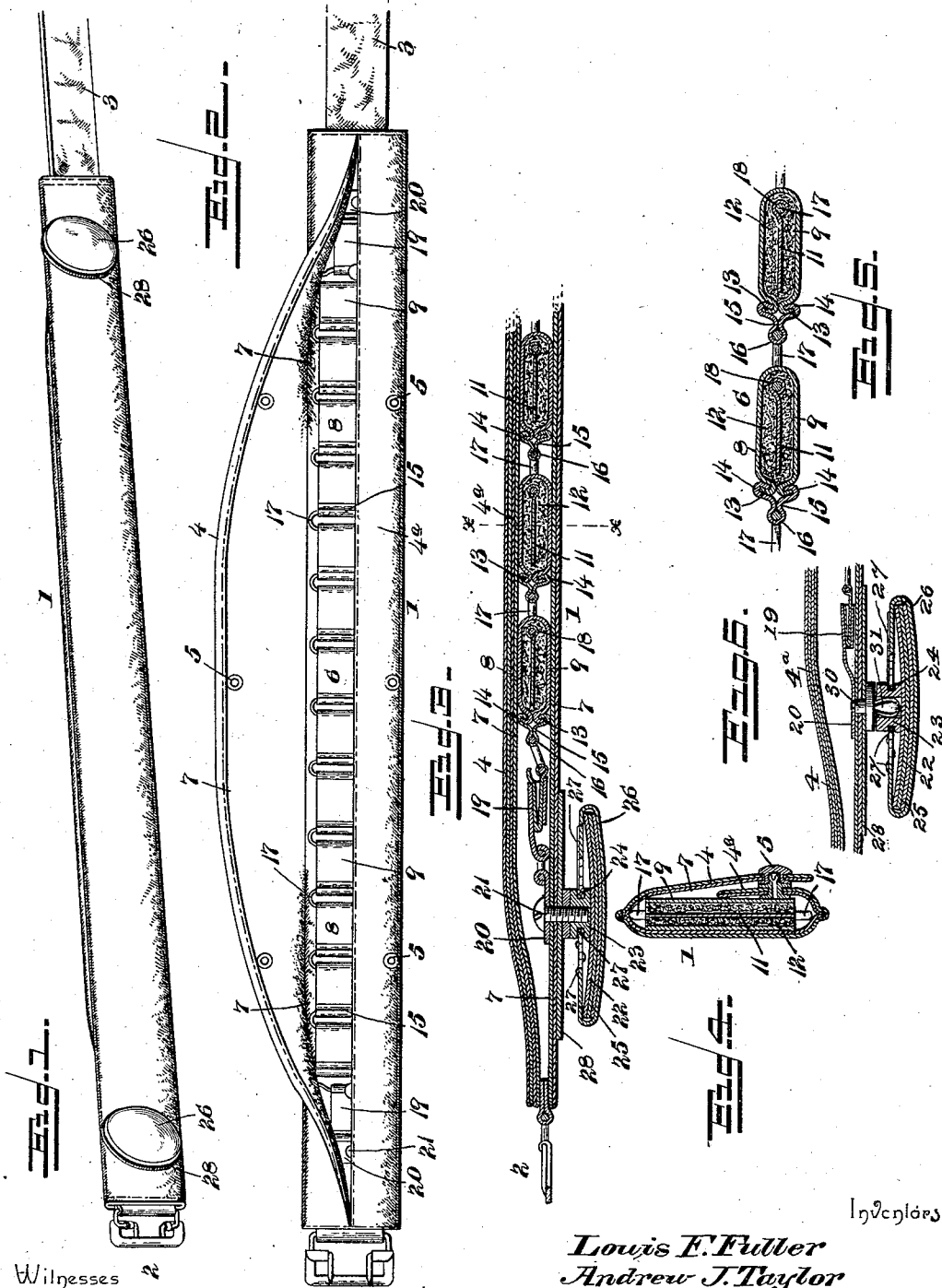


(No Model.)

L. F. FULLER & A. J. TAYLOR.  
ELECTRIC BELT.

No. 531,109.

Patented Dec. 18, 1894.



Witnesses

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# UNITED STATES PATENT OFFICE.

LOUIS F. FULLER AND ANDREW J. TAYLOR, OF NORFOLK, VIRGINIA.

## ELECTRIC BELT.

SPECIFICATION forming part of Letters Patent No. 531,109, dated December 18, 1894.

Application filed August 8, 1894. Serial No. 519,759. (No model.)

### *To all whom it may concern:*

Be it known that we, LOUIS F. FULLER and ANDREW J. TAYLOR, citizens of the United States, residing at Norfolk, in the county of Norfolk and State of Virginia, have invented a new and useful Electric Belt, of which the following is a specification.

This invention relates to electric belts; and it has for its object to effect certain improvements in galvanic batteries and the cases therefor, of that class that are employed for body wear, as a remedy or relief for different diseases.

To this end the main and primary object of the present invention is to provide a new and useful electric belt having efficient means for the generation of a strong powerful current, and also having simple and useful connections together with a novel construction of casing belt whereby the apparatus can be easily handled and manipulated for the purpose of adjustment, cleaning, &c., while at the same time absolutely insuring against the weakening or impairing of the current while the belt is in use.

With these and other objects in view, which will readily appear as the nature of the invention is better understood, the same consists in the novel construction, combination, and arrangement of parts hereinafter more fully described, illustrated, and claimed.

In the accompanying drawings:—Figure 1 is a perspective view of an electric belt constructed in accordance with this invention. Fig. 2 is a plan view or elevation of the outer side thereof showing the wide casing flap thrown open. Fig. 3 is a central longitudinal sectional view of the belt. Fig. 4 is a cross section on the line  $x-x$  of Fig. 3. Fig. 5 is an enlarged detail sectional view of a short section of the flexible battery. Fig. 6 is a detail sectional view at one end of the belt showing a modified attachment for the detachable electrode disks.

Referring to the accompanying drawings, 1 designates a suitable length body or casing belt made of any suitable cloth material and adapted to encircle the body of the wearer. The said belt 1 is provided at one end with the buckle 2, and at its opposite end with the buckle strap 3, that together provide means

for readily adjusting the belt to the body and securing the same in position. The inner side of the belt 1 next to the body is closed and the opposite outer side is formed into a casing or pocket by the upper and lower casing flaps 4 and 4<sup>a</sup>, respectively, which are stitched or otherwise suitably secured at one edge to the upper and lower edges respectively of the belt on the outer side thereof, and the lower of said flaps 4<sup>a</sup>, is made of a narrow strip of the same material as the belt itself, and is adapted to be overlapped by the free edge of the wider flap 4, which is of a width, between its opposite fastened ends, equaling the width of the belt 1 itself, and adapted to be detachably connected to the overlapped flap 4<sup>a</sup>, at intervals, by means of suitable readily separable connecting clasps 5.

As noted, the overlapping detachably connected casing flaps 4 and 4<sup>a</sup>, form the casing or pocket to removably hold therein the flexible galvanic battery 6, and the inner sides of said flaps and the outer side of the belt proper are lined or faced with an oil cloth or other suitable impervious lining 7, that not only prevents the liquid from the battery working through the belt and staining or discoloring the clothing of the wearer, but also acts in the capacity of an insulating lining to prevent the loss of current strength by the formation of local circuits, and thereby securing or insuring the delivery of the current from the battery through the end electrodes connected therewith.

The flexible galvanic battery 6, consists of a series of electrically and flexibly connected battery cells 8, and each of said cells comprises an outer oval or U-shaped zinc casing element 9, and an inner copper or copper plate element 11, arranged inside of the said zinc element 9, and insulated therefrom by the usual absorbent cell packing 12, that is wrapped around the inner copper plate 11 and is adapted to carry the usual charging liquid that produces an electrical action in the battery cells in the ordinary manner. The said outer oval or U-shaped zinc casing elements 9, are provided at their free extremities with the out-turned flanges 13, that are removably engaged by the inturned flanges 14, of a re-

movable lock cap 15, which is adapted to be slid in and out of engagement with the end flanges or said outer zinc casing element for the purpose of making provision for the ready and convenient opening and closing of each cell for the purpose of renewing any element or cleaning the same, as will be readily understood.

The removable lock caps 15, which serve to temporarily close the open ends of each battery cell are of a different metal than the zinc casing elements with which they connect and are preferably made of copper, and such removable lock caps are crimped or bent at their closed sides into the longitudinally disposed connecting eyes 16, in which are fitted one side portion of the copper connecting links or loops 17, the opposite side portions of which are fitted into the connecting eyes 18, at one end of the inner copper plate 11 of an adjacent cell. By reason of the construction of cells described, it will be seen that the cells are not only temporarily locked in a closed position but the connections therefor secure such a connection between the positive and negative elements in the cells as to positively prevent the weakening or impairment of the current, by reason of the fact that both sides of the connecting links or loops are connected to a non-corroding metal.

The end connecting links or loops 17, of the battery 6, are hinged to one member of a suitable two-part connecting clasp 19, the other member of which is similarly connected to a connecting plate 20, through which passes a conducting screw 21, the threaded end of which projects through the belt 1, beyond the inner side thereof. The connecting screws 21, are of course located at each end of the belt, and connected separably with the ends of the battery in the manner described, and the inner threaded ends of said screws are adapted to have detachably connected therewith the metallic electrode disks, 22, which contact with the body to provide for conducting the current of electricity therethrough. The said metallic electrode disks are provided upon their inner sides with the attaching collars or nuts 23, provided with annular grooves 24, and adapted to detachably engage the screws 21, whereby the electrodes can be readily attached and detached from the belt as occasion may demand. The said electrode disks 22, are adapted to be faced with an absorbent pad 25, consisting of disks of felt or other suitable absorbent material which are held in position on the electrodes by a cloth pad covering 26, the edges of which are engaged by a draw string 27, which is adapted to be drawn tight at the inner side of the electrodes in order to secure the pad cover thereon, and the free end of the tightened draw string is adapted to be wound a few turns in the annular groove of the attaching nut of the electrode, which will be sufficient to secure the free end of the draw string, and by reason of the means described which provide a remov-

able electrode and the pad therefor, the user of the belt is enabled to easily moisten and cleanse the pad, and to scour and polish the electrodes when they become corroded.

Fitted on the inner projecting ends of the screws 21, in rear of the electrode disks 22, are impervious insulating disks 28, made of oil cloth or other suitable material and of a larger size than the electrode disks so as to act in an insulating capacity for the said disks, to prevent the heat of the body from driving the water with which the pads are saturated out of the same. The said insulating disks therefore serve to retain the moisture in the pads of the electrodes and thus insure a more perfect electrical contact of the electrodes with the body.

From the above it will be obvious that the herein-described battery may be readily removed from and replaced in the belt while at the same time being so constructed and provided with new and useful connections whereby the efficiency of the entire apparatus shall be greatly increased, and it will be understood that changes in the form, proportion and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention. At this point attention is directed to the modification shown in Fig. 6 of the drawings, in which figure is illustrated different means for detachably connecting the electrodes to the ends of the battery than by means of the connecting screws 21. In the modification referred to the connecting plate 20, is dispensed with and one member of the clasp 19 has secured thereto the inner end of the post 30, that projects through the belt 1, beyond the inner side thereof and is provided on its end outside of the belt with the spring ball 31 that is adapted to have a detachable clasp engagement with the socket of the attaching collar or nut 23, of the electrode disks 22, it being understood that in this modification the said collars or nuts are not interiorly threaded. This connection provides for the detachable connection of the electrode disks with the ends of the battery, and it is to be noted that the form of clasp described consisting of the parts 31, and 23, is an ordinary form of clasp and is the same kind of clasp as indicated by the reference character 5, in the other figures of the drawings.

Having thus described the invention, what is claimed, and desired to be secured by Letters Patent, is—

1. In an electric belt, the herein-described battery consisting of a series of cells each comprising an outer oval or U-shaped element, an inner element of different metal from the outer element, and an absorbent packing interposed between the two elements, the copper connecting links or loops connected at one side to the non-corroding element of one cell and a non-corroding connection between the other side of said links or loops and the

corroding element of an adjacent cell, substantially as set forth.

2. The herein-described battery for electric belts consisting of a series of connected cells each comprising an outer oval or U-shaped zinc casing element, an inner copper plate, an absorbent cell packing between the copper plate and the zinc element, and a removable lock cap detachably interlocked with the free extremities of the zinc casing element, said lock cap being made of copper and provided with an integral connecting eye, and copper connecting links or loops connected at one side to the connecting eye, of a lock cap and at the opposite side to the copper plate of an adjacent cell, substantially as set forth.

3. In an electric belt, the combination of the body or casing belt, the flexible galvanic battery arranged within said belt, connecting plates arranged at opposite ends of the belt, conducting screws securing said connecting plate to the belt, the end electrodes provided with nuts detachably engaging said conducting screws, a separable hinge clasp connection between the opposite ends of the battery and said connecting plates, and absorbent pads removably secured on said electrodes substantially as set forth.

4. In an electric belt, the combination of the

body or casing belt, conducting screws fitted in opposite ends of the belt, a battery arranged within the belt and detachably connected to said screws, metallic electrode disks provided upon their inner sides with attaching nuts detachably engaging said screws, pads removably secured on said electrode disks, and impervious insulating disks arranged in rear of said electrode disks, substantially as set forth.

5. In an electric battery, the combination of the belt, the battery, end electrodes connected with opposite ends of the battery and provided upon their inner sides with projections having annular grooves, absorbent pads placed on the outer faces of said end electrodes, cloth pad coverings adapted to cover the electrodes and the pads thereon, and draw strings engaging the edges of said coverings and adapted to have their free ends wound in said annular grooves, substantially as set forth.

In testimony that we claim the foregoing as our own we have hereto affixed our signatures in the presence of two witnesses.

LOUIS F. FULLER.  
ANDREW J. TAYLOR.

Witnesses:

G. V. ADAMS,  
FRED R. TAYLOR.