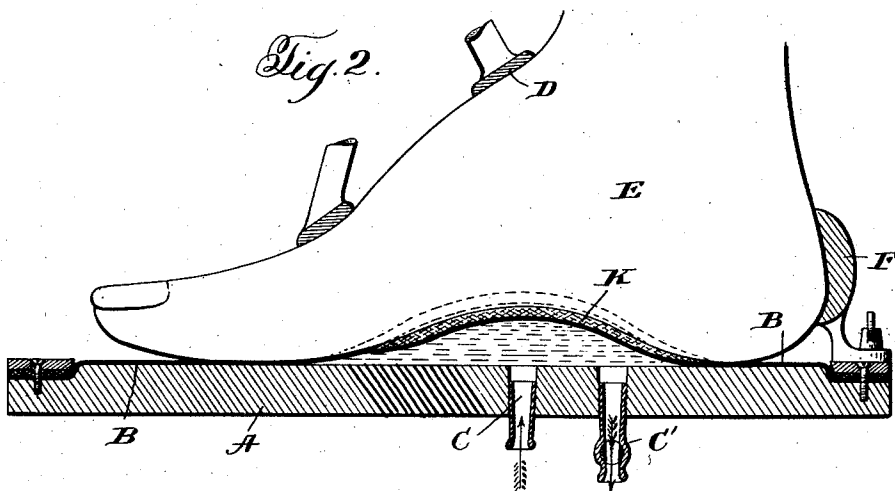
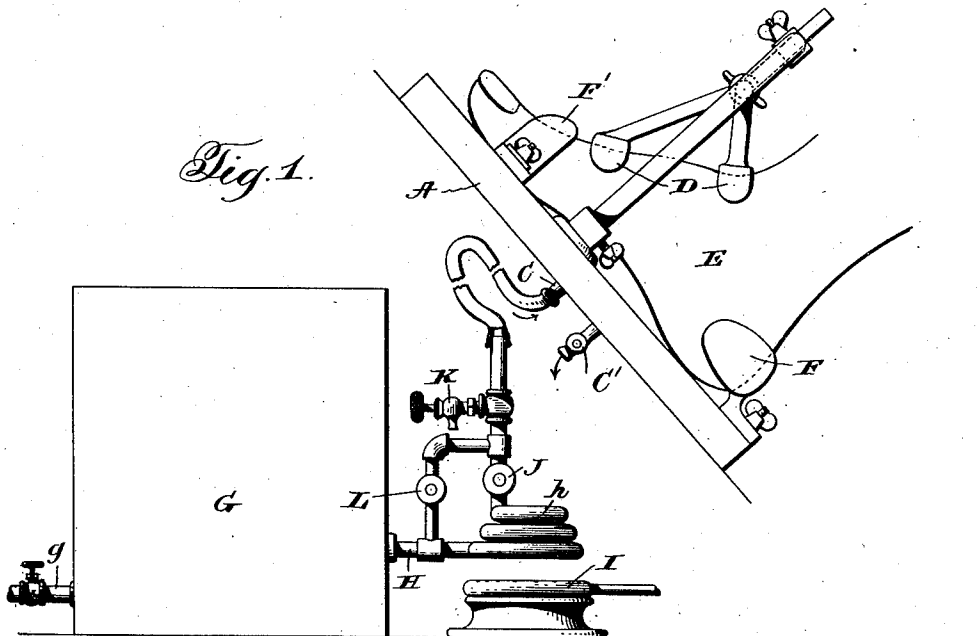


W. C. J. GUILFORD.
METHOD OF FORMING ARCH SUPPORTS OR PATTERNS THEREFOR.
APPLICATION FILED JAN. 7, 1910.

1,044,171.

Patented Nov. 12, 1912.

2 SHEETS—SHEET 1.



Witnesses:

James Hutchinson,
Chas. Thomas.

Inventor:

William C. J. Guilford,
By T. Macmillan Attorneys.

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Fig. 3.

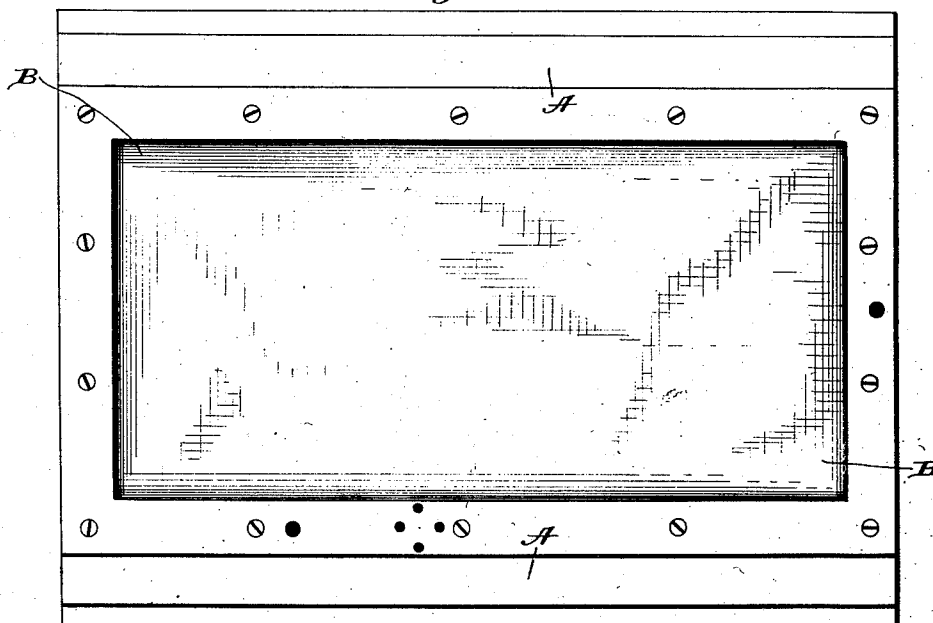
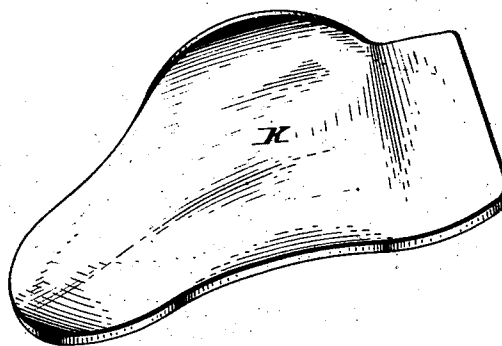


Fig. 4.



Witnesses:

James Hutchinson
Chas. Thomas

Inventor:

William C. J. Guilford

By *Macmillan* Attorneys

UNITED STATES PATENT OFFICE.

WILLIAM C. J. GUILFORD, OF WASHINGTON, DISTRICT OF COLUMBIA, ASSIGNOR TO
WILHELMINIA M. GUILFORD, OF WASHINGTON, DISTRICT OF COLUMBIA.

METHOD OF FORMING ARCH-SUPPORTS OR PATTERNS THEREFOR.

1,044,171.

Specification of Letters Patent.

Patented Nov. 12, 1912.

Application filed January 7, 1910. Serial No. 536,910.

To all whom it may concern:

Be it known that I, WILLIAM C. J. GUILFORD, a citizen of the United States, residing at Washington, in the District of Columbia, have invented certain new and useful Improvements in Methods of Forming Arch-Supports or Patterns Therefor, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention has for its object the provision of a simple, expeditious and practical method of taking impressions for or forming devices for use in connection with the treatment of members of the human body, and more particularly for the production of arch supports or props for individual or specific arches. The invention also includes the article produced by said method.

The invention contemplates the taking of an impression of an arch or the direct forming of a support by forcing a flexible sheet or blank such as wax, prepared cloth or equivalent substances dependent upon whether the impression device is to constitute a pattern for or the support itself, against the particular arch being treated with uniform pressure throughout the extent of the surface of the sheet or blank to obtain the minutest conformation to the foot. Conveniently, the treatment of the blank or sheet is through the instrumentality of fluid pressure, preferably first the application of a hot fluid against a blank susceptible to heat to press and readily form the blank against the arch of the foot, and subsequently while maintaining the pressure, the withdrawing of the heat and the application of a relatively cool fluid for setting the blank in its conformed condition.

The invention further embraces as an important feature thereof, the step of forcing the flexible blank under the equal pressure throughout against the arch of the foot not simply to conform to the surface contour of the arch of an impaired or fallen foot, but to raise the bony or structural parts of the arch so that the support or prop ultimately obtained will perform not only the ordinary function of a device of this kind in constituting a rest or support, but will perform the additional function of positively elevating the impaired arch structure to enable the same to become correspondingly corrected or restored to normal natural condition.

I have devised an apparatus capable of materially assisting in the carrying of my present method into practical effect, but will not claim the same herein, inasmuch as it constitutes the subject matter of a copending application executed of even date herewith. Therefore it is simply necessary here to illustrate more or less diagrammatically such features of said apparatus as will facilitate the imparting of a full and complete understanding of my present method. To that end, I have illustrated in the accompanying drawings forming part hereof in Figure 1, a side elevation of the parts for securing the desired impression. Fig. 2, a particular foot in position to be treated, the former being shown in full lines as expanded into surface engagement with the foot and in dotted lines, the former expanded further to elevate the arch structure of the foot, Fig. 3 is a plan view of the former, and Fig. 4 a perspective view of a pattern or support as the case may be, formed in keeping with my improved method.

A represents a base plate or support, B a flexible former secured thereto, the latter being sealed around its edges and provided with an inlet for the treating fluid through the medium of a nipple C inserted through the base A and discharging into the space between said base and the former B. C' is a similar valved outlet.

D represents adjustable bearing members or clamps adapted to engage the foot, represented at E to hold the same in proper position against the base A and relative to the former B, a heel rest F being also provided on the base as shown.

A lateral toe rest is indicated at F'.

Any suitable means may be employed for furnishing fluid under pressure for expanding the former B, that illustrated conveniently comprising a compressed air storage tank G supplied from any suitable source of supply through a pipe g, a pipe H leading from said storage tank to the nipple C before referred to. Intermediate its ends, this pipe H is formed into a coil h adjacent to a heater I for heating the air passing there-through as desired, and between the heating coil and the discharge end of the pipe H, a controlling valve J is provided to shut off or open communication with the tank. A pet-cock K in said pipe H between the

valve and the discharge end of the pipe will permit the air to escape from beneath the former B.

L is a valved by-pass feeding around the heater I and valve J, as shown.

K represents the sheet or blank, the same being of a flexible substance capable of softening under high heat, such as a wax composition; or a specially treated fabric, or equivalent substances dependent upon whether the impressed blank is to constitute a pattern from which the arch support is to be subsequently formed or said impressed blank is itself to directly constitute said support.

With the foregoing understanding of the structural characteristics of the apparatus, the performance of my method may now be followed, to wit: It being understood that my aim and desire is to specially treat each and every foot as distinguished from the mere furnishing of what might be styled standard arch supports or props adapted to be subsequently bent or refashioned usually by manual manipulation to the foot, I securely fasten the foot to be treated to the base or support A through the medium of the bearing or clamping members D, with the arch of the foot in proper position above the forming sheet B, and the sheet or blank interposed between the forming sheet B and the foot. I then subject the air within the coil to the heating influence of the burner and by opening the controlling valve (the pet-cock being closed), the heated air is admitted below the forming sheet B, and the same expanded upwardly under equal pressure at all points and under high heat against the blank K, which in turn is pressed against the arch of the foot and readily shaped to the contour of the foot, as shown in Fig. 2, the admission of air and pressure being continued to force the impaired or fallen arch structure of the foot upwardly to the desired extent to be determined in keeping with the comfort and ease of the patient, also represented in Fig. 2. At this point, the blank is allowed to conform to the minutest conditions of the foot by shutting off the controlling valve, thus maintaining the pressure in the former. Then the cold air is admitted around the heating coil and by proper manipulation in opening the outlet C' determined by the experienced skill of the operator or from any suitable pressure gage (not shown), the cold air is admitted to the former in volume to displace the hot air, the displacement being gradual and the formed pattern or support constituted from the blank or sheet K being thereby cooled and set in its accurately conformed condition. The air may be released from the former when the operation is completed, or as desired, through the pet-cock K.

I will not herein claim the article inas-

much as the same more properly constitutes subject matter for a divisional application.

I claim:

1. The method of forming a pattern for or an arch support which consists in utilizing the foot which is to be treated as a former, and forcing a blank of conformable material under substantially uniform pressure throughout toward the arch of the foot and until resisted by the bony structure constituting said arch, while maintaining the foot in position to resist displacement bodily.

2. The method of forming a pattern for or an arch support which consists in utilizing the foot which is to be treated as a former, and forcing a blank of conformable material under fluid pressure toward the arch of the foot and until resisted by the bony structure constituting said arch, while maintaining the foot in position to resist displacement bodily.

3. The method of forming a pattern for or an arch support comprising the forcing of a blank of conformable material under equal pressure throughout the extent of the blank against the arch of the foot and elevating the arch structure of the foot by said blank and under said pressure, substantially as and for the purpose described.

4. The method of forming a pattern for or an arch support comprising the forcing of a blank of conformable material under equal pressure throughout the extent of the blank against the arch of the foot and elevating the arch structure of the foot by said blank and under said pressure, and permitting the blank to become set in its conformed condition while in engagement with the foot.

5. The method of forming a pattern for or an arch support or prop which consists in forcing a blank of conformable material under equal pressure throughout its extent against the arch of the foot, and permitting the same to become set to its conformed condition while in engagement with the foot, the conforming of the blank being under a heated fluid pressure and the setting thereof under a relatively cool fluid pressure.

6. The method of forming a pattern for or an arch support comprising the forcing of a blank of conformable material under equal pressure throughout the extent of the blank against the arch of the foot and elevating the arch structure of the foot by said blank and under said pressure, and permitting the blank to become set in its conformed condition while in engagement with the foot, the conforming of the blank being under a heated fluid pressure and the setting thereof under a relatively cool fluid pressure.

7. The method, of substantially the character described, for the treatment of feet having impaired arches and the like, consisting in forcing a conformable material under pressure throughout toward the arch

of the foot which is to be treated and until resisted by the bony structure constituting said arch, and applying additional pressure to correctively elevate the arch structure, while maintaining the foot in position to resist displacement bodily.

8. The method of forming a pattern for or an arch support comprising the forcing of a blank of conformable material under equal fluid pressure throughout the extent of the blank against the arch of the foot and elevating the arch structure of the foot by said blank and under said fluid pressure, substantially as and for the purpose described.

9. The method, of substantially the character described, for the treatment of feet having impaired arches and the like, consisting in forcing a conformable material under fluid pressure toward the arch of the foot which is to be treated and until resisted by the bony structure constituting said arch and applying additional pressure to correctively elevate the arch structure, while maintaining the foot in position to resist displacement bodily.

10. The method of forming an individual arch support for a particular foot which consists in forcing a blank of conformable material adapted to ultimately constitute the arch support against the arch under uniform pressure throughout the extent of the arch, the pressure being sufficient to elevate the arch structure of the foot through the medium of the blank, substantially as and for the purpose described.

11. The method of forming an individual arch support for a particular foot which consists in forcing a blank of conformable material adapted to ultimately constitute the arch support against the arch under uniform fluid pressure throughout the extent of the arch, the pressure being sufficient to elevate the arch structure of the foot through the medium of the blank, substantially as and for the purpose described.

12. The method of forming a pattern for or an arch support or prop comprising the utilization of the foot which is to be treated as a former, and forcing of a blank of conformable material against the arch under uniform hot fluid pressure throughout the extent of the blank, and while maintaining the pressure withdrawing the heat and applying relatively cold fluid pressure to set the blank.

13. The method of forming a pattern for or an arch support or prop comprising the utilization of the foot which is to be treated as a former, and forcing of a blank of conformable material against the arch under uniform hot fluid pressure throughout the extent of the blank, and while maintaining the pressure withdrawing the heat and applying relatively cold pressure to set the blank, both the conforming and setting of the blank being effected while the foot remains in engagement with the blank.

14. In the method of forming devices for use on the human body, the positioning of a backing or resistance medium opposite to the member of the body to be treated, utilizing said member of the body as a former, and forcing a conformable material under substantially uniform pressure throughout against said member, substantially as described.

15. In a method of forming devices for use on the human body, the positioning of a backing or resistance medium opposite to the member of the body to be treated, utilizing said member of the body as a former, and forcing a conformable material under substantially uniform fluid pressure throughout against said member, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM C. J. GUILFORD.

Witnesses:

CARRIE A. KREY,
THOS. R. HEATH.