(No Model.)

# J. WILLIAMS.

## ELECTRIC BELT.

No. 372,647. Patented Nov. 1, 1887.

Fig. 1.

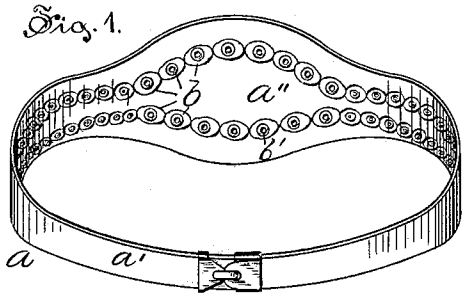



Fig. 2.

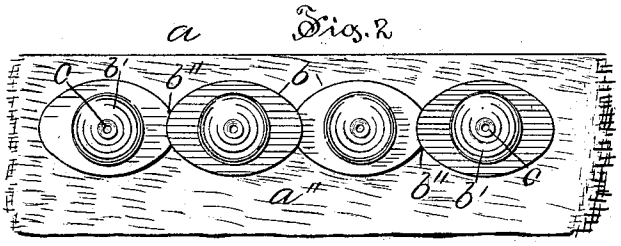



Fig. 4.

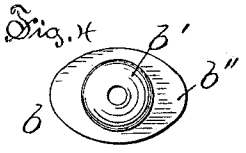



Fig. 5.

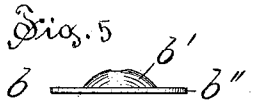



Fig. 3.

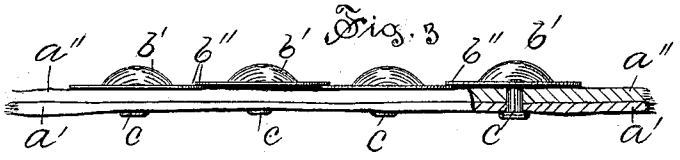
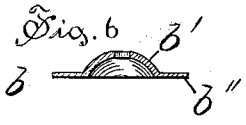



Fig. 6.




Witnesses:
W. M. Byerkman,
A. C. Tanner.

Inventor,
John Williams,
by Harry R. Williams
his attorney.

N. PETERS, Photo-Lithographer, Washington, D. C.

# UNITED STATES PATENT OFFICE.

JOHN WILLIAMS, OF HARTFORD, CONNECTICUT, ASSIGNOR TO THE DIAMOND ELECTRIC BELT COMPANY, OF SAME PLACE.

## ELECTRIC BELT.

SPECIFICATION forming part of Letters Patent No. 372,647, dated November 1, 1887.

Application filed June 9, 1887. Serial No. 240,749. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN WILLIAMS, of Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Electric Belts, of which the following is a full, clear, and exact description, whereby any person skilled in the art can make and use the same.

My invention relates to the class of electric belts that are provided with a number of positive and negative plates or electrodes in direct contact with each other, which belts are to be worn for curative purposes with the electrodes in contact with the body.

The object of my invention is to provide a belt of this class that is flexible and can be worn with the electrodes lying next the body without scratching, pinching, or causing any irritation of the skin.

My invention consists in a belt of textile fabric, with a number of positive and negative plates of peculiar construction, lying in contact with each other, so attached to the belt that they are always in contact and at the same time insure a freedom of movement to the wearer, the said plates being convexed, so as to present a rounded surface to bear against the body, as more particularly hereinafter described, and pointed out in the claims.

Referring to the accompanying drawings, Figure 1 is a perspective view of my improved belt. Fig. 2 is a view, on enlarged scale, of part of the device, showing the electrodes in place. Fig. 3 is an edge view of the part shown in Fig. 2. Fig. 4 is a detail plan view of one of my improved plates. Fig. 5 is a side view of the same. Fig. 6 is a sectional view of the same.

In the drawings, the letter *a* denotes the body of the belt, which is usually composed of an outer layer, *a'*, of so-called "webbing," with a lining, *a''*, of soft material, as flannel or felt.

Along the inside of the belt, preferably near the upper and lower edges, are attached oblong or oval shaped disks of metal, *b*, alternately copper and zinc, and these disks form the positive and negative plates or electrodes of the electricity-generating part of the belt. These electrodes are fastened to the belt, preferably, by an eyelet or rivet, *c*, that passes through an opening in the center of the disks and through the web, as this allows the plates some movement, which is desirable to give flexibility to the device.

To obtain the best therapeutical effect, it is desirable that the electrodes be in direct contact with the flesh, and it is also desirable that the plates should always be in contact with each other, and thus keep a constant and equal current of electricity.

In prior belts that most nearly resemble my within improvement the plates of metal which form the electrodes are flat circular disks, and these are attached to the web so as to overlap each other. It is impossible to wear such a belt without much discomfort, whether the electrodes are next the skin or have a cover interposed between them and the skin, for the reason that when the wearer bends, when walking or moving about, the flesh is caught between the disks and is given a hard pinch and oftentimes is cut by the sharp edges of the disks where they overlap. Another disadvantage is, that the edges of the plates irritate the skin and cause sores. To overcome these objections, the within-described electrodes, which are preferably struck out by dies from thin metal, are convexed or swelled out at the center when they are formed, so as to provide a smooth round bearing-surface to rest upon the body, and this projecting portion *b'* also prevents the flat edges *b''* that overlap from getting near the flesh, so that they cannot pinch or scratch the skin when the wearer bends in any direction. The plates are made oval or oblong, in order that they may more readily overlap each other at all times, and it is particularly desirable that each electrode should be attached to the web at only one point, so as to allow a slight rotary movement to adapt themselves to the configuration of the body of the wearer and allow him perfect freedom of movement.

The advantages of my improvement are that a belt provided with these domed oblong electrodes is light, flexible, and can be worn with the plates in contact with the flesh without discomfort and any injurious effects, and thus the full virtue of the belt may be obtained.

I claim as my improvement—

1. In a therapeutical device, in combination with the body part, a plural number of con-

vexed electrodes pivotally attached to the body part in such manner as to overlap each other, all substantially as described, and for the purpose set forth.

2. As an improved article of manufacture, an electric belt composed of a flexible body part, with a plural number of superimposed convexed oblong disks of copper and zinc pivotally attached to the body part and in contact with each other, all substantially as described, and for the purpose set forth.

JOHN WILLIAMS.

Witnesses:
DANIEL HENRY MURPHY,
HARRY R. WILLIAMS.