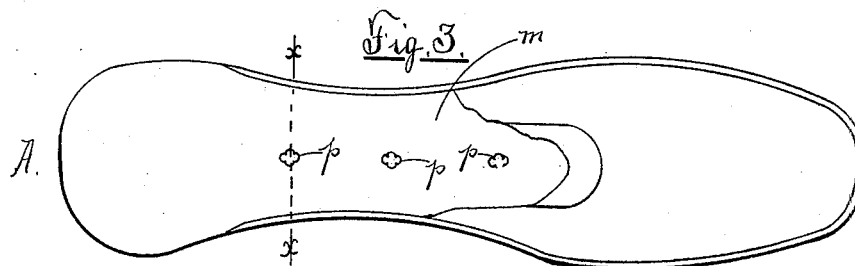
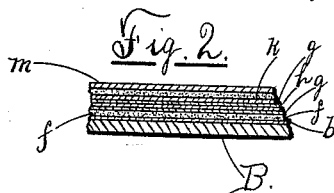
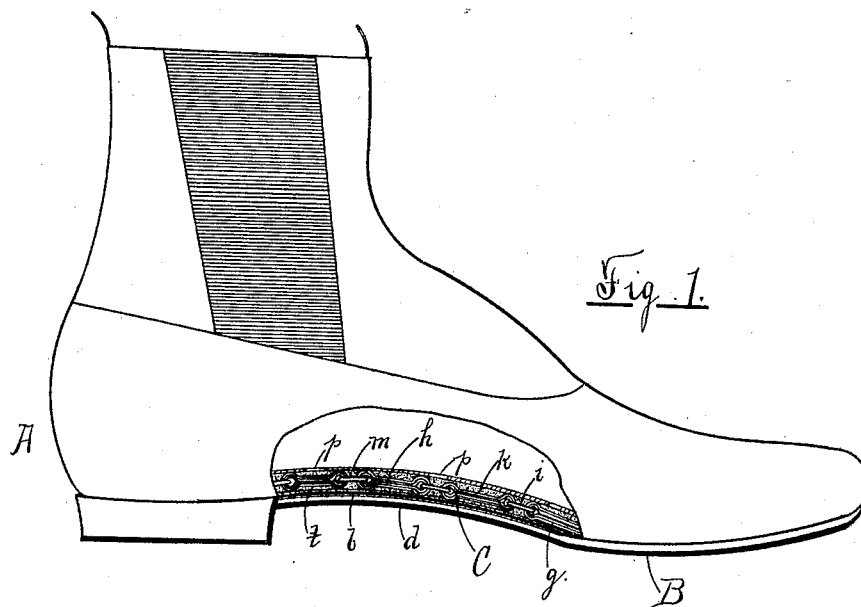


(No Model.)

C. H. AYER.  
VOLTAIC SHOE.

No. 422,107.

Patented Feb. 25, 1890.



Witnesses  
Irving H. Fay  
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Inventor  
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# UNITED STATES PATENT OFFICE.

CLARK H. AYER, OF BOSTON, MASSACHUSETTS.

## VOLTAIC SHOE.

SPECIFICATION forming part of Letters Patent No. 422,107, dated February 25, 1890.

Application filed December 2, 1889. Serial No. 332,258. (No model.)

*To all whom it may concern:*

Be it known that I, CLARK H. AYER, of Boston, in the county of Suffolk, State of Massachusetts, have invented certain new and useful Improvements in Voltaic Shoes, of which the following is a description sufficiently full, clear, and exact to enable any person skilled in the art or science to which said invention appertains to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a side elevation of a shoe provided with my improved battery, a portion of the upper being broken away to show the interior; Fig. 2, a vertical transverse section of the shank, and Fig. 3 a plan view of the inside face of the shank.

Like letters of reference indicate corresponding parts in the different figures of the drawings.

My invention relates especially to means for providing a shoe with a voltaic battery; and it consists in certain novel features, hereinafter fully set forth and claimed, the object being to produce a simpler, cheaper, and more effective device of this character than is now in ordinary use.

The nature and operation of the improvement will be readily understood by all conversant with such matters from the following explanation.

In the drawings, A represents the shoe, considered as a whole, which is of the ordinary form and construction. A steel shank *b* is secured over the shank portion *d* of the shoe-sole B in the usual manner. A layer of felt *f* is disposed above the steel shank. Voltaic battery C, consisting of a chain comprising a series of links composed of alternate copper

or brass and zinc plates *g h*, connected by copper loops or links *i*, is disposed on the felt layer *f*, and a similar layer of felt *k* covers said battery. The upper felt layer is covered by the inner sole *m*, which is provided with openings *p* to admit the moisture of the foot to said felt. The battery may be secured by its ends between the soles in any suitable manner.

In use the felt is slightly moistened with a very weak acid solution or other excitant sufficient to affect the battery and produce a slight continuous electrical current therefrom. Said battery being disposed in the shoe-shank, with which the hollow of the foot comes into contact, a constant electric current is delivered to the person of the wearer. After once being moistened, as described, the moisture of the body absorbed by the felt through the openings *p* is sufficient to keep the battery in action.

Having thus explained my invention, what I claim is—

1. A shoe provided with a layer of felt disposed above the steel shank thereof, a voltaic battery disposed on said layer of felt over said shank, and a layer of felt disposed over said battery, said upper layer of felt being covered by the insole of the shoe and said insole being perforated, substantially as described.

2. A voltaic shoe provided with a voltaic battery disposed between the outsole and the perforated insole, said battery being composed of hinged links and inclosed by layers of felt, substantially as described.

CLARK H. AYER.

Witnesses:

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