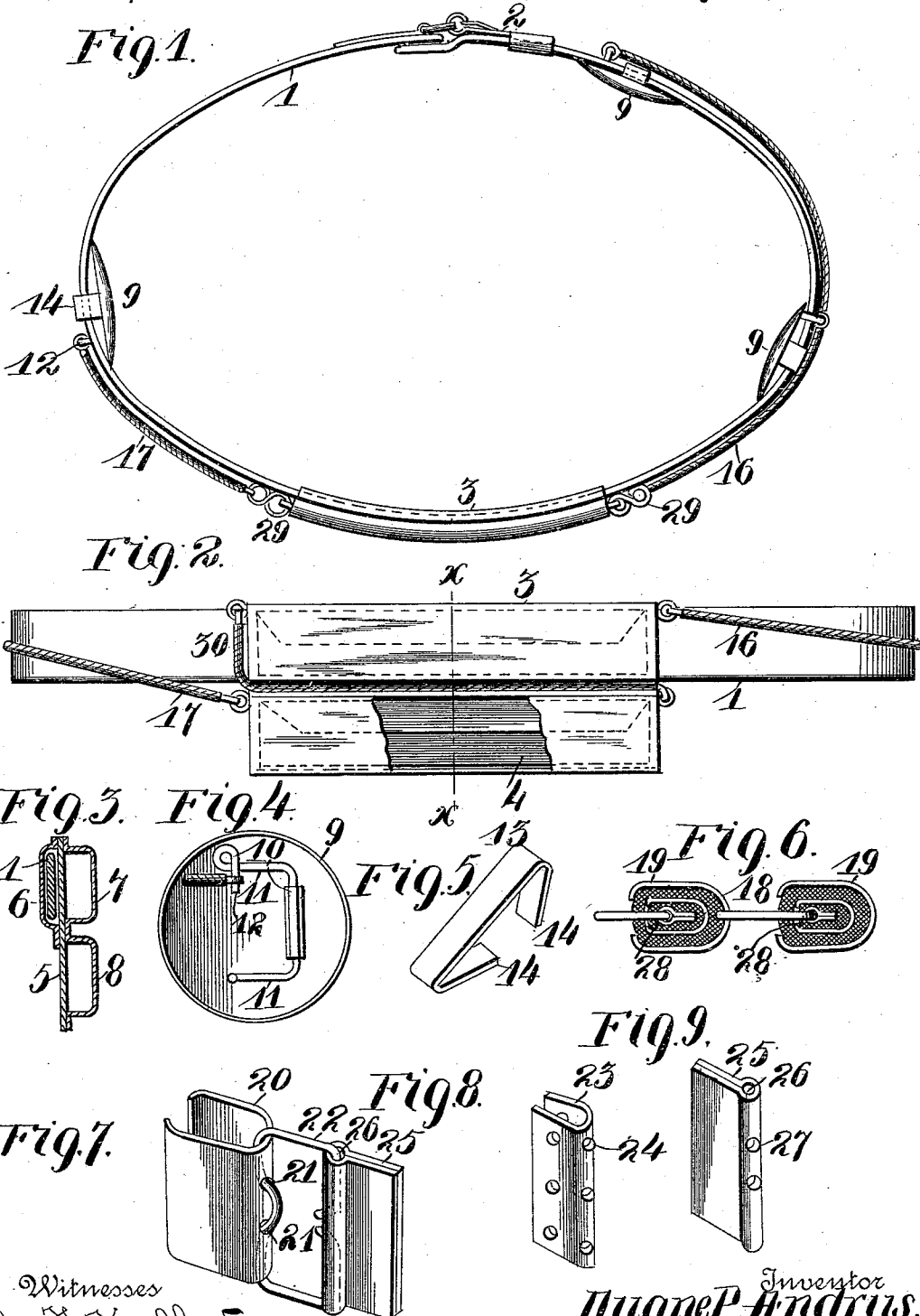


(No Model.)

D. P. ANDRUS.
ELECTRIC BELT.

No. 479,147.

Patented July 19, 1892.



Witnesses
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UNITED STATES PATENT OFFICE.

DUANE P. ANDRUS, OF ST. LOUIS, MISSOURI.

ELECTRIC BELT.

SPECIFICATION forming part of Letters Patent No. 479,147, dated July 19, 1892.

Application filed December 14, 1891. Serial No. 415,019. (No model.)

To all whom it may concern:

Be it known that I, DUANE P. ANDRUS, of the city of St. Louis and State of Missouri, have invented certain new and useful Improvements in Electric Belts, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention relates to improvements in electric belts; and it consists in the novel arrangement and combination of parts, as will be more fully hereinafter described, and designated in the claims.

In the drawings, Figure 1 is a top plan view of a belt constructed according to my invention. Fig. 2 is a side elevation thereof. Fig. 3 is a cross-section taken on the line $x x$ of Fig. 2, showing the arrangement of the pockets within which the battery is placed. Fig. 4 is a rear plan view of one of the electrodes which I employ. Fig. 5 is a perspective view of a metallic strip which is used in connection with the electrodes. Fig. 6 is a top plan view of the battery, which is shown here composed of two cells. Fig. 7 is a perspective view showing the mechanical connection between the cells. Fig. 8 is a perspective view of the zinc plate which is carried by the belt. Fig. 9 is a perspective view of the copper plate which I employ in constructing the battery.

Referring to the drawings, 1 represents a band or belt, which is adapted to pass around the body and is provided with a suitable fastening device or buckle 2, by means of which the ends of the belt are united.

3 represents a pocket or pockets, which is movable upon said band or belt and, as represented in the drawings, one is movable upon the band and another is attached to the lower edge of the same and carried thereby. By this construction I am enabled to use a larger number of cells and thereby obtain a larger quantity of electrical energy. The cells which compose the battery, arranged in the manner above described, do not inconvenience the wearer.

The battery, as hereinafter described, is placed in a pocket or pockets 4, of impermeable material, which prevents the fluid used in generating the electrical energy from per-

colating through and soiling the clothes and coming in contact with the body.

The pocket or pockets 3 is composed of a strip 5 of flexible material and to one side thereof is secured a loop 6, near the upper edge thereof, through which the belt or band 1 is adapted to be passed. To the opposite side of said strip 5 is secured two pockets 7 and 8, which are located one below the other, within which the removable pocket 4 and the battery is adapted to be placed. By the construction of the pocket or pockets as above described I am enabled to move the battery to any position upon the belt, and thereby bring the electrode in contact with any desired portion of the body in proximity to the belt.

I employ any suitable number of electrodes and arrange them upon the belt as may be deemed desirable, the construction of which I shall now proceed to describe.

9 represents a circular metallic plate, which constitutes the electrode, the convex surface of which is adapted to come in contact with the body of the wearer. To the rear or concave surface of said plate is secured a U-shaped wire 10, the parallel arms 11 of which are free from contact with said plate and one of said arms terminating into an eye 12, to which one end of one of the conducting-cords is adapted to be attached.

13 represents a metallic strip, which is suitably shaped so as to encircle the band or belt 1, the ends 14 of which are adapted to be passed under the arms 11 of the wire 10, carried by the electrode. When the strip 13 is attached to the electrode, as above described, the poles 9 will come in contact with the surface of the plate 9 and thereby make contact therewith. The strip 13 is preferably constructed of spring-steel, in order that it may be easily removed from the electrode, and, further, by the use of said metal the poles 14 will constantly bear against the surface of said electrode.

18 represents the battery, which is composed of any number of cells 19, and as said cells are constructed similarly I shall only proceed to describe one minutely.

20 represents the outer casing or shell of the cell, which is constructed of a thin sheet of

zinc or other oxidizable metal and having formed therein two holes 21, through which a copper wire 22 is passed and is in contact with said copper, as shown in Fig. 7 of the drawings.

23 represents a U-shaped plate, also of zinc, and is provided with a suitable number of perforations 24, through which the oxidized fluid is adapted to pass. Between said outer shell of zinc 20 and the U-shaped plate 23 is placed any amount of dielectric absorbent material, which is adapted to hold enough of the oxidizable fluid in order to chemically effect the zinc and copper plates used in the construction of the cells.

25 represents a copper plate, which is folded upon itself, forming a vertical opening 26, through which the wire connection 22, leading from one of the other cells, is adapted to be passed, the ends of said wire 22 passing through holes 27, formed in said plate 25.

Between the U-shaped plate 23 and the copper plate 25 is also placed any amount of absorbent material, and which holds in absorbent a sufficient amount of oxidizable fluid. The absorbent material 28, or that last described, separates the zinc plate 23 from the copper plate 25, which is absolutely necessary in constructing the cells of the battery.

From the foregoing description it will be seen that the copper plate of one cell is electrically connected with the zinc plate of the other, thus forming a voltaic couple and transmitting the galvanic current and increasing the electro-motive force of the battery in proportion to the number of cells used.

29 represent S-shaped fastening devices, which are carried by each end of the conducting-cords 16 and 17, and by means of which the said cords may be electrically connected with the positive and negative poles of the battery.

Referring to Fig. 2 of the drawings, it will be seen that I use a conducting-cord 30, which cord connects the cells carried by the pockets 7 and 8, and which when united, as shown in said figure, form a complete battery. The opposite ends of the conducting-cords 16 and 17, or those ends not provided with the S-shaped fastening devices, are electrically connected to the eyes 12, formed on one of the arms 11 of the U-shaped wire 10, conveying the current to the electrode or electrodes.

By the construction of electrodes as shown the same are adapted to be slipped along the belt and adjusted to whatever portion of the body desired.

By the construction of the cells as shown I obtain a greater surface from both the oxidizable metal and also the conducting metal in proportion to the size of the cells, which is very desirable in inventions of this character. By forming openings 24 in the copper-plate 23 the amount of oxidizable or exciting fluid is equalized in the absorbent material, and thereby produces a steady current. The oxi-

dizable or exciting fluid used is preferably acetic acid or acidulated water, within which the cells of the battery may be immersed, the absorbent material employed holding a sufficient quantity in absorption to produce the desired effect.

Having fully described my invention, what I claim is—

1. An electric belt having a pocket or pockets adapted to move upon said belt, a battery placed within the same, conducting-cords leading from the positive and negative poles of said battery, an electrode or electrodes electrically connected with the opposite end of said connecting-cord, and a U-shaped wire or wires attached to the concave surface of said electrode, substantially as set forth.

2. In an electric belt, an electrode or electrodes, consisting of a circular plate 9, a U-shaped wire attached thereto, having arms 11 out of contact with said plate, a metallic strip adapted to be held to the said electrode or electrodes by the said arms, and conducting-cords 16 and 17, leading from the positive and negative poles of the battery and connected to one end of the insulated wire or wires 15 of said strip or strips, the opposite end of said wire or wires 15 in electrical contact with said electrode or electrodes, substantially as set forth.

3. An electric belt having a battery composed of a series of cells, each of which consists of a plate 20, of oxidizable metal, having perforations 21, a copper wire 22, passing through the said openings and adapted to connect said plate with the next cell, a copper plate 25, adapted to receive the ends of the wires 22, and a suitable amount of absorbent material interposed between each of the said plates, substantially as set forth.

4. An electric belt having a battery composed of a series of cells, each of which consists of a plate 20, of oxidizable metal, having perforations 21, a copper wire 22, passing through the said openings and adapted to connect said plate with the next cell, and a copper plate 25, adapted to receive the ends of the wires 22, substantially as set forth.

5. An electric belt having a battery composed of a series of cells, each of which consists of a plate 20, of oxidizable metal, having perforations 21, a copper wire 22, passing through the said openings and adapted to connect said plate with the next cell, and a copper plate 25, provided with perforations 27, through which the ends of the copper wire 22 are adapted to pass, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

DUANE P. ANDRUS.

Witnesses:

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