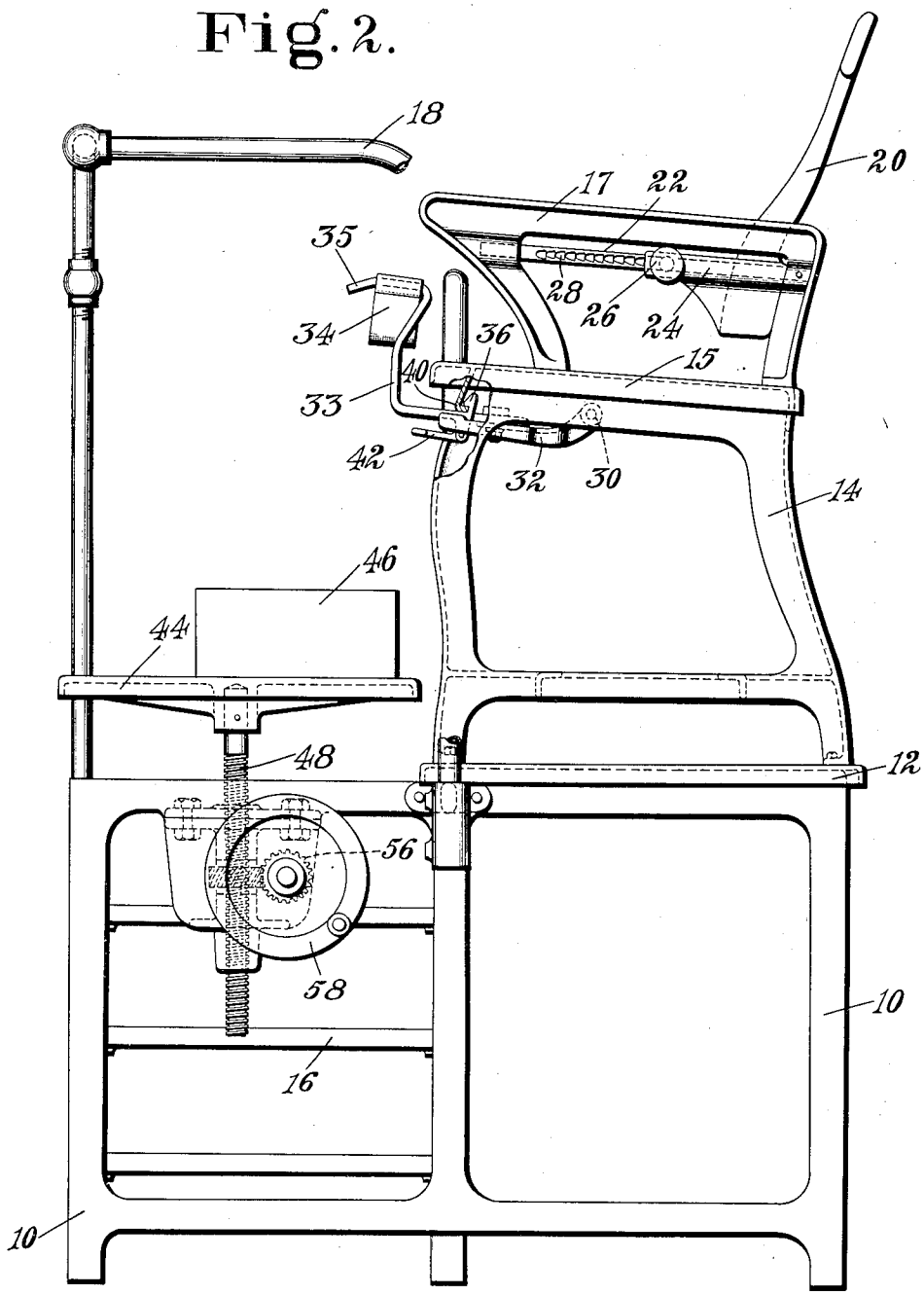
Harlow M. Davis

Nov. 27, 1934. W. L. BAXTER 1,981,941

APPARATUS FOR USE IN TAKING IMPRESSIONS OF FEET

Filed Dec. 27, 1930 3 Sheets-Sheet 2

Fig. 2.



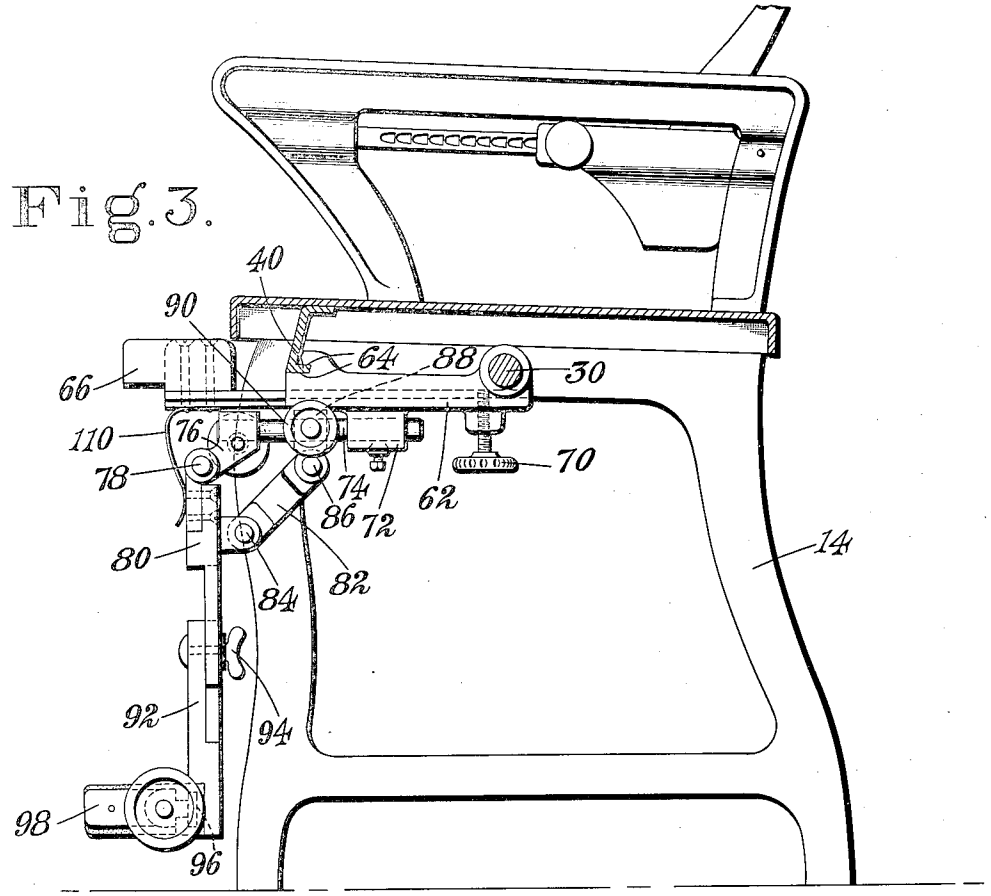
INVENTOR-
William L. Baxter
By his Attorney,
Harlow B. Davis

Nov. 27, 1934. W. L. BAXTER 1,981,941

APPARATUS FOR USE IN TAKING IMPRESSIONS OF FEET

Filed Dec. 27, 1930 3 Sheets-Sheet 3

Fig. 3.



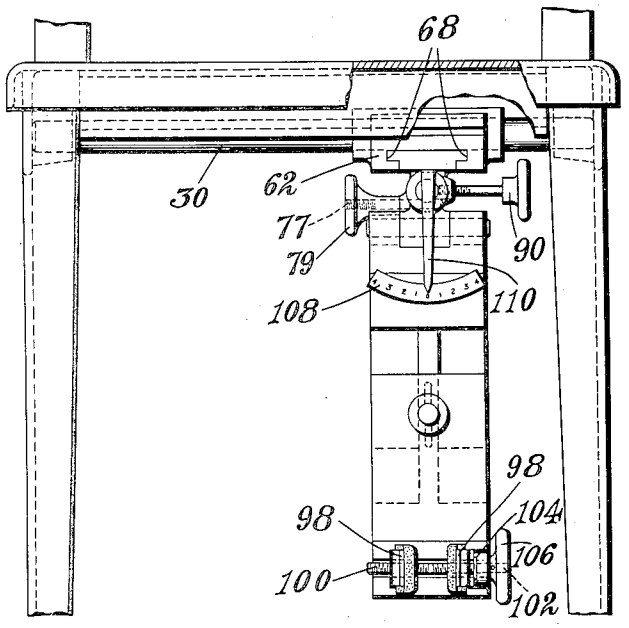


Fig. 4.

INVENTOR-
William L. Baxter
By his Attorney,
Harlow M. Davis

Patented Nov. 27, 1934 1,981,941

UNITED STATES PATENT OFFICE

1,981,941

APPARATUS FOR USE IN TAKING IMPRESSIONS OF FEET

William L. Baxter, Devereux, Mass., assignor to United Shoe Machinery Corporation, Paterson, N. J., a corporation of New Jersey

Application December 27, 1930, Serial No. 505,128

23 Claims. (Cl. 18—5)

The present invention relates to apparatus for use in taking impressions of human feet.

In making lasts for use in the manufacture of orthopedic shoes it is customary to provide the last-maker with accurate measurements of the feet of the wearer of the shoes so that the shoes when completed will not only fit the feet but that any corrective devices which may be incorporated in the shoes will be located properly with respect to the feet of the wearer. It has been found highly desirable in addition to provide the last-maker with casts of the feed in order that any anatomical defect may be brought to his attention and the lines of the last changed as required. In order to make these casts it is first necessary to obtain impressions of the feet. These impressions are commonly taken by means of molds which are later filled with a suitable material to obtain casts of the feet.

It is an object of the present invention to provide an improved apparatus for use in taking the impressions of the feet. It is well known that the weight-bearing points on the human foot are the os calsis or heel bone and the heads of the first and fifth metatarsals. In a normal foot these weight-bearing points are in the same horizontal plane when the tread surface of the foot is substantially at right angles to the tibia. However, due to inherent weakness of the feet or to the use of improperly fitting shoes the bones of the feet frequently become displaced to such an extent that these weight-bearing points are thrown out of their normal positions.

It is well known that the bones of the feet are given their principal support by the ligaments and are only controlled by the muscles and their attachments. When the feet are supporting the weight of the body the degree of flattening varies considerably depending upon the severity of the weakened condition of the ligaments. Accordingly it will be readily seen that the maximum distortion of the foot takes place when the foot is supporting the weight of the body. When the foot is in repose, that is when not supporting the weight of the body, the actual displacement of the bones of the foot may be accurately recorded and the proper corrective device selected for insertion in a shoe made for the foot. This corrective device may be so made that the displaced bones will be supported in normal position thereby tending not only to prevent further displacement of the bones but also to restore the foot to a normally balanced muscular condition.

It is a further object of the present invention to provide a convenient apparatus for use in taking impressions of the feet by means of which the feet may be held suspended in normal position with the weight of the body removed therefrom so that an impression of the foot may be taken which will accurately record any malformation or deformation thereof. Preferably and as illustrated means is provided in the form of a chair for supporting a person impressions of whose feet are to be taken and in accordance with a feature of the invention means is provided for supporting the leg of a person occupying the chair so that the foot will be suspended in normal depending position while an impression thereof is taken in a molding medium.

The present invention also provides means, illustrated as carried by the base of the apparatus, for supporting a molding box in operative relation to the foot of a person occupying the chair.

Other features of the invention relate to the provision of means adjustable relatively to the leg support and constructed and arranged to grip the leg to hold the latter against movement from normal depending position and to the provision of means for indicating the adjusted transverse positions of the gripping means whereby impressions may be taken of the feet with each foot held in substantially the same position relatively to the leg support.

Other objects and important features of the invention will be apparent when the following description and claims are considered in connection with the accompanying drawings.

In the drawings,

Fig. 1 is a front elevation of an apparatus embodying this invention;

Fig. 2 is a side elevation of the apparatus shown in Fig. 1, a part of the hand rail and chair being shown as broken away to disclose the means for holding the leg sling in operative position;

Fig. 3 shows a modified leg supporting device applied to the chair shown in Figs. 1 and 2; and

Fig. 4 is a front elevation of the leg supporting device shown in Fig. 3.

The illustrated apparatus comprises a base 10 having an upper platform 12 to which is rigidly secured a chair 14. The base 10 is provided with a short flight of stairs 16 by means of which a person, impressions of whose feet are to be taken, may ascend to the level of the platform 12. Hand rails 18 of convenient height are provided in order to assist the person to ascend the stairs 16 and to occupy the chair 14. The chair 14 is provided with a seat 15, arms 17 and a forwardly and rear-

wardly adjustable back supporting member 20 supported by rods 22 passing through lugs 24 projecting from the sides of the back 20. The lugs 24 are provided with spring-pressed plungers 26 the ends of which are arranged each to engage one of a series of notches 28 formed on each rod 22 to hold the back 20 in any position of adjustment into which it may be moved. Pivotally and adjustably mounted on a transversely extending rod 30 carried by the chair 14 is a bracket 32 having a pair of diverging forwardly extending rods 33 to the curved ends 35 of which are attached the ends of a conformable leg supporting sling 34, preferably made of flexible material such, for example, as canvas, cloth or leather. The sling 34 is arranged to support either the right or left leg of a person occupying the chair by engaging either leg under the forward end of the femur bone. The bracket 32 is provided with a spring-pressed pivoted latch 36 arranged to engage a lip 40 formed on a transversely extending rib depending from the under side of the front of the seat 15 to hold the leg sling 34 in operative position. The latch 36 is provided with a forwardly extending arm 42 by means of which the operator may disengage the latch and lip and allow the bracket 32 and leg sling 34 to swing downwardly beneath the seat 15. The base 10 is provided with a vertically adjustable platform 44 arranged to support a molding box 46 of suitable form. In order that the box 46 (Fig. 2) may be moved into any desired heightwise position with respect to the foot of a person occupying the chair 14, suitable means is provided under the control of the operator for raising and lowering the platform 44. In the illustrated construction, as best shown in Fig. 1, the platform 44 is provided with a pair of depending threaded rods 48 which are journaled in bearings 50, 52 carried by the base 10. The platform 44 is raised or lowered through intermeshing skew gears 54, 56 by means of a hand wheel 58 fast to the outer end of a transverse shaft 60 carried in suitable bearings in the base 10 of the apparatus. The gears 54 are threaded to receive the rods 48 and are held against vertical movement between adjacent faces of the bearings 50, 52. The gears 56 are fast on the shaft 60.

While it will be readily seen that the leg sling 34 is arranged to support the leg of a person occupying the chair 14 so that the foot will be held in depending position with the muscles thereof completely relaxed thereby disclosing any malformation of the foot which will be accurately recorded in an impression taken of the foot in this position, it has been found desirable to provide means for holding the leg against movement while an impression of the foot is being taken. Accordingly the present invention contemplates the provision of means for holding the leg of a person occupying the chair 14 against movement during the taking of an impression of the foot. As illustrated the leg clamping means is adjustably connected to the under side of a leg support and is arranged to engage the lower or ankle end of the tibia bone to hold the leg in the desired position.

Referring now to Figs. 3 and 4 the illustrated chair 14 is provided with a bracket 62 slidably mounted on the transverse shaft 30 and having a slot 64 formed therein to engage the lip 40. An adjustable leg support 66 is provided movable in ways 68 formed in the bracket 62. The leg support 66 is held in adjusted position by means of a set screw 70. Depending from the under side of the support 66 is a lug 72 through which passes a short rod 74 upon the outer end of which is pivotally mounted a bracket 76. The bracket 76 is held in adjusted position by means of a draw bolt 77 and nut 79. Pivotally connected to the bracket 76 at 78 is a member 80 held against swinging movement by means of a short link 82 connected at 84 to the member 80 and at 86 to a collar 88 loosely mounted on the rod 74. The collar 88 is held against sliding movement on the rod 74 by means of a set screw 90. Adjustably connected to the member 80 by means of a tongue and slot connection is a bracket 92 held in adjusted heightwise position by means of a binding screw and nut 94 and having a way 96 formed adjacent its lower end in which is slidably mounted a pair of leg gripping members or clamps 98 the contacting faces of which are covered with a soft material such, for example, as leather or rubber. The gripping members 98 are provided with oppositely threaded holes to receive a rod 100 having right- and left-hand threads formed thereon. The reduced end portion 102 of the rod 100 passes through a lug 104 formed on the bracket 92. Secured to the outer end of the rod 100 is a handle 106 by means of which the rod 100 may be rotated to move the members 98 toward and from each other.

From the foregoing it will be readily seen that the gripping members 98 may be swung about horizontal axes extending transversely and longitudinally of the chair 14 so as to grip the leg of the person occupying the chair to hold the leg in normal depending position. It has been found convenient to provide means for indicating the adjusted positions of the gripping members 98 transversely of the chair 14 in order that impressions may be taken of the feet, with each foot held in substantially the same position relatively to the leg support 66. Accordingly a graduated plate 108 and a pointer 110 are provided, the plate 108 being carried by the member 80 and the pointer 110 depending from the support 66.

In taking impressions of the feet the bracket 32 may be moved transversely of the chair 14 and then swung upwardly into operative position so that the leg sling 34 will support either the right or left leg of the person occupying the chair with the foot held in normal depending position. The molding box 46 may be moved along the platform 44 to a position beneath the suspended foot and then elevated by rotation of the handle 58 so that the foot will be immersed in a molding medium contained in the box 46.

If the age or physical condition of the person occupying the chair is such that it is desirable to hold the person's leg against movement while an impression of the foot is being taken, the leg support 66, to which is adjustably and pivotally connected leg gripping member 98, may be used in place of the leg sling 34. By loosening the nut 77 and set screw 90 the gripping members 98 may be moved into any desired position of adjustment relatively to the support 66 so as to engage the lower or ankle end of the tibia bone. The nut 77 and set screw 90 may then be tightened to hold the members 98 in adjusted position. Rotation of the hand wheel 106 in a clockwise direction, as viewed in Fig. 3, will cause the members 98 to move toward each other to grip the ankle and to hold the leg against movement out of normal depending position.

Having described the invention what I claim as

new and desire to secure by Letters Patent of the United States is:

1. An apparatus for use in taking an impression of a foot comprising a chair, means carried by the chair and arranged to support the leg and foot of a person occupying the chair in depending position, said means comprising a forwardly and rearwardly adjustable member arranged to engage the leg under the forward end of the femur bone, and means for supporting a molding box in operative relation to the foot.

2. An apparatus for use in taking an impression of a foot comprising a chair, an adjustable member arranged to support the back of a person occupying the chair, a conformable leg supporting member adjustable transversely of the chair to support either the right or the left leg of a person occupying the chair so that the foot will be held in normal depending position, and means for supporting a molding box in operative relation to the suspended foot.

3. An apparatus for use in taking an impression of a foot comprising a chair having a forwardly and rearwardly adjustable back-supporting member, means for holding the back-supporting member in adjusted position, a leg sling movable from beneath the seat of the chair into operative position in front of the chair, means for holding the leg sling in said position whereby the leg of a person occupying the chair may be held with the foot suspended in normal position, and means for supporting a molding box in any desired position heightwise relatively to the suspended foot.

4. An apparatus for use in taking an impression of a foot comprising a chair arranged to support a person impressions of whose feet are to be taken by means of a molding box, a bracket carried by the chair and mounted for transverse movement relatively thereto, a flexible leg support mounted on the bracket for supporting the leg of a person occupying the chair with the foot suspended in normal position, a vertically adjustable molding box support, and means for elevating the support to bring the molding box into operative relation to the foot.

5. An apparatus for use in taking an impression of a foot comprising a chair arranged to support a person impressions of whose feet are to be taken by means of a molding box, a pivoted bracket carried by the chair, a conformable leg-supporting sling carried by the bracket, a latch for locking the bracket in operative position whereby the leg of a person occupying the chair may be supported by the sling with the foot in normal depending position, and means for supporting a molding box in operative relation to the suspended foot.

6. An apparatus for use in taking an impression of a foot, comprising a chair, means carried by the chair for supporting the leg of a person occupying the chair with the foot suspended in normal position, means for holding the leg in said position, and means for supporting a molding box in operative relation to the suspended foot.

7. An apparatus for use in taking an impression of a foot having, in combination, a chair, means carried by the chair for supporting the leg of a person occupying the chair with the weight of the leg removed therefrom, means for holding the leg in said position, a support for a molding box, and means for elevating the support to bring the molding box into operative relation to the foot.

8. An apparatus for use in taking an impression of a foot having, in combination, a chair, means carried by the chair for supporting the leg of a person occupying the chair with the leg suspended in normal depending position, a bracket carried by the leg support and adjustable relatively thereto, means carried by the bracket for gripping the leg of the person occupying the chair to prevent movement of the suspended leg relatively to the support, and means for indicating the adjusted position of the bracket.

9. An apparatus for use in taking an impression of a foot having, in combination, a base, a chair rigidly secured thereto, means carried by the chair for supporting the leg of a person occupying the chair with the leg held in normal depending position, means for gripping the leg to hold the leg in said position, and means for supporting a molding box in operative relation to the suspended foot.

10. An apparatus for use in taking an impression of a foot having, in combination, a base, a chair rigidly secured thereto, a support carried by the chair for holding the leg of a person occupying the chair with the leg and foot in normal depending position, adjustable means carried by the leg support for maintaining the leg in said position, and a support for holding a molding box in operative relation to the foot.

11. An apparatus for use in taking an impression of a foot having, in combination, a chair having an adjustable back supporting member, an adjustable leg supporting member arranged to support the leg of a person occupying the chair with the leg and foot suspended in normal depending position, a pair of leg gripping clamps adjustable relatively to the support and constructed and arranged to grip the lower end of the tibia to hold the leg against movement out of normal depending position, and means for holding the gripping clamps in adjusted position.

12. In an apparatus for use in taking an impression of a foot the combination with a base having a supporting chair attached thereto, of leg supporting means adjustable transversely of the chair and movable into operative position in front of the chair to support either the right or left leg of a person occupying the chair with the foot suspended therefrom in normal depending position, and means for moving a molding box upwardly into engagement with the suspended foot.

13. In an apparatus for use in taking an impression of a foot the combination with a base having a supporting chair attached thereto, of leg supporting means adjustable longitudinally of the chair and movable transversely thereof to support either the left or right leg of the person occupying the chair with the foot suspended therefrom in normal depending position, and means for moving a molding box into any desired position heightwise relatively to the suspended foot.

14. In an apparatus for use in taking an impression of a foot the combination with a supporting chair, of independently adjustable leg supporting means and ankle gripping means constructed and arranged to support the leg of a person occupying the chair with the weight of the leg removed from the foot and to hold the leg against movement from normal depending position.

15. In an apparatus for use in taking an impression of a foot the combination with a supporting chair, of leg supporting means arranged to hold the leg of a person occupying the chair suspended in normal depending position, and means carried by the support movable about hori-

zontal axes extending longitudinally and transversely of the support and constructed and arranged to grip the lower end of a leg depending from the support to hold the leg in any desired position of adjustment relatively thereto.

16. In an apparatus for use in taking an impression of a foot the combination with a supporting chair, of leg supporting and gripping means co-operating to support and to hold the leg of a person occupying the chair in normal depending position, and means for moving a molding box into engagement with the suspended foot so that an impression of the foot may be taken in said position.

17. In an apparatus for use in taking an impression of a foot the combination with a supporting chair, a support for the leg of an occupant of a chair, and a leg gripping clamp comprising a pair of members carried by the support and arranged to grip the lower or ankle end of the tibia to hold the leg in supported position.

18. In an apparatus for use in taking an impression of a foot the combination with a supporting chair, of a transversely and longitudinally adjustable leg support constructed and arranged to support either the right or left leg of a person occupying the chair with the leg and foot suspended in normal depending position, and a pair of independently adjustable leg gripping clamps pivotally mounted on the support and adapted to hold the leg against movement from normal depending position.

19. In an apparatus for use in taking an impression of a foot the combination with a supporting chair, of a leg support adjustable relatively to the chair, and a pair of leg gripping clamps carried by the support and mounted for swinging movement about a horizontal axis extending longitudinally of the support, and means for indicating the extent of transverse swinging movement of the gripping clamps with respect to the leg support.

20. In an apparatus for use in taking an impression of a foot the combination with a supporting chair, of a slidably mounted leg support, and a bracket carried by the support and mounted for swinging movement about a horizontal axis extending longitudinally of the support, said bracket having a pair of leg gripping clamps adjustably mounted adjacent its lower end, said support having a pointer and said bracket having a co-operating scale for indicating the extent of swinging movement of the gripping clamps relatively to the support.

21. In an apparatus for use in taking an impression of a foot the combination with a supporting chair, of a slidably mounted leg support movable transversely of the chair to support either the right or left leg of a person occupying the chair, and a bracket carried by the support mounted for swinging movement about horizontal axes extending transversely and longitudinally of the support and having a pair of leg gripping clamps mounted adjacent its lower end, said support having a pointer and said bracket having a co-operating scale to determine the lateral position of the gripping members relatively to the support.

22. In an apparatus for use in taking an impression of a foot the combination with a supporting chair, of a slidably mounted leg support movable transversely of the chair to support either the right or left leg of a person occupying the chair, a bracket carried by the support and mounted for swinging movement about horizontal axes extending transversely and longitudinally of the support, a second bracket slidably connected to the first bracket, a pair of leg gripping clamps carried by the second bracket, and means for moving the leg gripping clamps toward and from each other.

23. In an apparatus for use in taking an impression of a foot, the combination with a supporting chair, of a leg support movable transversely of the chair and adjustable longitudinally thereof to support the leg of a person occupying the chair under the forward end of the femur, a bracket slidably connected to the support and mounted for swinging movement about axes extending transversely and longitudinally of the support, a second bracket adjustably connected to the first bracket, means for holding the second bracket in adjusted position, a pair of independently adjustable leg gripping clamps slidably connected to the second bracket, and hand-operated means for moving the gripping clamps toward and from each other.

WILLIAM L. BAXTER.