

(No Model.)

G. E. & W. L. MARKS.  
ARTIFICIAL FOOT.

No. 546,405.

Patented Sept. 17, 1895.

Fig. 1.

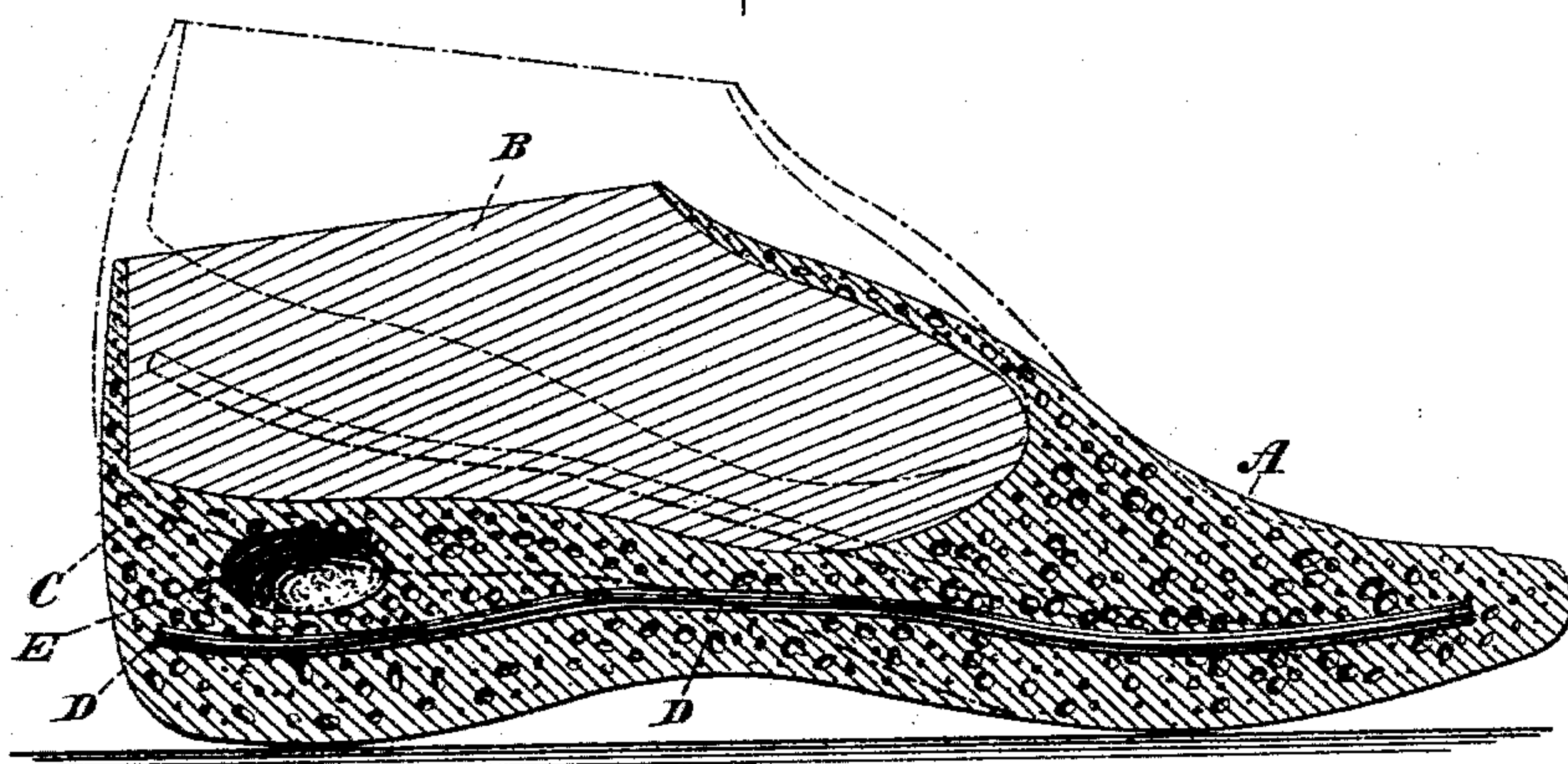


Fig. 2.

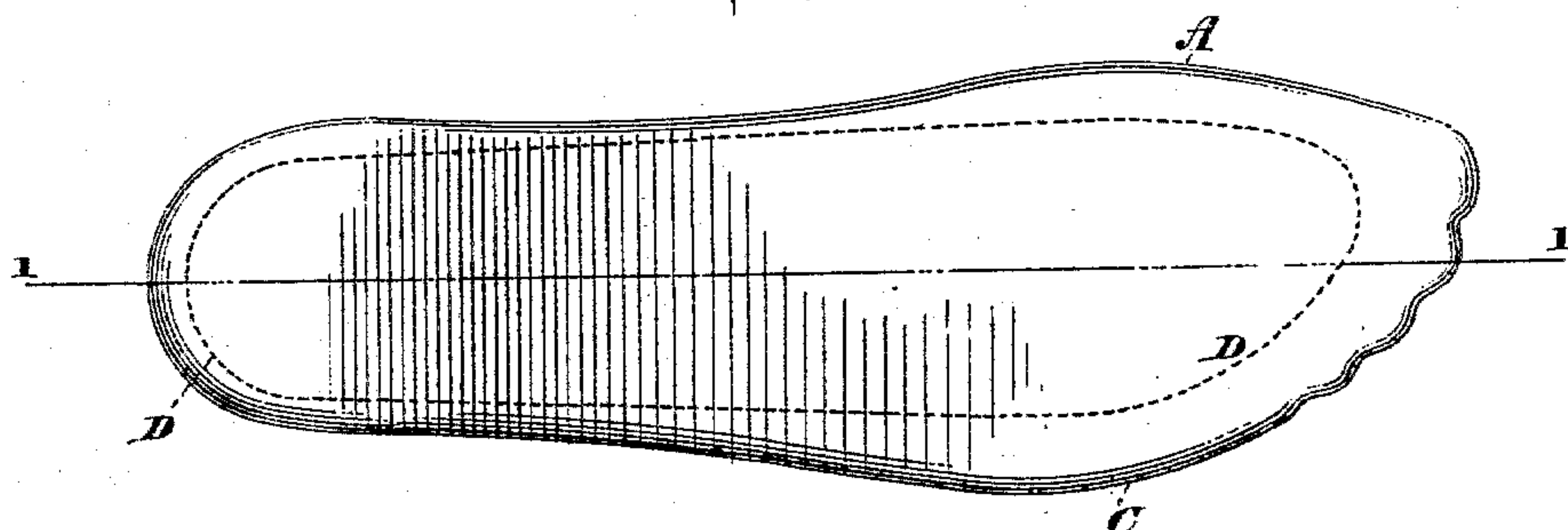
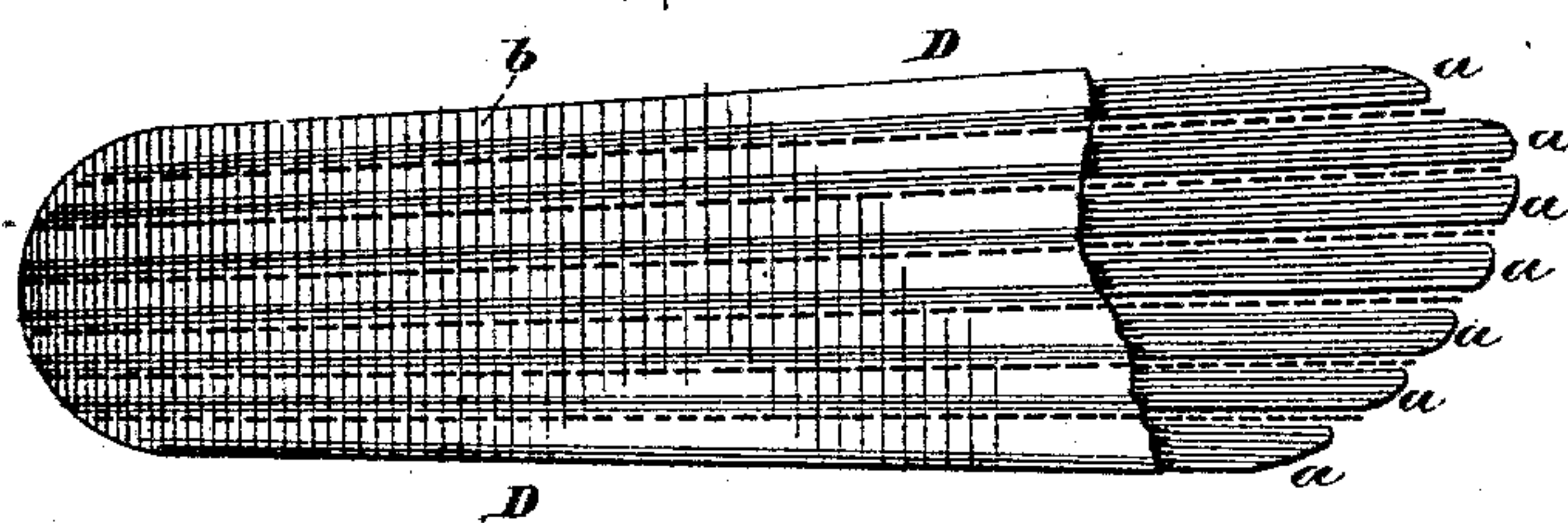


Fig. 3.



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# UNITED STATES PATENT OFFICE.

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## ARTIFICIAL FOOT.

SPECIFICATION forming part of Letters Patent No. 546,405, dated September 17, 1895.

Application filed June 12, 1895. Serial No. 552,550. (No model.)

*To all whom it may concern:*

Be it known that we, GEORGE E. MARKS, a resident of New York, in the county and State of New York, and WILLIAM L. MARKS, a resident of Sound Beach, in the county of Fairfield and State of Connecticut, citizens of the United States, have jointly invented certain new and useful Improvements in Artificial Feet, of which the following is a specification.

10 The invention relates to improvements in artificial feet; and it consists in a member composed of an inelastic core, an elastic or rubber portion in the outline of a foot and inclosing said core, and a spring or series of  
15 springs embedded in the rubber below said core and extending lengthwise of the foot, as hereinafter more fully explained.

The object of the invention is to produce an artificial foot which shall be efficient and durable, capable of convenient use by the wearer, and possess actions when under heel or toe pressure, as during the act of walking, which greatly enhance the value of the foot and facilitate its use by and add comfort to the  
25 wearer. The spring embedded in the rubber portion of the foot is wholly inactive when the foot is at rest, being at such time simply held in an unflexed condition in the rubber. The spring will preferably be composed of a  
30 series of parallel wires, covered with canvas and separated from one another by lines of stitching which will form parallel pockets in the canvas, and said spring in its edge outline will conform substantially to the horizontal sectional outline of the foot. The  
35 presence of the spring will increase the durability and resiliency of the foot and impart certain qualities thereto which will render the same comfortable to the wearer and natural and graceful in action. The foot may be  
40 made of sponge rubber for softness, lightness, noiselessness, and comfort, and the spring, being inactive when the foot is at rest, will not detract from any of the good qualities of the foot, but will tend to preserve the correct  
45 shape of same, impart a degree of stiffness on horizontal lines, and insure the desired resiliency under heel and toe pressure.

A further feature of the invention consists  
50 in the provision of an air space or cell in the

heel portion of the rubber below the inelastic core for the purpose of lightening the foot, increasing the spring-action therein on proper lines, and facilitating the ankle motions.

The invention will be more readily understood by reference to the accompanying drawings, in which—

Figure 1 is a central vertical longitudinal section of a foot constructed in accordance with and embodying the invention, the dotted  
60 lines indicating the position of the foot when under toe pressure. Fig. 2 is a bottom view of same; and Fig. 3 is a detached plan view of the spring located in the rubber portion of the foot, a portion of the canvas being re-  
65 moved to expose the individual wires.

In the accompanying drawings, A indicates the foot; B, the inelastic core; C, the elastic or rubber portion of the foot inclosing said core; D, the spring, which is embedded in the  
70 rubber portion of the foot and extends lengthwise of same below the core B, and E the air space or cell in the heel portion of the rubber below the said core.

The spring D will by preference conform  
75 substantially in outline with the horizontal outline of the foot and be composed of the series of wires *a*, held in pockets formed in the canvas covering *b*, as illustrated more  
80 fully in Fig. 3. The elastic portion C of the foot will preferably be composed of sponge rubber, and the spring D will be molded into the rubber at about an equal distance between the bottom of the foot and the lower  
85 portion of the inelastic core B, the said spring extending lengthwise of the foot from the heel to the toe portion thereof. The spring  
90 D is wholly inactive while the foot is at rest, and comes into action only during the use of the foot, as in the act of walking, and at this time, whether the pressure is exerted against the toe or the heel of the foot, the spring D  
95 will operate in a natural easy comfortable manner to restore the foot to its initial position and condition, the force of the spring lessening as the foot regains its normal position. The spring D, when arranged as shown,  
100 imparts sufficient rigidity to the foot to enable the same to retain its shape and consistency without rendering the same awkward in use



or uncomfortable to the wearer. We prefer to employ sponge rubber for the main portion of the foot in view of its lightness, flexibility, and yielding nature, and when sponge rubber is thus employed the spring will increase the durability and elasticity of the same without destroying any of the other good qualities resulting from the use of the sponge rubber.

We do not confine the invention to any particular form or extent of spring D; but we prefer to construct the same of the series of wires *a*, secured within the canvas *b*, the whole forming a broad strip extending transversely through the center of the lower portion of the foot from the heel to the toe portion thereof, the front end of the strip composing the spring D being conformed to the general outline of the toe portion of the foot, in order that the latter may have a natural movement and the strain equally distributed through the same. The spring D acts throughout its entire length during the use of the foot, being free to yield with the rubber, and not only operates by direct action to restore the flexed portion of the foot to its normal position, but also indirectly, by combining with the yielding rubber to create a longitudinal drawing action, to aid in restoring the foot to a normal condition.

Within the heel portion of the rubber C is formed the air space or cell E, which serves to lighten the foot, increase the spring action therein on proper lines, and facilitate the ankle motions. The space or cell E is preferably located intermediate the core B and spring D, where it will facilitate the action of the spring D and also aid in preventing any jarring effects on the stump of the wearer

from the firm contact of the heel of the foot against the ground.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. The artificial foot consisting of the inelastic core, the sponge rubber portion in the outline of the foot and inclosing said core, and the continuous spring embedded in said rubber substantially midway between said core and the sole of the foot and extending lengthwise of the foot, said spring being unrestrained except by the rubber inclosing it; substantially as and for the purposes set forth.

2. An artificial foot of flexible material having embedded therein the continuous spring which extends lengthwise of the foot and is unattached, being held only by the flexible material itself; substantially as set forth.

3. An artificial foot having embedded within and extending lengthwise of its rubber lower portion the spring composed of the series of wires covered with canvas; substantially as set forth.

4. An artificial foot consisting of the inelastic core and the rubber or elastic portion in the outline of the foot and inclosing said core, the heel portion of said rubber having within it the air space or cell; substantially as set forth.

Signed at the city of New York, in the county and State of New York, this 10th day of June, 1895.

GEORGE E. MARKS.  
WILLIAM L. MARKS.

Witnesses:

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