March 17, 1959 A. E. MURRAY 2,877,502

PROCESS OF FOOT CASTING

Filed Oct. 25, 1955

Fig. 1.

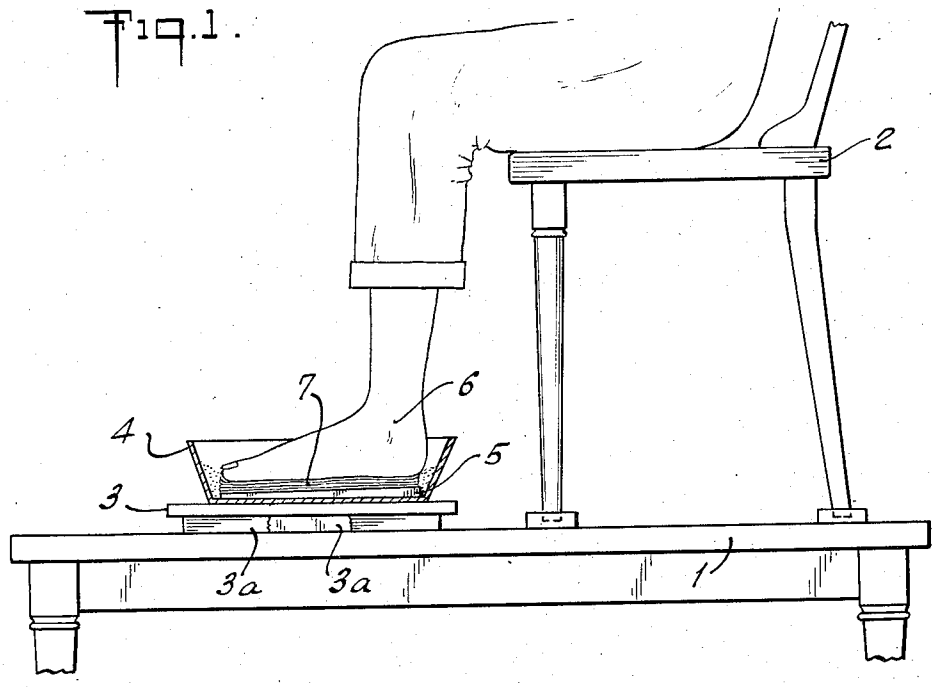


Fig. 2.

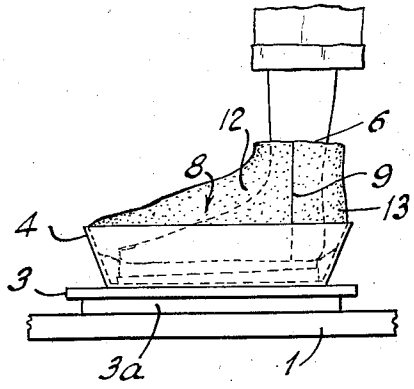
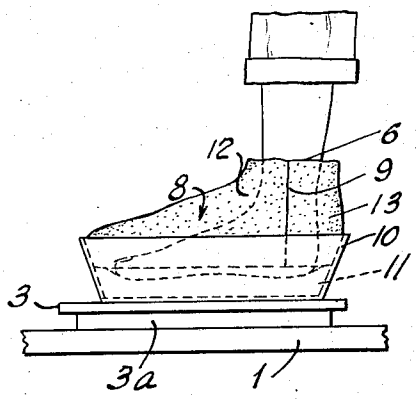


Fig. 3.



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PROCESS OF FOOT CASTING

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6 Claims. (Cl. 18—55.05)

My invention relates particularly to a process of making a foot cast with great accuracy.

An object of my invention is to provide a process whereby foot casts may be made to conform with the utmost accuracy to the foot contours. Another object is to incorporate in the cast the accurate body-weight impression of the foot when supported in a hydraulic medium. Further objects of my invention will appear from the detailed description of the same hereinafter.

While my invention is capable of being carried out in many different ways, by way of illustration I have described only certain methods of procedure in connection therewith, in relation to the accompanying drawings, in which—

Fig. 1 is a side elevation of a table and chair, together with a longitudinal vertical section of a pan in which the upper or baffle portion of a negative foot cast is being made in accordance with my invention;

Fig. 2 is a side elevation of the same pan as shown in Fig. 1, with the plaster of Paris as applied to the upper portion of the foot; and

Fig. 3 is a side elevation showing a second pan in which the lower portion of the cast is being made.

In carrying out my invention, I preferably provide a table 1 on which I place a chair 2 for seating the person from whose feet the casts are to be made. In front of the chair 2 there is placed on the table 1 a low wooden rectangular stand 3, supported on said table by two cross pieces 3*a* made of wood, which are attached to the wooden stand 3.

The wooden stand 3 is provided for supporting a rectangular pan 4. On the bottom of said pan 4 there may be provided a wedge 5 having the thick part thereof located so as to be beneath the heel of a foot 6, the cast of which is to be made thereon. Instead of said wedge 5 there may be utilized for this purpose a part of a sphere or ball cast out of plaster of Paris, such as disclosed in my copending application upon Interdigital Toe-positioners, Casts, Footwear, Process of Making the Same and Products Thereof, Ser. No. 465,109, filed October 27, 1954.

There are now placed on top of the wedge 5 about eight pieces of fabric such as terry cloth 7, which is a loose weave fabric with a looped pile on both faces thereof, each of which is wet with water and wrung out. I then place them one after another, on top of one another, on the top of the wedge 5. This forms a hydraulic mat with liquid present between the different layers of the terry cloth 7 and in the pile thereof. The said person is first made to stand on the table 1 with the body weight resting on the foot 6 so as to press it down and produce a foot impression, including the toe recess pyramid, in the hydraulic mat, comprising the pieces 7, until some of the water just becomes visible around the margin of the foot 6. Then the pieces 7 are pressed down with the fingers all around the foot so that the upper level thereof is at the undercut line of the foot. Now I put a little sand

between the toes to bring up the levels between the toes to the undercut line. The said person is made to sit on the chair 2 so as to have only the weight of the foot 6 resting on the said pieces 7, this being approximated by placing the hand under the horizontal curve of the leg carrying the foot 6 so as to support it slightly, thus lessening the leg weight until substantially only the weight of the foot bears down within the said pan 4. This aids in producing a hydraulic suspension for the foot within the said pan 4. Thereupon, I prepare a pan of plaster of Paris and water, preferably ice water, having about the thickness of thin mud, and having about one tablespoon of salt therein to the volume of plaster of Paris and water utilized in making the negative cast of the foot 6 in order to accelerate the setting thereof. This plaster of Paris mixture is then applied all over the foot within the pan 4 and up to the point slightly above the ankle bone to form a baffle 8 of the negative cast, as shown in Fig. 2. While the plaster cast 8 is still soft, two vertical weakening lines 9 are made on the cast 8 on opposite sides thereof passing through the ankle bone. This portion of the negative cast is allowed to set for about five minutes so as to harden slightly, which is evidenced by the feeling of heat in the foot 6. Thereupon, the foot 6 is lifted out of the pan 4 and away from the terry cloth pieces 7 by lifting with the hand beneath the horizontal curve of the leg. Now a silicate of soda solution in water is brushed all over the underneath portion of the foot and cast 8 to form a separating layer. A second pan 10, like the pan 4, is then filled approximately three quarters full with the said plaster of Paris mixture 11 and the foot 6, having thereon the upper cast 8, is lowered into the second pan 10 where the foot and cast 8, having the leg weight thereon while the said person is seated, rests on the plaster of Paris mixture 11 in the same. Now the operator, with his hands, presses the cast 8 down into the plaster of Paris until the cast 8 and the foot make complete contact with the liquid plaster of Paris mixture 11 in the pan 10, thus forming, also, a toe-recess pyramid. Then the plaster of Paris mixture 11 is allowed to harden for above five to ten minutes, which is evidenced by the heating of the foot 6.

Thereupon the foot 6, with the entire cast thereon, is lifted out of the pan 10. The composite cast 8, 11 is now tapped gently with a hammer, which causes the bottom cast 11 to fall away from the cast 8. Then the cast 8 is tapped more forcibly, which breaks the upper cast 8 into two parts, a forward part 12 and a rear portion 13. This provides a three-piece negative cast, from which residual sand may be removed by brushing, which is now brushed on its entire inner surface with the silicate of soda solution to act as a separator. The three portions of the negative cast can now be fastened together with three or more rubber bands and a positive cast can be made therein by pouring more of the same kind of plaster of Paris mixture therein, which is allowed to set until it is hard, after which the said rubber bands are removed and the three portions of the negative cast are taken off, resulting in a completed positive cast. This positive cast carries the detailed shape of the contours of the body-weight-bearing foot with the utmost accuracy, especially as it is made while supported in a hydraulic medium and as in making the negative cast all arbitrary shapes or supports for the foot are eliminated.

While I have described my invention above in detail I wish it to be understood that many changes may be made therein without departing from the spirit of the same. For instance accurate casts of other foot shapes or casts could be made in accordance therewith.

I claim:

1. The method of forming a negative cast of the foot

which comprises placing a hydraulic mat, comprising a plurality of layers of wet woven fabric material on a support, pressing the foot down into the hydraulic mat to form an impression of the foot therein, covering the exposed portion of the top of the foot with a molding material which is adapted to set and form a lock on the exposed top portion of the foot, maintaining the foot in the impression while the molding material sets to form the lock, removing the foot from said hydraulic mat and then pressing the exposed bottom portion of the foot down into a separate mass of molding material while the lock is still in place on the foot to form an impression of the bottom of the foot and complete the cast.

2. The method specified in claim 1 which includes the step of applying full body weight to the foot when it is pressed down into the hydraulic mat.

3. The method of forming a negative cast of the foot which comprises placing a wet mat, comprising a plurality of layers of woven fabric material on a support, pressing the foot down into the wet mat under full body pressure to form an impression of the foot therein, covering the exposed portion of the top of the foot with a molding material which is adapted to set and form a lock on the exposed top portion of the foot, maintaining the foot in the impression while the molding material sets to form the lock, removing the foot from said impression

and then pressing the exposed bottom portion of the fooot down into a separate mass of molding material while the lock is still in place on the foot to form an impression of the bottom of the foot and complete the cast.

4. The method specified in claim 3 which includes the step of forming the wet mat of fabric material by wetting a plurality of strips of terry-cloth fabric material and then placing the plurality of strips on top of each other to form the hydraulic mat.

5. The method specified in claim 3 in which the molding material comprises plaster of Paris in liquid form.

6. The method specified in claim 1 which includes the step of forming a hydraulic mat by superimposing one upon the other a plurality of layers of woven fabric material wet with water.

References Cited in the file of this patent

UNITED STATES PATENTS

1,925,459	Parker et al.	Sept. 5, 1933
2,154,169	Koehler	Apr. 11, 1939
2,177,304	Murray	Oct. 24, 1939
2,352,067	Barr	June 20, 1944
2,472,754	Mead	June 7, 1949
2,547,419	Sugarman et al.	Apr. 3, 1951
2,668,304	Murray	Feb. 9, 1954