

No. 628,699.

Patented July 11, 1899.

J. S. DAMRELL.  
INNER SOLE.

(Application filed Oct. 13, 1898.)

(No Model.)

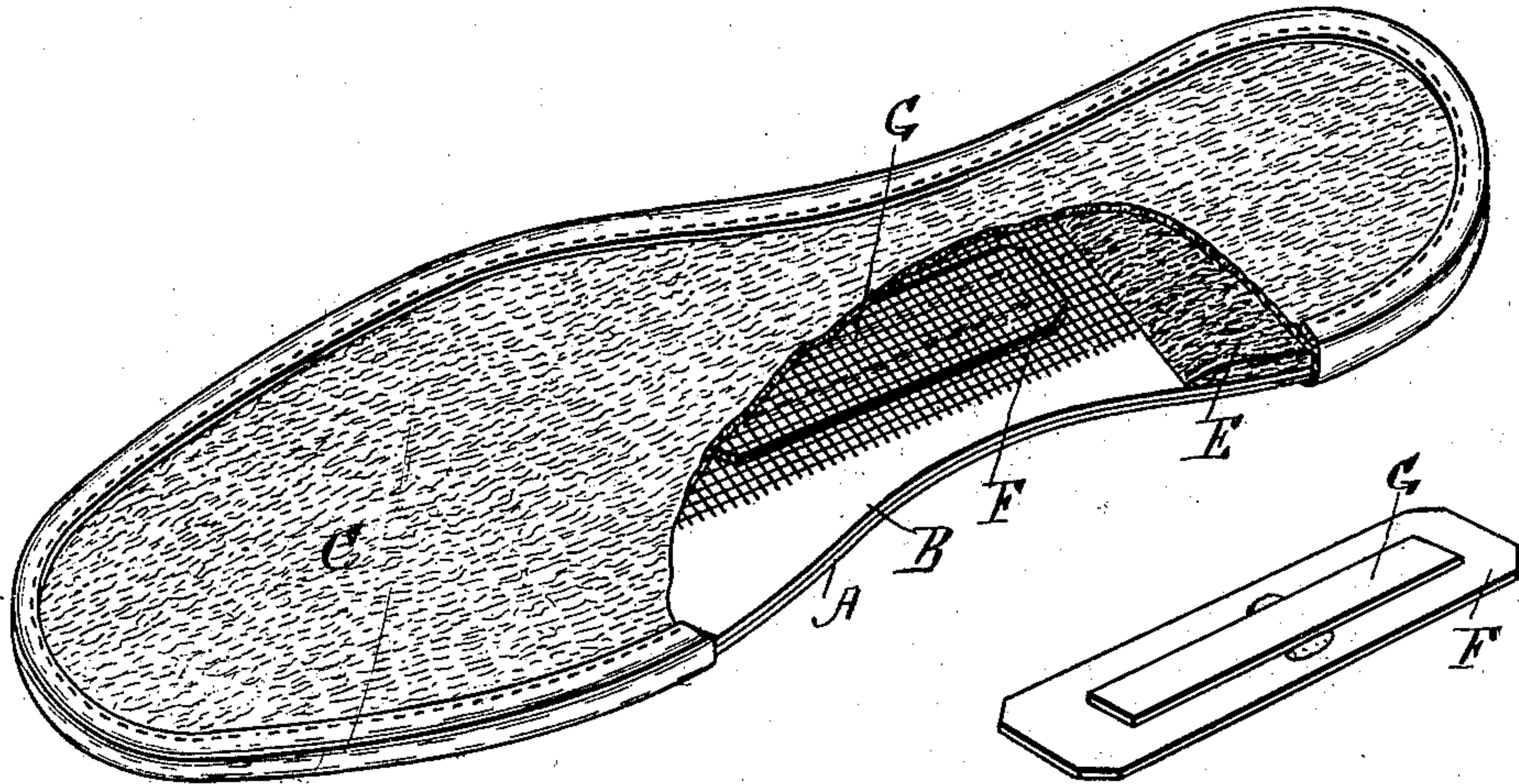


Fig. 1.

Fig. 5.

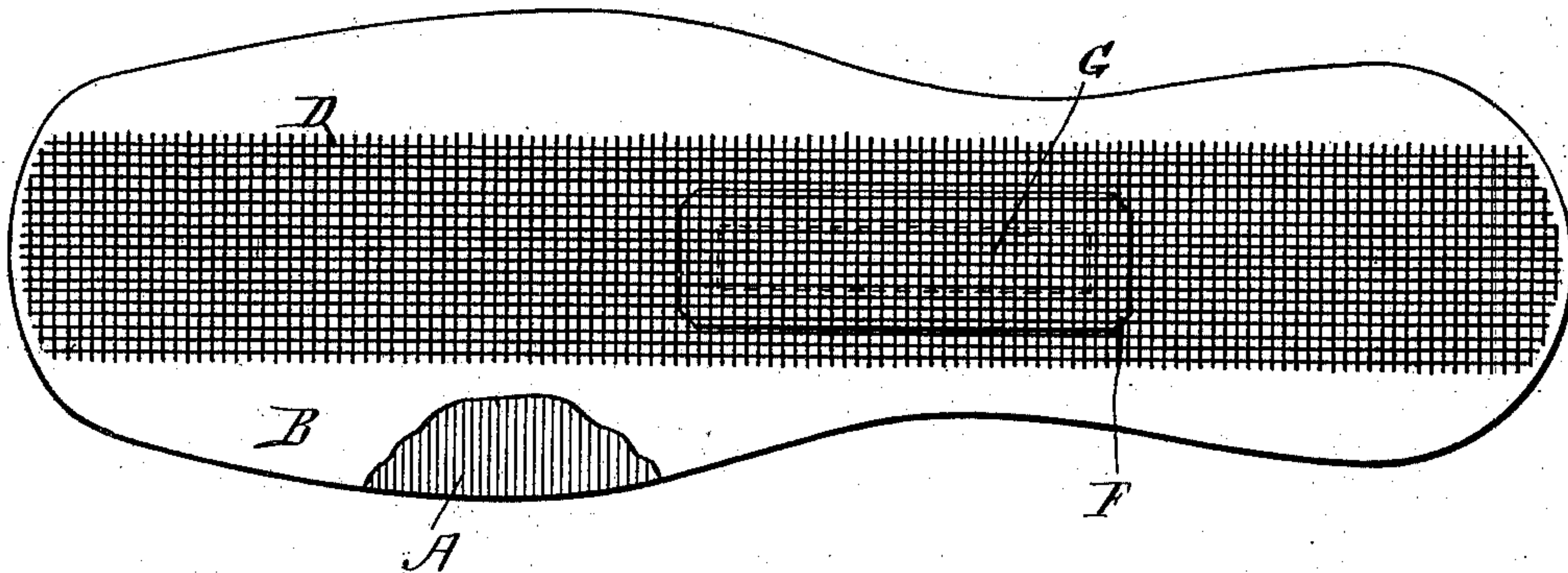


Fig. 2.

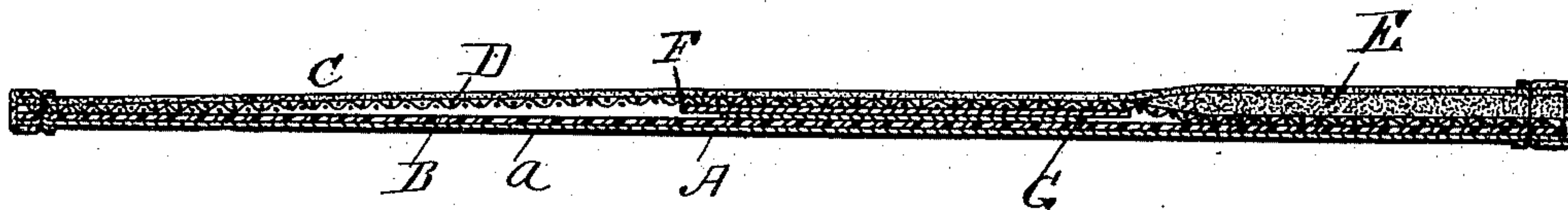


Fig. 3.



Fig. 4.

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# UNITED STATES PATENT OFFICE.

JOHN S. DAMRELL, OF BOSTON, MASSACHUSETTS, ASSIGNOR OF ONE-HALF  
TO WILLIAM ROONEY, OF SAME PLACE.

## INNER SOLE.

SPECIFICATION forming part of Letters Patent No. 628,699, dated July 11, 1899.

Application filed October 13, 1898. Serial No. 693,402. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN S. DAMRELL, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented a new and useful Improvement in Inner Soles, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification, in explaining its nature.

The invention relates to a removable inner sole having in addition to the usual properties of such soles means whereby it is made to conform to the sole of the foot of the wearer, particularly between the heel and the instep. It also has a cushion at the heel end, against which the heel seats and which relieves the wearer from the usual jar of a non-cushioned shoe, and also certain electrical and medical properties for invigorating the foot and system and for relieving or curing certain tendencies of the feet and for absorbing the heat and moisture of the foot.

In the drawings, Figure 1 is a view of the insole in perspective, a portion of the fabric forming the upper or top section thereof being removed to better illustrate its construction. Fig. 2 is a view in plan of the sole, the upper section being removed and a portion of the intermediate section also being removed to show the lower section. Fig. 3 is a longitudinal central section of the complete sole. Fig. 4 is a cross-section thereof, taken through the shank. Fig. 5 represents the combined shank-spring and electric battery.

The insole has a waterproof under surface, a top of flannel or other suitable fabric, an interposed flexible reinforcing-section, an interposed cushion of felt at the heel, and an interposed spring-shank, which also provides the electrical current and properties and which is combined with an interposed distributing, ventilating, and stiffening metallic strip.

A is the lower section of the sole. It is made of any suitable closely-woven fabric and is waterproof throughout or provided with a waterproof under surface *a*.

B is a section of the sole, preferably made of buckram, although it may be made of thin

leather-board, leatherette, or other suitable material, and the purpose of which is to provide the sole with some degree of stiffness and body. I prefer the buckram because it possesses a suitable degree of stiffness, is light, ventilating, and flexible and readily and continuously bendable without being weakened. This section of the insole is located upon the lower section A.

C is the upper section of the sole. It is preferably made of flannel for winter use or warmth and a suitable fabric for coolness or summer use.

Between the upper section C and the section B there is interposed a strip D of wire-gauze, which preferably extends the full length of the sole and which rests upon the section B. This wire-gauze serves to provide the sole with resiliency throughout its length. It also serves to form ventilating-chambers within the sole, to strengthen the sole, and as a means for distributing the electrical influence of the sole.

Between the heel end of the section B and the wire-gauze D and upper section C is inserted a resilient cushion E, preferably of felt and which is of a size to receive the heel of the user. There is also located between the wire-gauze and the section B, at the shank, a spring-metal shank-piece F for providing the insole with conformability and springiness at the shank, and which spring is made of thin sheet-copper, and combined with this spring shank-piece is a zinc plate G, which is attached to the copper plate near the center of its length, so as not to impede the spring of the plate, and which, acting with the plate, forms the source of the electrical property or energy provided the sole and distributed throughout it by means of the metal gauze, against the under surface of which the copper plate is held.

A chemical compound of an absorbent character for absorbing the moisture of the feet and to increase the electrical properties of the generating device is placed between the layers B and C in contact with the wire-gauze and the copper and zinc plates. Any compound for effecting these objects or either of them may be employed. I would mention as



one compound a mixture of sulfur and bichromate of potash, which may or may not be perfumed.

The various sections A, B, and C are of the same size and are united together by a common binding-tape H or other cloth, which embraces the entire outer edge of the sole and is united thereto by stitches, which pass through the edges of said sections.

While in the drawings the copper plate is represented as somewhat longer than the zinc, I would say that the zinc may be longer and may be extended from both ends of the copper plate into the fore part and heel part of the sole.

Having thus fully described my invention, I claim and desire to secure by Letters Patent of the United States—

1. A removable inner sole comprising two or more layers of flexible material between which is located an electrical device shorter than the length of the sole, and a wire-gauze strip of substantially the length of the sole, in contact with said generator, and means whereby the edges of said sole are bound together, said generator serving to stiffen the shank of the sole and said gauze to distribute the current from said generator over the interior of the sole, without unduly stiffening it, as set forth.

2. The improved removable inner sole con-

sisting of a number of layers of material united together, an interposed device for generating electricity, an interposed means for assisting in the distribution thereof throughout the same and a chemical compound for assisting in the generation of the electricity and also of a moisture-absorbent nature interposed between said layers.

3. A removable inner sole having a waterproof under layer or surface and containing a layer of stiffening material, a strip of wire-gauze extending the length of the sole above said stiffening material, an electric generator containing a strip of spring metal considerably shorter than the length of the sole and located in the shank thereof and in electrical contact with said strip of gauze, and an upper surface formed of flannel or other suitable material, said parts being bound together at the edge, whereby the generator is protected from moisture on the under side of the sole and the electricity generated thereby is spread throughout the surface of the sole and protected from the foot, and the whole is bound together by stitching, as and for the purposes set forth.

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Witnesses:

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