(No Model.) 2 Sheets—Sheet 1.

H. W. MATTHEWS.

ELECTRO THERAPEUTIC BELT.

No. 459,144. Patented Sept. 8, 1891.

Fig. 1.

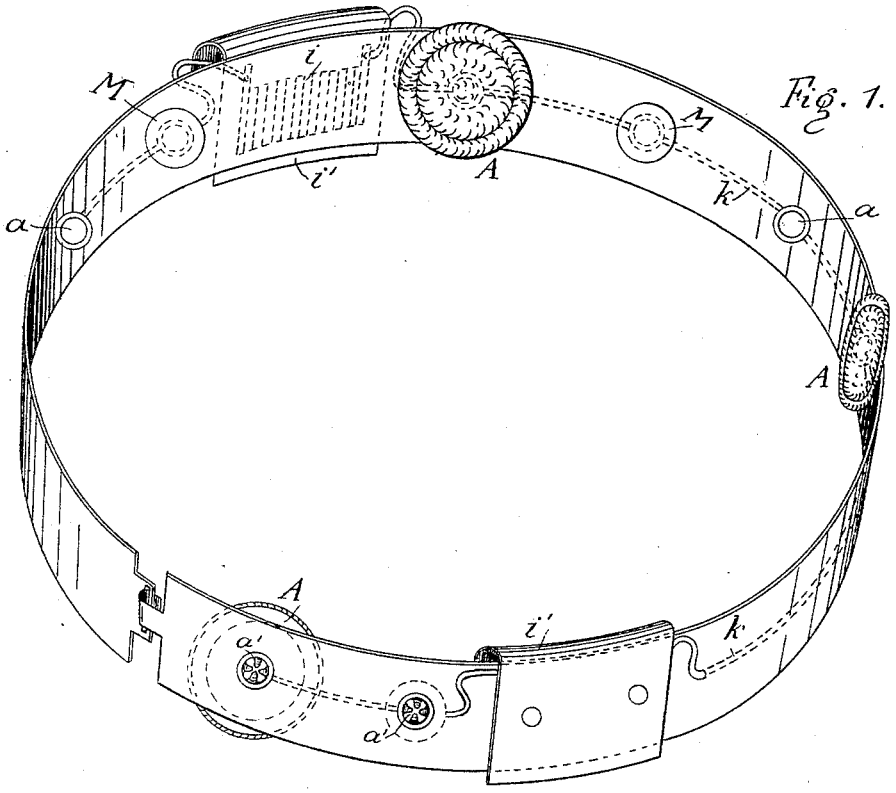

Fig. 2.

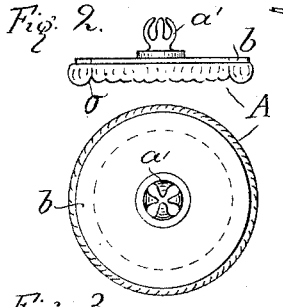

Fig. 3.

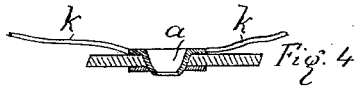

Fig. 4.

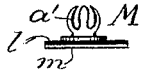

Fig. 5.

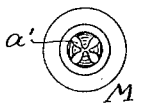

Fig. 6.

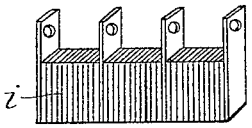

Fig. 7.

Fig. 9.

Witnesses
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Anton Fongner

Inventor
Hugh W. Matthews
By his Attorney
Wm Zimmerman.

(No Model.) 2 Sheets—Sheet 2.

H. W. MATTHEWS.

ELECTRO THERAPEUTIC BELT.

No. 459,144. Patented Sept. 8, 1891.

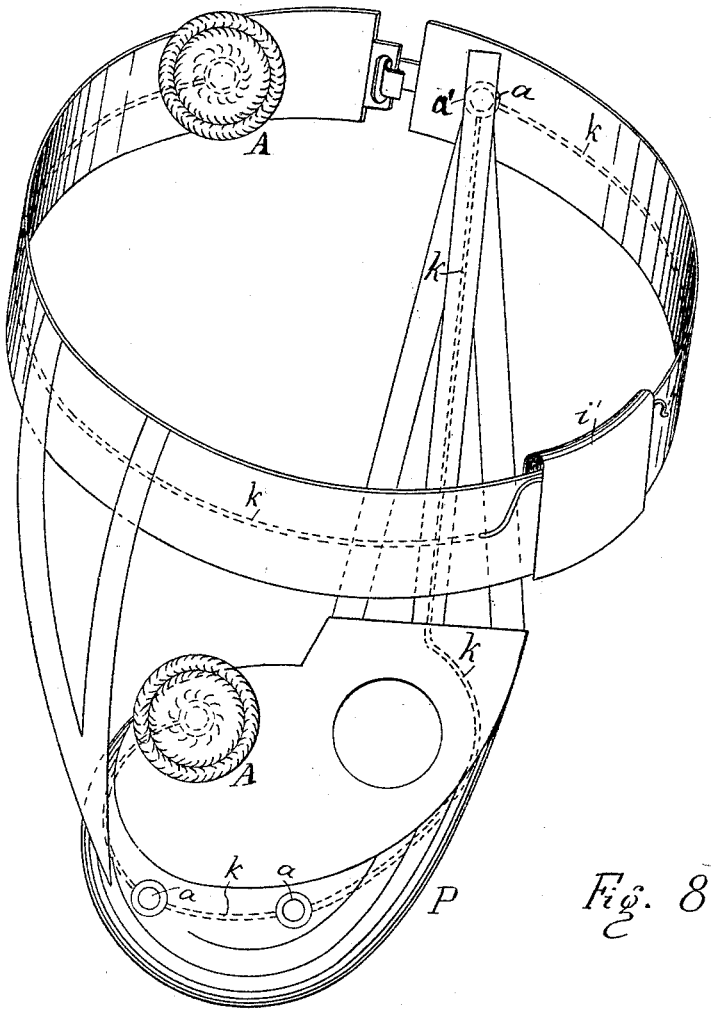

Fig. 8.

Witnesses
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UNITED STATES PATENT OFFICE.

HUGH W. MATTHEWS, OF CHICAGO, ILLINOIS.

ELECTRO-THERAPEUTIC BELT.

SPECIFICATION forming part of Letters Patent No. 459,144, dated September 8, 1891.

Application filed June 26, 1891. Serial No. 397,609. (No model.)

To all whom it may concern:

Be it known that I, HUGH W. MATTHEWS, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Electro-Therapeutic Appliances, which are fully set forth in the following specification, reference being had to the accompanying drawings, forming a part hereof, and in which—

Figure 1 shows my electro-therapeutic belt in perspective provided with my special devices. Fig. 2 shows one of my improved aluminium electrodes in side elevation. Fig. 3 shows the same from the top. Fig. 4 shows a metal socket *a* in section. Fig. 5 shows one of my insulators in side elevation. Fig. 6 shows Fig. 5 in plan view. Fig. 7 shows my battery in perspective. Fig. 8 shows a modification of my said device. Fig. 9 shows a vertical section of the electrode, Fig. 2.

Like letters refer to like parts.

The object of my invention is to improve the construction of electro-therapeutic body appliances; and my said invention consists in providing electrodes of non-corrosive and flexible metal faced with suitable absorbents of moisture, adapted by special mechanism to be removably attached to a belt or truss; and it further consists in providing suitable insulating devices for those places from which said electrodes have been removed; and it also and further consists in so connecting such electrodes in sets or pairs as to be adapted to operate on certain parts of the body, while at the same time intermediate parts of the body are relieved from the full force of the current, so as to be either only mildly affected thereby or not at all; and in order to attain said desirable ends I construct my said improvements in substantially the following manner, namely:

I attach my said improved electrodes either to a belt or other piece of apparatus by providing a metallic ring or socket *a*, which is securely attached to said belt or part; and it preferably consists in adapting for said purpose a well-known device used for gloves, consisting of such a socket-piece *a*, into which a removable spring-button *a'* is attachable. To said button *a'* is attached permanently a flexible aluminium disk *b*, made so thin that it may easily be bent by the fingers into any desired form. The object of making said disk of said quality of material is, first, that said disk may not wear out and in wear become unsightly and also discolor and injure fabrics coming in contact with it, and, second, that the said disk may be shaped by the patient to fit into any depression or over any elevation on the body and retain its form in that place, and thus cause a more gentle action on the part, because the electrode by thus fitting over the entire part acts with its whole surface instead of from a point, as it must do when of stiff material, and has its convex side toward the body, a form in which all inflexible electrodes must be used, because if used as flat disks their edges would be irritating when in a hollow part of the body—as, for instance, under the arm—because the current could then act only on the circumference of the disk, and, on the other hand, if an electrode of convex form were applied to the angle of the shoulder, for instance, its action would be from a comparatively small part of its surface, or a point which would render it painful, besides reducing its effects to too small a surface. The said several disadvantages are all overcome by the use of such improved thin metallic flexible and non-corrosive disks, as shown in my construction.

On a suitable belt are attached as many sockets *a* as may be considered necessary or desirable, which are all connected by a suitable conductor *k*, and it with the battery or batteries *i* in the pockets *i'*, as herein shown. Said conductor *k* is for convenience, and its safety from injury placed between the several layers of the belt, and is here indicated in broken lines connecting said several sockets *a* and battery or batteries *i*.

Insulators M to insulate the sockets *a* when not holding an electrode A are also provided, and form a highly necessary and useful part of my invention.

Said insulators are made of an adjustable button *a'*, adapted to be removably inserted into said sockets *a*, to which is attached an insulating-body, as a piece of rubber *l*, and said insulating-body is faced with soft chamois-skin *m* or other suitable material to prevent its irritating the skin. By means of this arrangement and construction of the parts the

said electrodes may be moved from place to place and the current kept from escaping at any of said sockets by placing in them said insulators M.

In Fig. 8 is shown a special device to show how my invention may be arranged for special purposes. In this case a pocket P is suspended from a socket *a* in the belt by a strap, in the upper end of which is a button *a'*, which enters said socket *a*, and to said button is attached a lead *k* to sockets *a* in the pocket P, one of which is provided with my electrode A, from which and through the body to the electrode A in the opposite end of the belt the circuit may be completed, instead of through a metallic conductor.

It is a well-known fact that the metal plates *b*, which form the electrodes in like appliances, soon become corroded and unsightly as well as unpleasant to handle—features which are entirely overcome by my aluminium plates *b*, which are non-corrosive under such use; and to make such plates still more effective I face them with sponge *o*, which when in use becomes moist from the body, and therefore makes the electrode more effective, or, if that is not sufficient, is supplied with moisture. Said aluminium plate is also annealed, so that it may retain the form it may be made to assume to fit any part of the body.

What I claim is—

1. The combination, in an electric belt provided with a battery and metallic sockets fixed in said belt and connected to said battery, of electrodes provided with spring-buttons adapted to be received and removably held in said sockets, substantially as specified.

2. The combination, in an electric belt provided with a battery and metallic sockets in said belt connected by conductors, of flexible metallic electrodes provided with spring-buttons adapted to be removably secured in said sockets, substantially as specified.

3. The combination, in an electric belt provided with a battery and metallic sockets electrically connected in said belt, of metallic electrodes and insulators adapted to be interchanged and removably held in said sockets, substantially as specified.

4. The combination, in an electric belt provided with a battery and metallic sockets electrically connected in said belt, of sponge-faced removable electrodes, substantially as specified.

5. The combination, in an electric belt provided with a battery and metallic sockets electrically connected in said belt, of aluminium electrodes faced with sponge and removably held in said electrodes, substantially as specified.

HUGH W. MATTHEWS.

Witnesses:
WM. ZIMMERMAN,
ANTON FOUGNER.