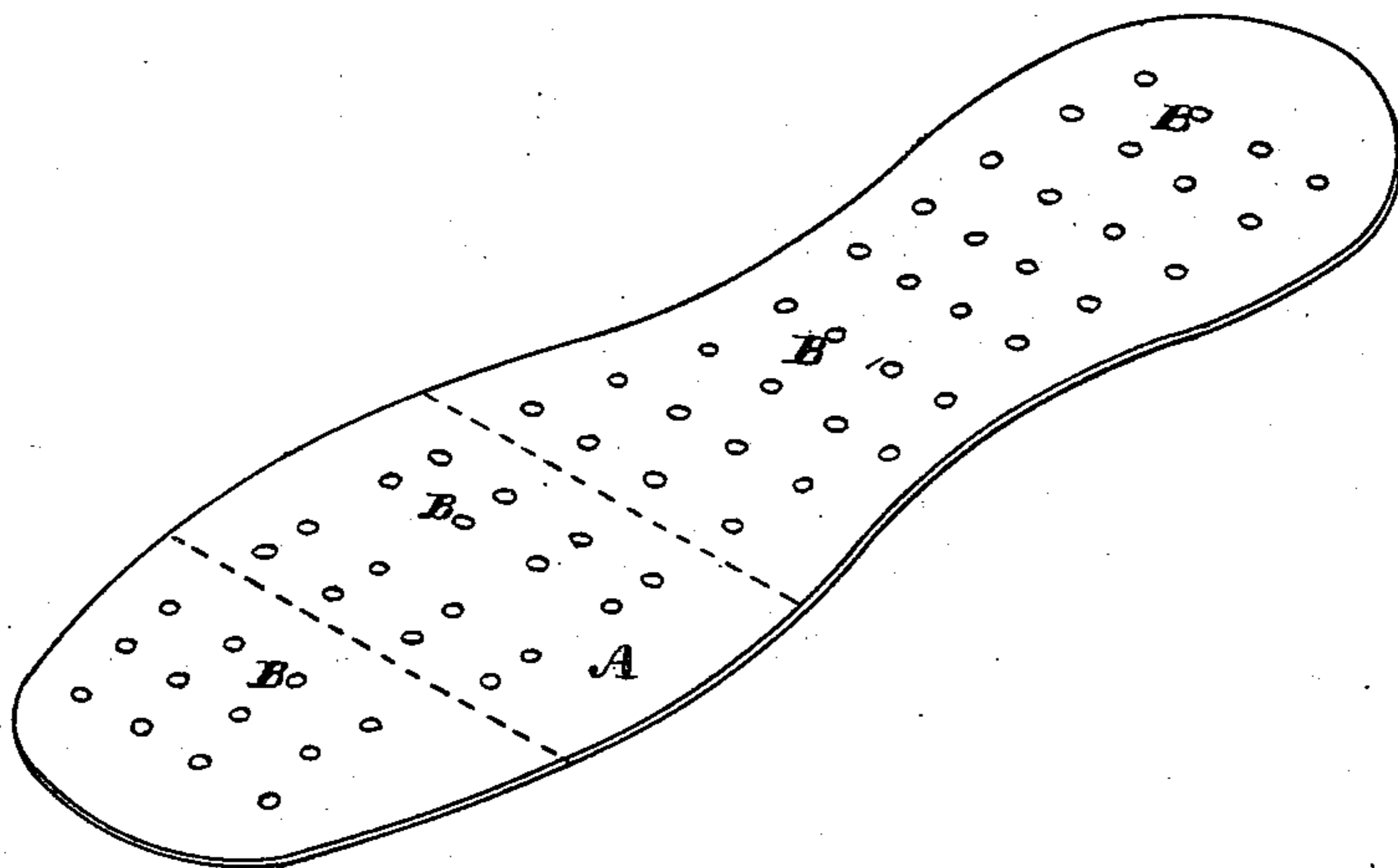


E. H. CRAW.  
GALVANIC SOLES.

No. 187,105.

Patented Feb. 6, 1877.

*Fig. 1.*



Witnesses

*Geo. H. Strong*  
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# UNITED STATES PATENT OFFICE.

ERASTUS H. CRAW, OF VALLEJO, CALIFORNIA, ASSIGNOR OF ONE-HALF  
HIS RIGHT TO W. W. VANDERBILT.

## IMPROVEMENT IN GALVANIC SOLES.

Specification forming part of Letters Patent No. **187,105**, dated February 6, 1877; application filed  
September 4, 1876.

*To all whom it may concern:*

Be it known that I, ERASTUS H. CRAW, of Vallejo, county of Solano, and State of California, have invented an Improvement in Electro-Magnetic Soles for Boots and Shoes; and I do hereby declare the following to be an exact, full, and clear description thereof, reference being had to the accompanying drawing.

My invention relates to a novel sole for boots and shoes, which is intended to create a feeble electro-magnetic current through the lower limbs of the wearer, thereby relieving or curing rheumatic attacks. These soles are made one of a positive and one of a negative metal suitably covered, and jointed to prevent wear and breakage, the covering being also perforated, if desired.

Referring to the accompanying drawings for a more complete explanation of my invention, A is a sole of my construction. These soles are made in pairs, one being designed for each foot, and they are made of a positive and a negative metal, one of each being used in every case, so as to make a voltaic pair, of which the limbs of the wearer form the connecting medium.

For neatness and convenience, these plates are covered with any suitable fabric, which can also be perforated with holes B, if desired, to

increase the effect of the plates. These plates are made preferably in three parts, and are hinged or loosely connected together at the joints C by means of the covering fabric, so that as the foot and shoe bend at the ball in the movement of walking the plates will be allowed to give and work easily without breaking.

The effect of these plates has been to completely cure rheumatic affections of the lower limbs in all cases where the soles have been worn, and they require no special attention or adjustment from the wearer.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The soles for boots and shoes, the one made of a positive and the other of a negative material, substantially as and for the purpose herein described.

2. The soles A, constructed of a positive and a negative element, and hinged or jointed at C, said soles being covered with a fabric, perforated at B, and connecting the parts together, substantially as herein described.

ERASTUS H. CRAW.

Witnesses:

JOHN H. FORD,  
D. G. BARNES.