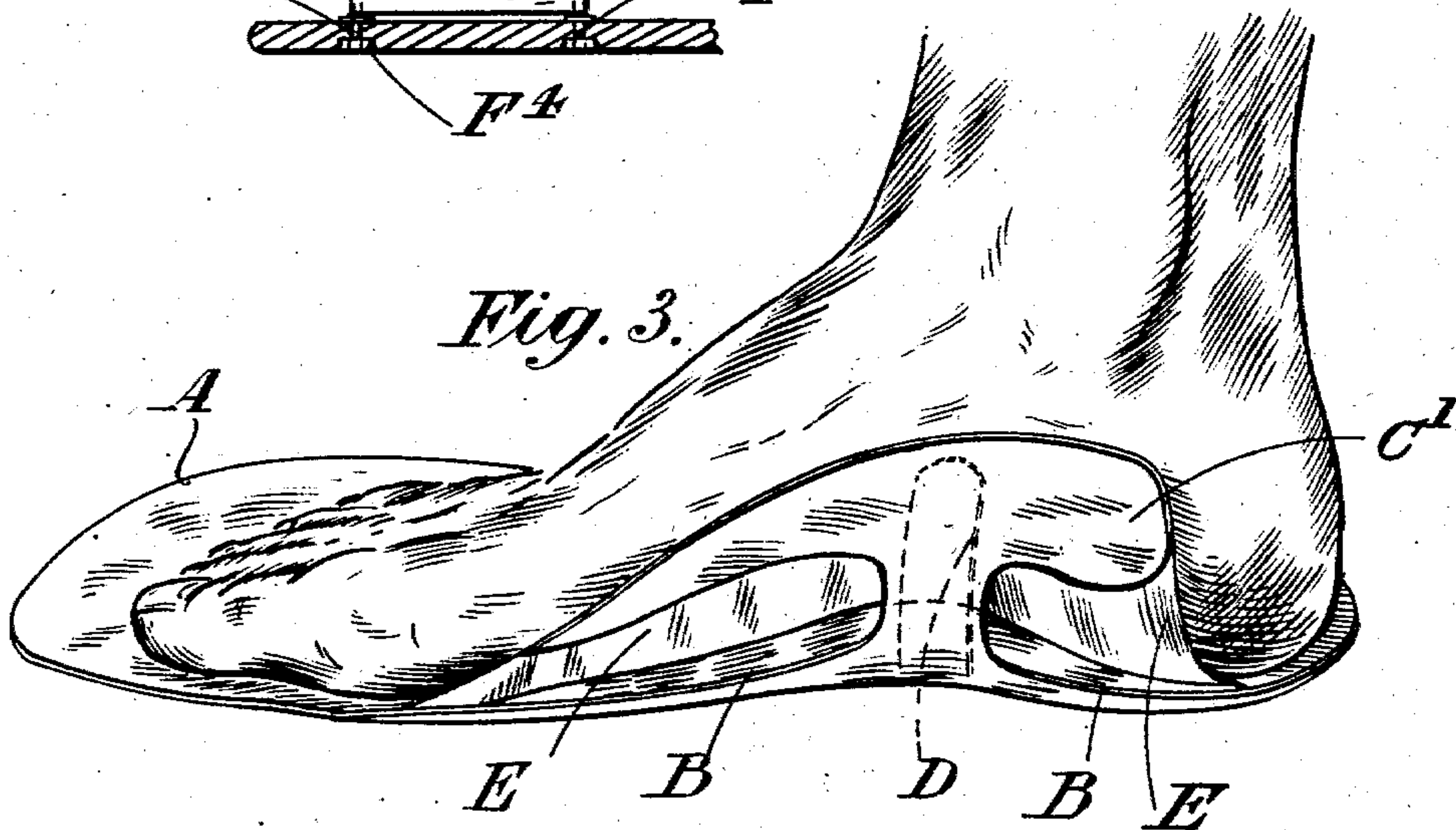
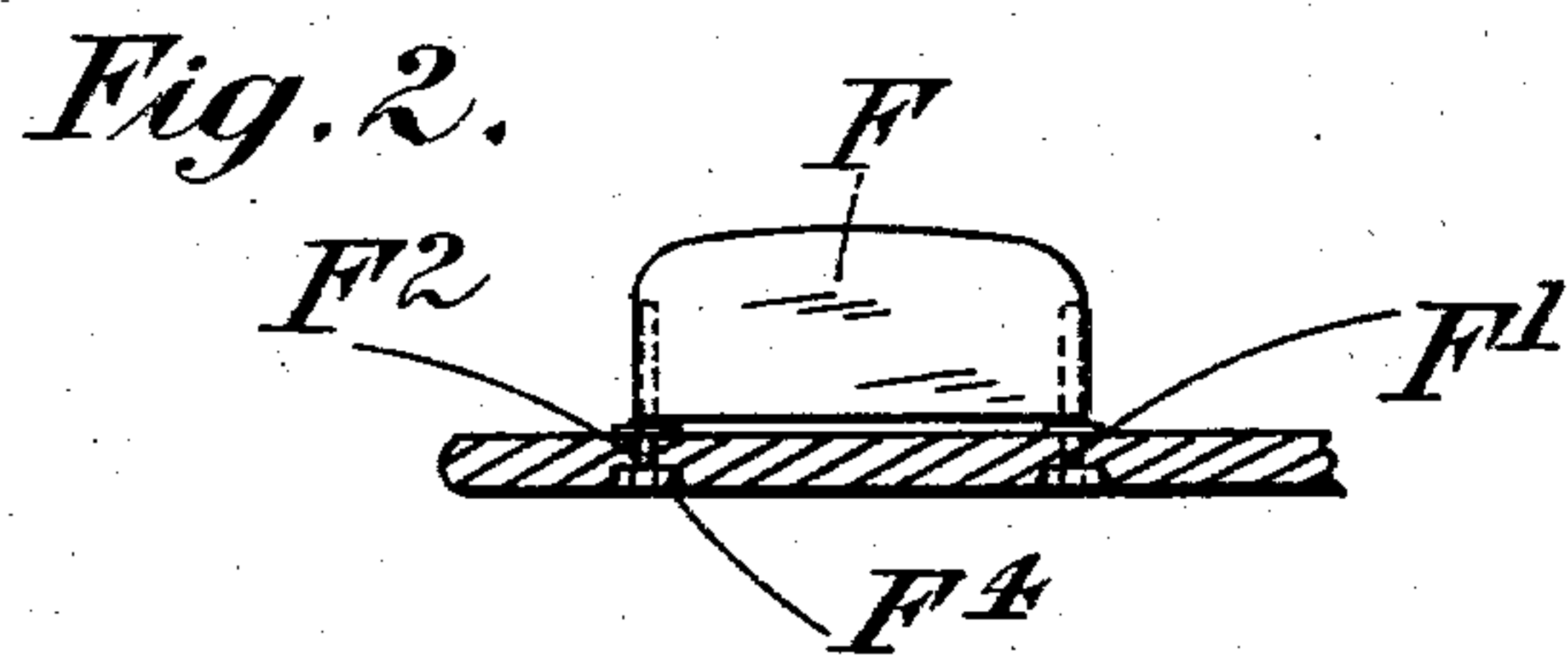
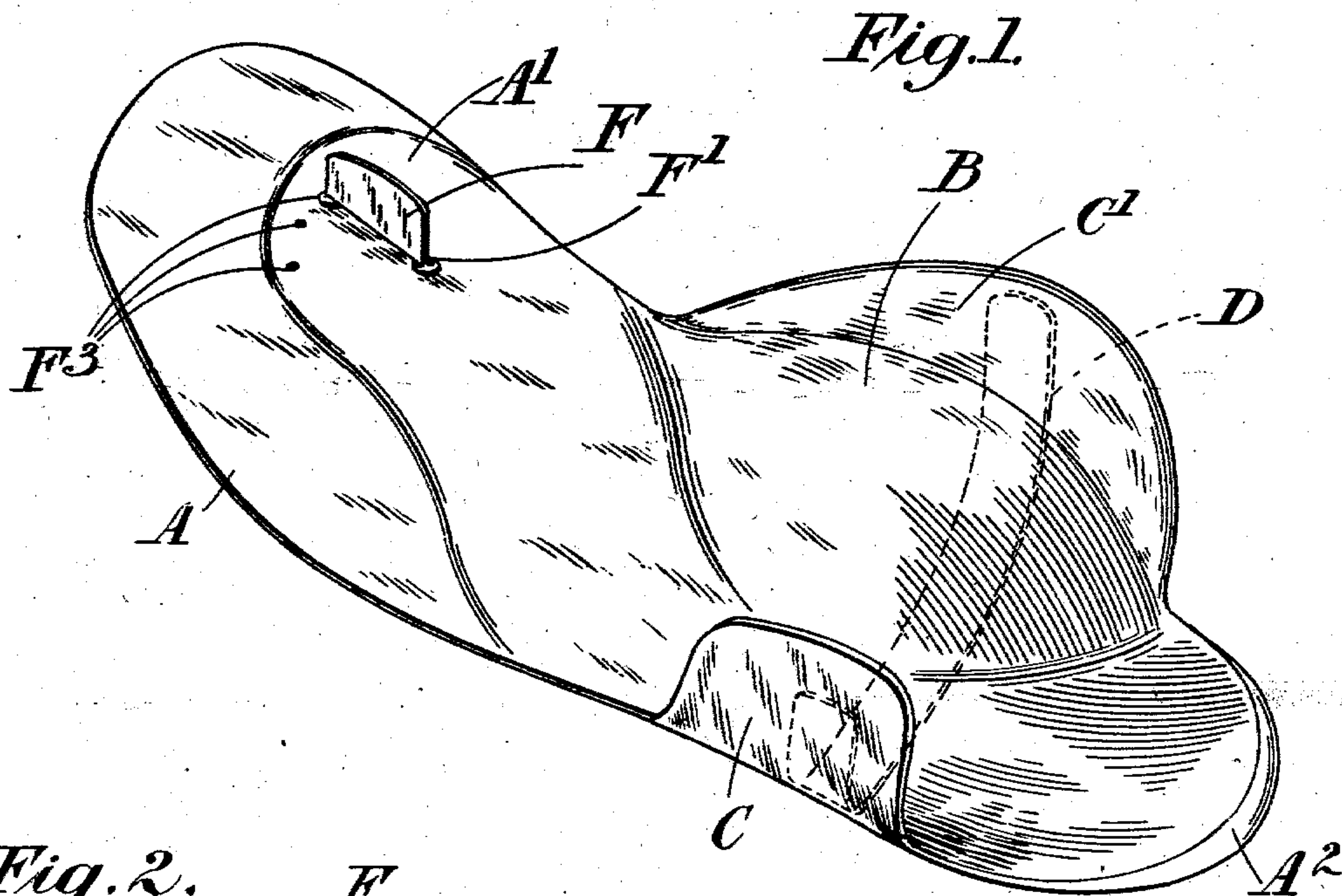


P. J. M. GUNTHERP.  
SUPPORT FOR WEAK OR DEFORMED FEET.

APPLICATION FILED JUNE 10, 1902.

NO MODEL.

2 SHEETS—SHEET 1.



Witnesses:

Thomas Durant

Elizabeth Griffith

Inventor:

Percy J. M. Gunthorp

by *Chas. & Chas.*  
his Attys



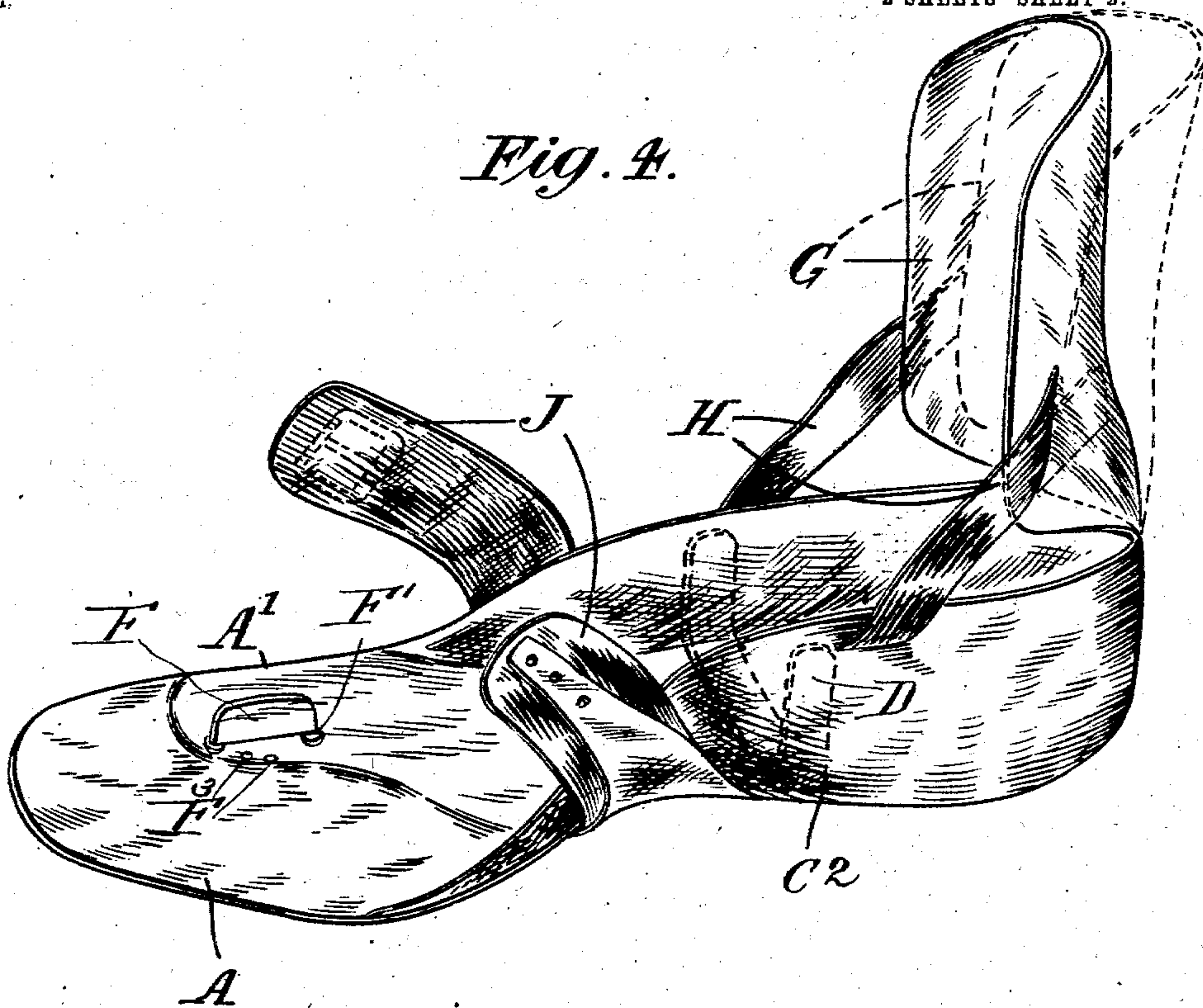
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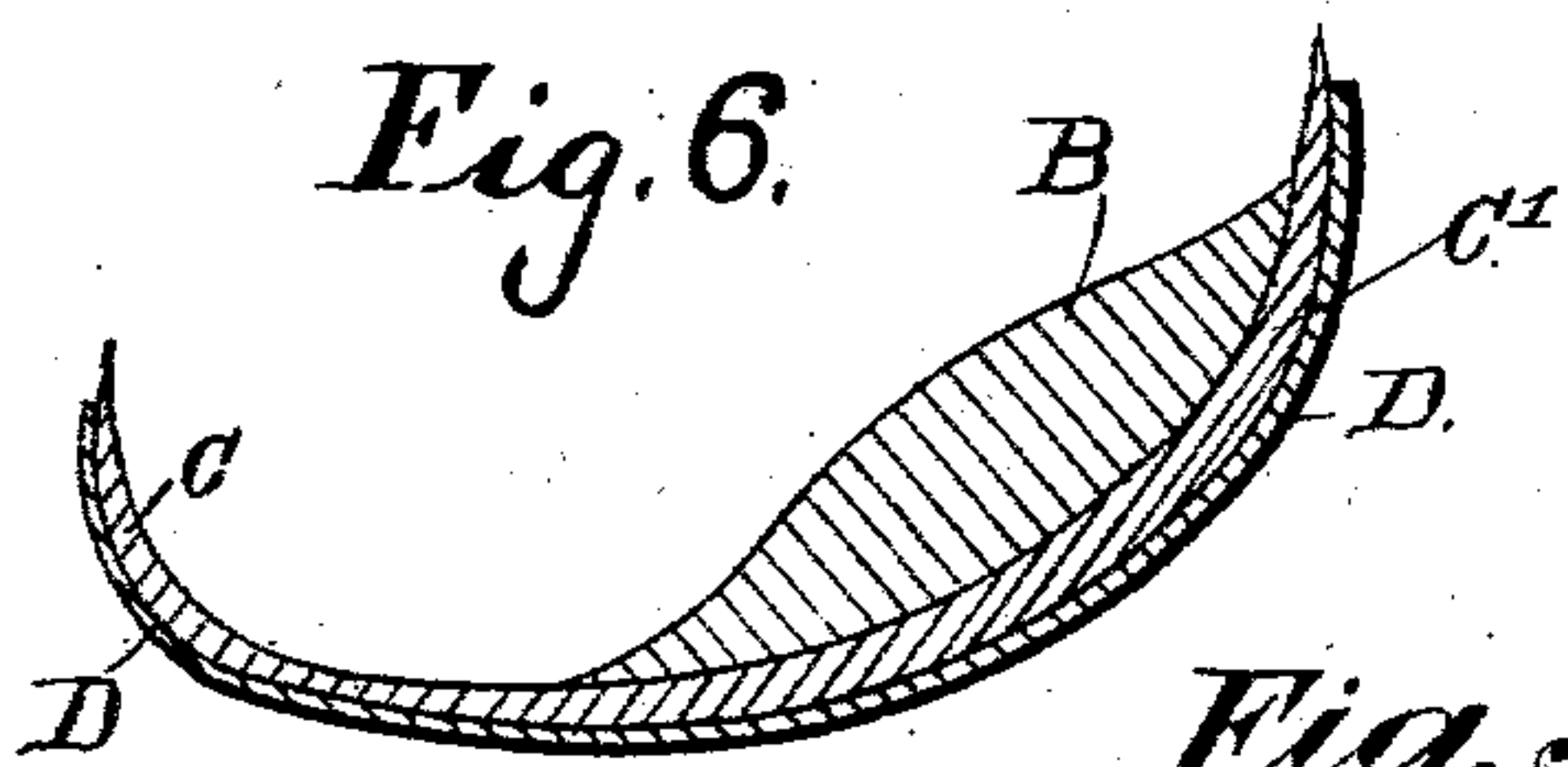
APPLICATION FILED JUNE 19, 1902.

2 SHEETS—SHEET 2.

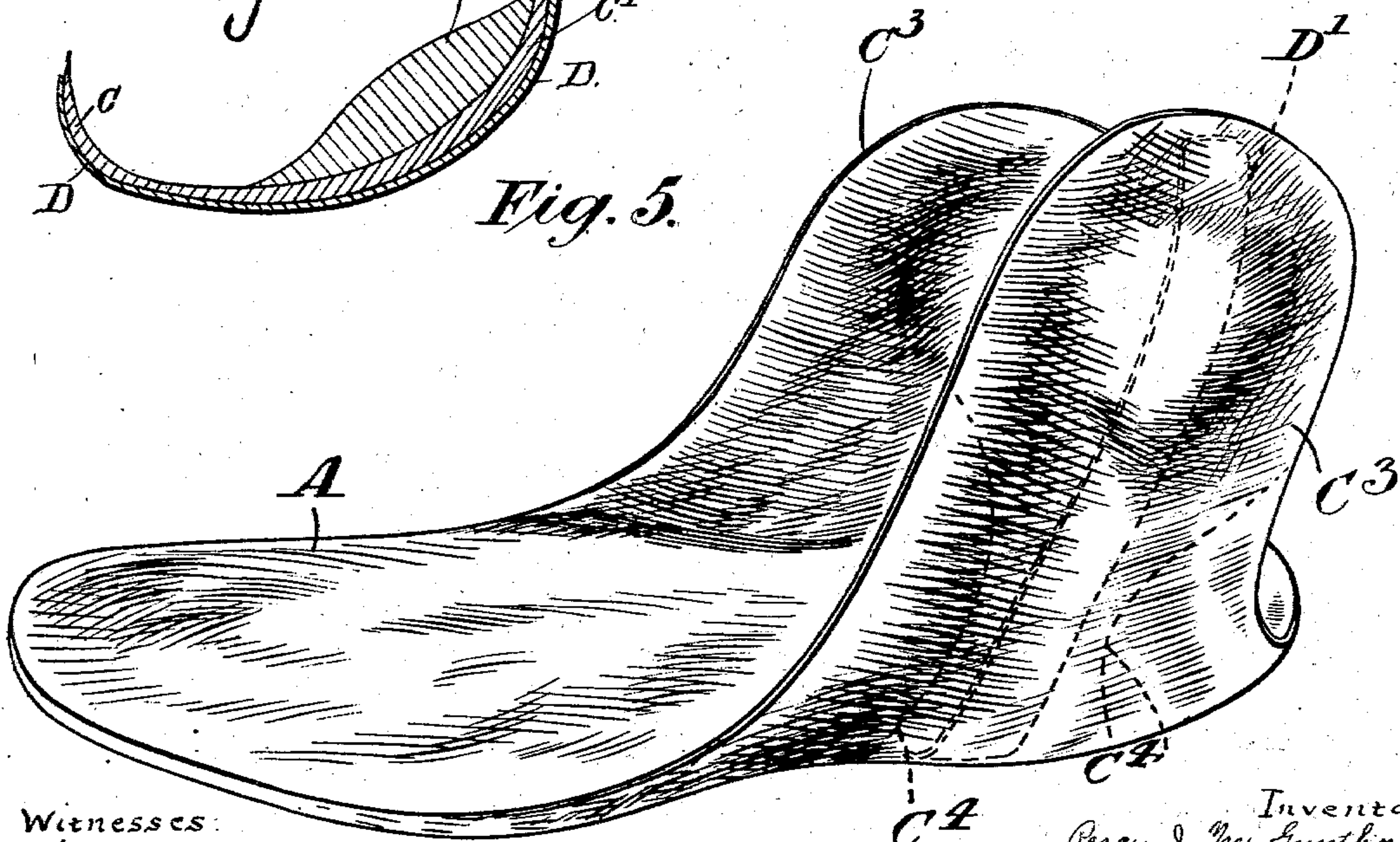
*Fig. 4.*



*Fig. 6.*



*Fig. 5.*



Witnesses:

Thomas Durant

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Inventor:

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by Church & Church  
his Attys



# UNITED STATES PATENT OFFICE.

PERCY JOHN MOORE GUNTHERP, OF LONDON, ENGLAND.

## SUPPORT FOR WEAK OR DEFORMED FEET.

SPECIFICATION forming part of Letters Patent No. 730,366, dated June 9, 1903.

Application filed June 19, 1902. Serial No. 112,375. (No model.)

*To all whom it may concern:*

Be it known that I, PERCY JOHN MOORE GUNTHERP, a subject of the King of England, residing at London, England, have invented certain new and useful Improvements in or Relating to Supports for Weak or Deformed Feet, of which the following is a specification.

This invention relates to supports for weak or deformed feet, and has special reference to what may be termed "sock-supports"—that is, supports which are not permanently attached to the boot or shoe, but are contained within it when in use.

The foot-supports according to this invention are specially intended for the relief or cure of "valgus," or flat foot, and comprise a sole portion formed to suit the shape of the foot and throw it into a desired position and a lateral extension on each side of the sole to keep the support in position relatively to the foot, such lateral extensions being stiffened by a spring which extends transversely across the sole. In some cases of flat foot there is a tendency for the fore part of the foot to fall downward, and to remedy this the foot-support may be provided with a back piece, which partially embraces the lower part of the back of the leg in proximity to the ankle and is connected to the sole or platform or to the lateral extensions by a rubber strap or straps or other elastic or springy members.

It is preferred to provide the foot-support with a pad of rubber, felt, or other suitable material to support the arch of the foot, but where desirable the sole may be made rigid.

The lateral extensions may be prolonged in an upward direction and molded to suit the shape of the ankle, and consequently support it.

In cases where the valgus is complicated by "hallux valgus" the sole is provided with a movable toe splint or support, the position of which is capable of adjustment, so that the everted toe can be gradually restored to its proper position with less inconvenience to the wearer than is the case where a permanently-fixed splint is used.

In the accompanying drawings, Figure 1 is a perspective view of one form of foot-support according to this invention, provided with a movable toe-splint. Fig. 2 is a side elevation of a toe-splint. Fig. 3 shows a foot-

support viewed from the inside of the foot and with portions removed to show the shape of the lateral extension. Fig. 4 is a perspective view of a foot-support provided with a spring-controlled back piece, and Fig. 5 is a similar view showing a foot-support with the lateral extensions prolonged to support the ankle. Fig. 6 is a transverse section taken through the spring and arch-support, the outer covering being removed.

With reference first to Fig. 1, A is the sole of the support. It is thickened along its inner edge from a point marked A' beneath the great toe down to the heel, as at A<sup>2</sup>, the thickened portion gradually tapering down as the outer edge is approached. The object of this is to throw the weight onto the outer edge of the foot. An arch-support B is provided, in the form of a pad of rubber, felt, or other suitable material, and lateral extensions C and C' are provided, one on each side of the sole, and kept in place or stiffened by a transverse spring D, the ends of which are turned up and secured to the extensions C and C', respectively. It will be noticed that although this transverse spring keeps the lateral extensions in place against the foot it cannot interfere with the natural movement of the arch of the foot, a disadvantage which is present in any foot-support provided with stiff longitudinal springs. The transverse spring D may be divided beneath the center of the foot to give still further flexibility to the support. As an additional means of securing the flexibility of the foot-support the lateral extension C' on the inside of the foot is preferably shaped somewhat as shown in Fig. 3, where the thin leather covering E, which envelops the support, is shown stripped off to display the lateral extension. It will be seen from this figure that the extension C' is, owing to the presence of the end of the springs D and to its shape, made stiffest at its central portion adjacent to the top of the arch of the foot, and by this means the whole support is more flexible than would be the case if the lateral extension were not so shaped.

The front portion of the sole A is preferably very thin, so that it may be cut, say, with a pair of scissors, to suit the particular boot worn. The thickened portion A' A<sup>2</sup> would of course be made to suit the shape of



the foot fitted. For instance, should the joint of the great toe be abnormally large a depression would be formed in the sole beneath it to allow that joint to fall below the level of the other toe-joints, and in that case the thickened portion of the sole could be continued across it to the outer edge.

F is a movable toe-splint pivoted to the sole, as at F', and provided at its free end with a pin F<sup>2</sup>. The splint can be turned about its pivot-F' so that the pin F<sup>2</sup> engages with one of a number of holes F<sup>3</sup> in the sole. Conveniently the pin F<sup>2</sup> is screwed and a nut F<sup>4</sup> fitted to it, by means of which the splint may be fixed after its position has been adjusted. If desired, grooves may be formed in the sole A into which the lower edge of the splint can fit.

In the form of foot-support shown in Fig. 4 the lateral extensions are carried right around the heel in a slipper-like fashion, and a hinged back piece G is provided, attached to the lateral extensions by rubber straps H. The dotted position of the back support G (shown in Fig. 4) indicates approximately the position which it occupies when the support is in use, and obviously the rubber straps H, being in tension, will, acting in conjunction with the sole A and the back support G, tend to prevent the dropping of the fore part of the foot. A padded strap J is provided to fasten over the instep. This particular form of support is useful in cases of "cavus," or exaggerated hollow under the foot, the opposite deformity to flat foot, or valgus. As these cases are usually complicated with "equinus"—that is, the tendency of the fore part of the foot to drop—the back support G, with its tension straps H, is often a necessity.

Fig. 5 shows a foot-support in which the lateral extensions C<sup>3</sup> are prolonged so as to just cover the ankle without impeding its movement. In this case the extensions are molded to suit the shape of the ankle where necessary and the transverse spring D' is preferably curved and brought right over the ankle. To give further pliability to the sole portion, the lower part of the lateral extension C<sup>3</sup> may be cut away as indicated by the dotted lines C<sup>4</sup>.

Various materials may be used in constructing the improved foot-supports, a very suitable one being the special preparation of felt known in the trade as "Poroplastic."

What I claim as my invention, and desire to secure by Letters Patent, is—

1. A foot-support adapted to be contained in a boot or shoe and comprising a sole portion formed to suit the shape of the foot, a lateral extension at each side thereof, a transverse supporting-spring extending across the sole and up the lateral extensions and a spring-controlled back piece substantially as set forth.

2. A foot-support adapted to be contained in a boot or shoe and comprising a sole portion formed to suit the shape of the foot, a lateral extension at each side thereof and a transverse supporting-spring extending across the sole and up the lateral extensions substantially as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

PERCY JOHN MOORE GUNTHERP.

Witnesses:

ARCHD J. FRENCH,  
HARRY N. BIDGE.