

C. R. KRUGER.
Electric-Belt.

No. 215,637.

Patented May 20, 1879.

Fig. 1.

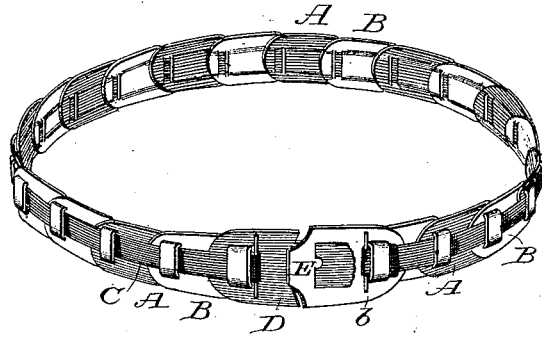


Fig. 2.

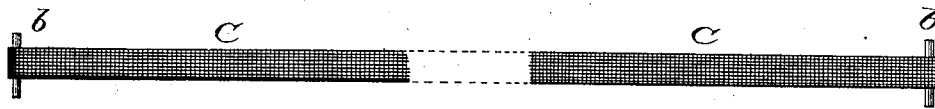


Fig. 3.

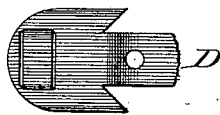


Fig. 4.

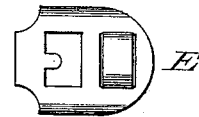


Fig. 7.



Fig. 5.



Fig. 6.



Fig. 8.



Witnesses:

Geo. W. Molten
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UNITED STATES PATENT OFFICE.

CHARLES R. KRUGER, OF PROVIDENCE, RHODE ISLAND.

IMPROVEMENT IN ELECTRIC BELTS.

Specification forming part of Letters Patent No. **215,637**, dated May 20, 1879; application filed September 5, 1878.

To all whom it may concern:

Be it known that I, CHARLES R. KRUGER, of the city and county of Providence, in the State of Rhode Island, have invented a new and useful Improvement in Electric Belts or Bands, of which the following is a specification, reference being had to the accompanying drawings.

Figure 1 is my electric belt or band complete. Fig. 2 is the non-conducting band of caoutchouc C. Fig. 3 is a plan of the clasp D E. Fig. 4 is a plan of the clasp D E. Figs. 5 and 6 are independent sections of the elliptic plates of zinc and copper A B. Fig. 7 shows the end of Figs. 5 and 6, with loop *a*. Fig. 8 shows the side view of Figs. 5 and 6.

My invention consists in a series of elliptic plates of zinc and copper, alternately, forming a voltaic battery, which plates are connected through suitable loops by means of a cable or band of caoutchouc, and the ends of which are fastened together by a clasp or buckle to complete the circuit.

The object of my invention is to generate and impart voltaic electricity to the body for the relief and cure of such diseases and pain as may be advantageously treated with electricity.

In the drawings, A B represent, respectively, the alternate plates of zinc and copper. They are, preferably, of elliptic shape. The upper and lower edges are slightly bent, as shown, to keep them normally in line. At one end each of these plates has a metallic loop, *a*. Through these loops *a* passes the elastic band C of caoutchouc, being fastened at each end by the engagement of a small bar or pin, *b*, against the loop. A clasp, D E, of zinc and copper, respectively, serves to bring and lock together the ends of this voltaic belt and close the circuit.

This rubber band C is the essential feature of my improvement. It serves several useful functions. It serves to hold together and in close and constant contact the whole series of plates A B. It gives elasticity to the belt throughout its entire length; but its chief value is found in the fact that it confines and controls the electric current passing through the voltaic pile. It is itself a non-conductor,

and the electricity generated by the contact of the plates must pass from plate to plate through the whole circuit, and cannot escape from the external surfaces of the belt, because thus confined by a non-conducting band.

In voltaic belts as heretofore constructed the elasticity, if any, has not been throughout the length of the belt, but has been obtained by the insertion of an elastic band between the ends of the voltaic pile; but this insertion has broken the circuit and destroyed the current.

In my improved belt I complete the circuit by the clasps D E, as shown, while, by the peculiar construction shown, I have the manifest advantages of elasticity all through the belt. The use of this non-conducting elastic band also gives the belt great flexibility, allowing a transverse movement of the plates upon each other, to conform the belt to the contraction or expansion of the muscles in action. Besides this valuable property of transverse flexibility, this construction enables the creating of an additional amount of electricity in the plates by means of the friction between them as the muscles move. This feature is wholly new.

In voltaic belts as heretofore made the electric current is excited by means of the saline moisture of the flesh, or by acids directly applied to the metals.

In my improved belt I not only employ the electricity developed by the moisture of the flesh in contact with the plates, but also the electricity generated by the friction of these metallic plates upon each other, as described.

I claim as a novel and useful invention, and desire to secure by Letters Patent—

1. The combination, with a series of alternate plates which overlap each other and afford continuous metallic contact throughout the series, of a band on which each plate is separately mounted, and by which said plates are wholly maintained in electric contact, substantially as described.

2. The combination, with a connecting-band, of a series of plates alternately overlapping each other, and in successive contact throughout the series and capable of independent movement with relation to each other, for exciting

the electric current by frictional contact of the coincident surfaces of the overlapped plates, substantially as described.

3. The combination, with a series of plates alternately overlapped and in successive contact, of an elastic connecting-band, substantially as described, whereby the series of plates as a belt or band may be snugly fitted to bodies or limbs of various sizes without breaking connection between the plates, and also to permit said plates to move longitudinally and laterally independently of each other in frictional contact while worn, and thereby to excite the electric current, as set forth.

4. The combination, with a series of plates alternately overlapped and in successive contact, of interlocking clasps and an elastic band, which connects the plates and is secured at each end to one of the clasps, substantially as described, whereby on connecting the clasps the plates are placed in continuous circuit.

CHAS. R. KRUGER.

Witnesses:

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