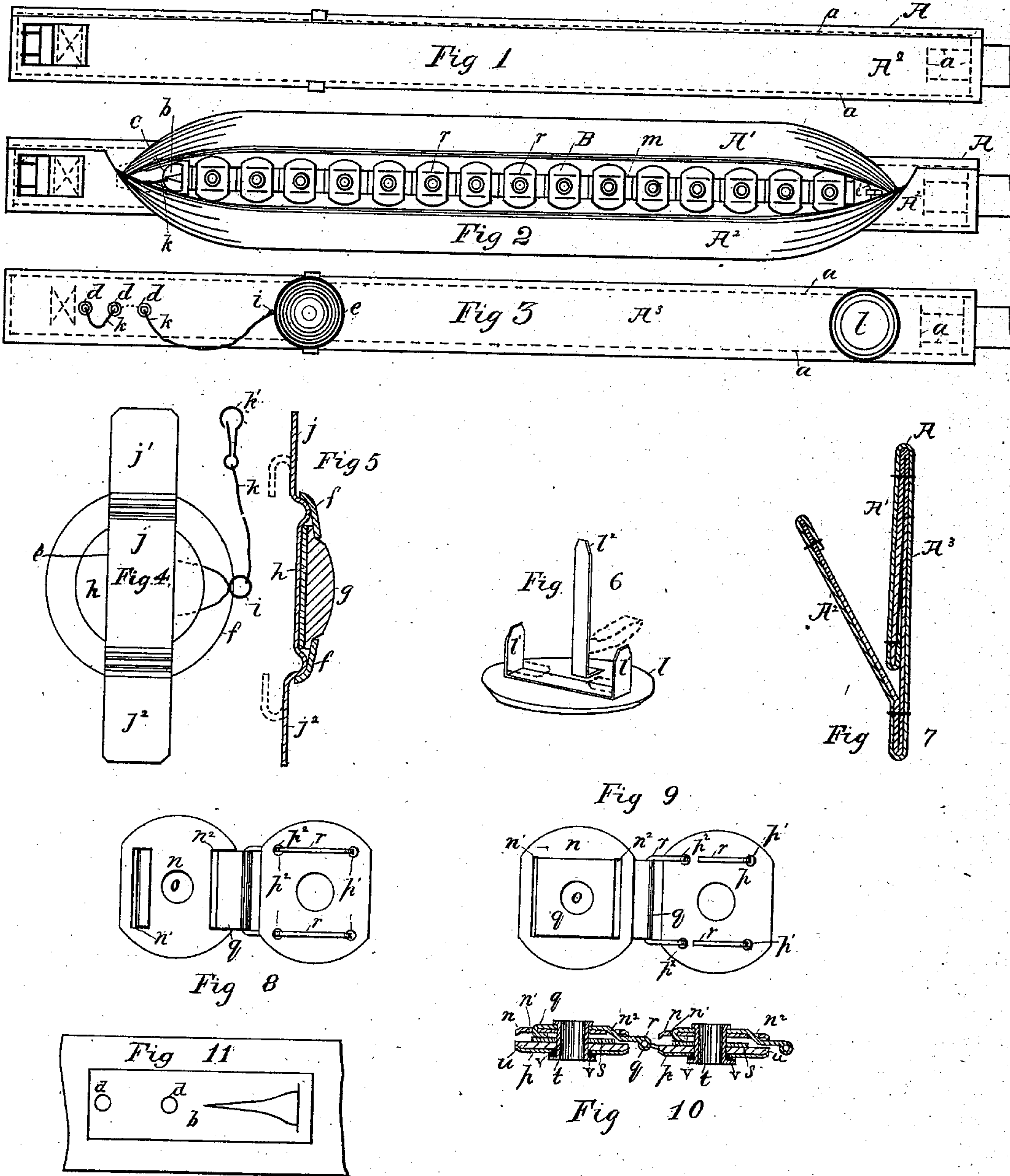


(No Model.)

S. B. BUSHFIELD.
THERAPEUTIC ELECTRIC BELT.

No. 376,730.

Patented Jan. 24, 1888.



WITNESSES:

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THERAPEUTIC ELECTRIC BELT.

SPECIFICATION forming part of Letters Patent No. 376,730, dated January 24, 1888.

Application filed May 31, 1887. Serial No. 239,824. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL B. BUSHFIELD, a citizen of the United States, residing at Denver, in the county of Arapahoe and State of Colorado, have invented certain new and useful Improvements in Therapeutic Electric Belts; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

My invention relates to electric belts.

The object of my invention is to make improvements in the details of construction of this class of devices, whereby they will be rendered more effective in operation, more durable, and more comfortable in use.

The improvements will be hereinafter fully explained, and then pointed out in the claim.

In the drawings, Figure 1 is an outside view of the case. Fig. 2 is a view of the same with the flaps turned back, showing the interior chain of cells and its attachments. Fig. 3 is a view of the inside or that portion of the belt which is to be placed next the body. Fig. 4 represents the reverse side of the adjustable positive electrode and its attachments. Fig. 5 is a vertical section through the center of the same. Fig. 6 is a perspective view of the reverse side of the negative electrode, showing its attachments. Fig. 7 is a vertical section through the case, showing its construction. Fig. 8 is a view of one of the series of connected plates used in the construction of the battery-cells, showing the interior of the zinc and the exterior of the copper and their connections. Fig. 9 is a view of the same reversed. Fig. 10 is a section through the line *xx*, Fig. 9. Fig. 11 is a top view of the attachment for holding the positive pole of the belt in place.

In the drawings, A represents the case, which is constructed of a strip of material impervious to the moisture contained in the generating agent used, and also a strip of suitable covering material, the two sewed together, as indicated in the drawings by lines *a*. This forms the flaps A' and A² and the back A³ of

one duplex piece. On the positive end of the case, firmly attached to the interior of the back A³, is the holding-strap *b*, (shown in Figs. 2 and 11,) which is provided with a suitable opening for the reception of the ring *c* on the positive end of the cell chain B. At this end one or more openings, *d*, are made through the backs of the case to facilitate in making connection between the cell chain B and the positive electrode *e*, which is formed, as shown, of an annular concavo-convex disk, *f*, in the center of which is placed a piece of some good absorbing material, preferably wool felt, *g*. A flat copper disk, *h*, is placed upon the felt for the purpose of facilitating and holding it in position. A copper strap, *j*, is then soldered to the disks *f* and *h*. To the disk *f* is soldered the copper-wire loop *i*, the ends of which are placed between the absorbent and the disk *h*. The ends *j'* and *j''* of the strap *j* are then turned over the edge of the case, as shown in dotted lines, Fig. 5. It can then be adjusted to rest at any desired point on the belt, and is connected with the ring *c* on the cell chain by the insulated wire *k*, which is provided with a snap, *k'*, on its inner end. The wire *k* is laced through the openings *d* in the case. On the opposite end of the case A is attached the negative electrode *l*, which is a concavo-convex disk, having projections *l'* and *l''* attached to it. The projections *l'* are for the purpose of holding the electrode in position in the case. The projection *l''* is for the purpose of holding the negative end of the cell chain. After being passed through the back A³, the projections *l'* are turned down and the projection *l''* is formed into a hook, as indicated in dotted lines, Fig. 6.

The cell chain B consists of a series of electric-battery cells constructed and connected as follows: Zinc plates *n* are used of any desired shape, but preferably that shown in the drawings, with concavo-convex surfaces. These have rectangular slots *n'* and *n''* on either side, near the parallel edges of the plates, and a circular hole, *o*, is formed in the center. Copper plates *p* are also used, which are the same form as the above-mentioned zinc plates, and these are provided with four holes, *p'* and *p''*. One of the zinc plates and one of the copper plates are hinged together by a hinge

constructed of a strip of thin sheet-copper, *q*, the ends of which are passed from the convex side of the zinc plate through the slots *n'* and *n*². The end passing through the slot *n'* is then
5 bent onto the concave surface of the plate. The opposite end is bent around the copper wire *r*, the ends of which are passed from the concave surface of the plate *p*, through the holes *p*², and across the convex surface to the holes
10 *p'*, through which they are passed, and are then bent onto the convex surface of the plate *p*. In the top of the copper strip *p* a circular hole is formed corresponding to the hole *o* in the zinc plate. The cell chain is constructed of a
15 series of these connected plates in the following manner; on the concave surface of one of the copper plates (connected to a zinc plate in the manner described) are placed annular pieces of some good absorbent, such as wool
20 felt, *u*, Fig. 10, which should not extend beyond the edges of the plate. On this an annular zinc plate, *s*, (previously amalgamated with mercury to render it porous, in which state the larger surface of zinc is presented,
25 upon which the generating agent may act,) is placed. Over this a zinc plate attached in the manner described is placed. The whole is then fastened together by the eyelet *t*, which is insulated from the copper plate by a ring
30 of insulating material, *v*, preferably rubber. This process of construction is carried on until a cell chain of the required length has been

made. It will be seen that there would be an odd copper plate and an odd zinc plate at the ends. These should be removed; and the cop- 35 per plate at one end and the zinc plate at the other are attached by copper wire to the rings *c* and *c'*, which are held in the case in the manner before described.

In using the belt the cell chain should be 40 taken out and placed for a short time in an acid solution, preferably ordinary vinegar, after which it is again placed in the case, when it is ready for use.

Having now fully described my invention, 45 what I claim as new, and desire to secure by Letters Patent, is—

The combination, with the generating cell chain and its inclosing-case, of the herein-described electrode, composed of the annular concavo-convex disk *f*, having a central opening, 50 a piece of absorbent material in the said opening at the concave side of the disk *f*, the metallic disk *h*, supporting said absorbent material in the opening, and the fastening-strap *j*, 55 extending over the disk *h* and secured to the disk *f*, and a conductor connecting the electrode and the chain cell, as set forth.

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

SAMUEL B. BUSHFIELD.

Witnesses:

F. O. KNIFTON,

B. L. POLLOCK.