

(No Model.)

H. C. WARNER.

GALVANIC BELT.

No. 246,051.

Patented Aug. 23, 1881.

Fig. 1.

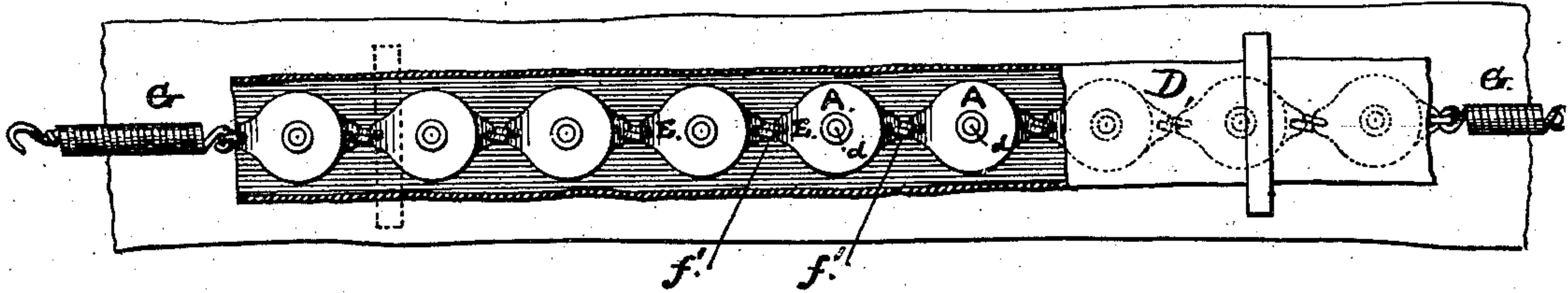
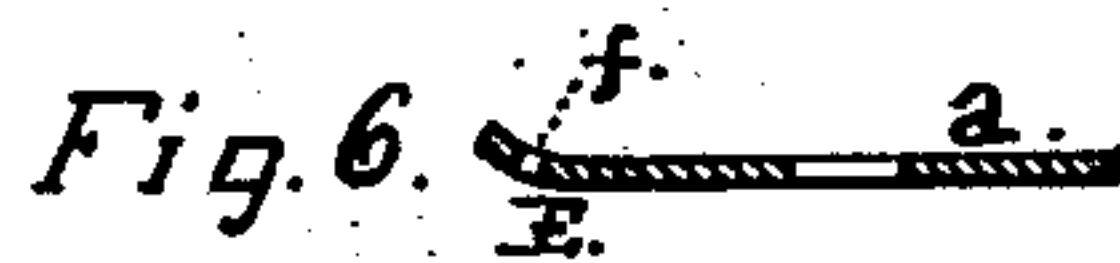
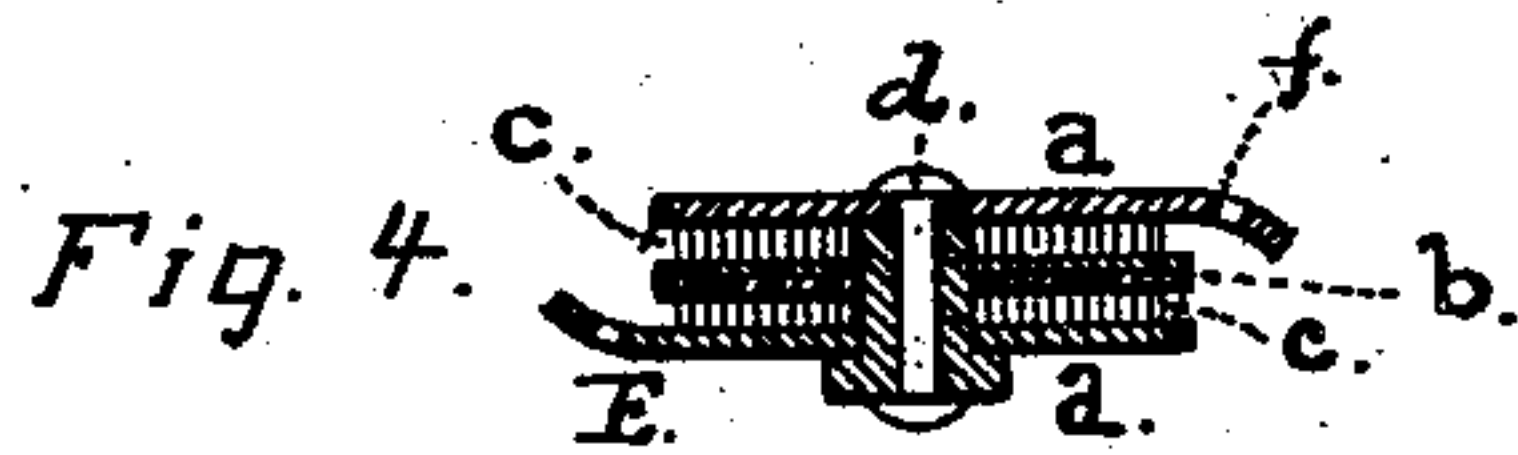
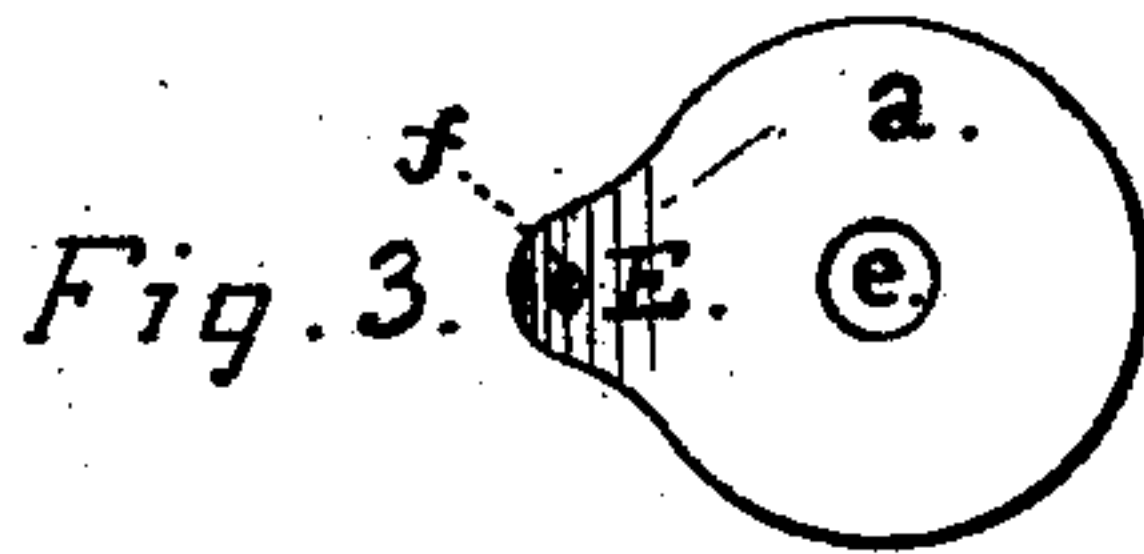
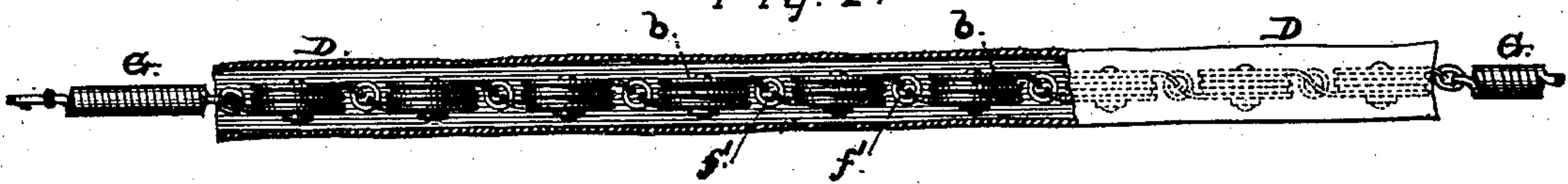


Fig. 2.



Witnesses:

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UNITED STATES PATENT OFFICE.

HENRY C. WARNER, OF GILROY, CALIFORNIA.

GALVANIC BELT.

SPECIFICATION forming part of Letters Patent No. 246,051, dated August 23, 1881.

Application filed December 20, 1880. (No model.)

To all whom it may concern:

Be it known that I, HENRY C. WARNER, of Gilroy, in the county of Santa Clara and State of California, have made and invented a new and useful Improvement in Galvanic Belts; and I do hereby declare that the following specification fully, clearly, and exactly describes my said invention, reference being had to the accompanying drawings.

This invention is an improvement in galvanic belts to be worn about the person for curative purposes.

It relates both to the construction of the voltaic elements or pairs of which the belt is composed, and to the manner of connecting them together to produce a perfect and continuous action throughout the entire number of elements, as shown in the drawings, and hereinafter described.

Figure 1 shows a portion of my improved belt, the remainder of which would be only a repetition of the elements and connections. Fig. 2 is a top or edge view of Fig. 1. Figs. 3, 4, 5, 6 are details of the parts used in forming the circular elements of the battery.

I make the elements A of my belt from four disks, *a a b b*, of proper positive and negative metals, and I place them so as to have the two inner ones, *b b*, in contact, and the two outer ones, *a a*, facing them, but separated by means of the washers *c c*, of material usually employed for such purpose. Each element is formed in this way of an outer disk of one metal, a second disk of metal positive or negative to the first one and separated from it by a washer, *c*, a third disk of metal of opposite nature to the second disk and placed directly against it, and, lastly, a disk on the outside, which is of a metal positive or negative to the last-named disk, and is separated from it by a washer, *c*. All these parts are secured together by means of an insulated rivet, *d*, that passes through a central hole made for it through all the disks. I prefer to make these disks of circular form, as shown in the drawings, and by employing them in the manner described I produce a battery or element of small size and light weight, but of increased power. In constructing a belt of these elements I can employ a less number than is required of other kinds of such elements and still

obtain the proper strength and continuity of action. I thus greatly reduce the cost of manufacture, not only in the quantity of metal required, but chiefly in the time and labor of finishing and fitting the parts together.

There is an extension or ear, E, formed on one side of the disk *a* by extending the metal, and having a slot or hole, *f*, to receive the ring or link *f'*. The shape of this extension is such that a sufficient quantity of metal is provided between this hole and the edge of the disk to prevent the link from pulling or cutting out. These ears are provided on the outside disks, *a*, of each battery and on alternate sides, so that when two or more batteries, A, are brought together the ear on the outside disk of one shall be connected to the ear on the inside disk of the next battery; and in a belt formed of such elements a continuous connection of an inner to an outer disk is made throughout the entire length, as shown in Figs. 1 and 2 of the drawings.

Connection between the ears E is made by rings or links *f'*, which not only join the elements together, but also act as conductors from one element to the next one, so as to give the required continuity of action through the several elements of the belt. In order to keep the belt in this continuous working condition, it is necessary to preserve the galvanic contact and connection at all times between the several elements while the belt is in place around the body, and for such purpose to prevent the oxidation of the inner surface or edges of the holes and the surface of the connecting-links when they pass through these holes. I therefore maintain the belt in a state of tension, when in use, by inserting at one or more points in the length of the belt a coil-spring, G, Figs. 1 and 2. These springs join two of the elements together, and act also as conductors between them, and when the belt is clasped around the body the elasticity thus given to it causes the rings or links to be always in metallic contact with the edges of the holes in the extensions E, and by their rubbing action while thus in a state of tension upon the person the surfaces of the rings and the edges of the holes are kept clean and bright and the perfect contact of the surfaces insured as long as the belt is worn.

This construction and manner of putting together the parts gives a more powerful and more durable belt than is obtained by any of the kinds now known to me. The construction, moreover, greatly simplifies the cost and labor of producing the parts and putting them together, and thus it materially reduces the cost of manufacture, while giving a better article. A single central rivet or fastening unites the several parts of an element firmly together, and a single short link is all that is required to connect one element to another. The required effect is obtained with a minimum amount of metal, and the amount of hand-labor required to produce and join the elements into a continuous battery is very small. When the required number of these elements are joined together, as before described, I inclose them within a tube, D, of cloth or textile material, so that they are covered on all sides, and this tube I attach by bands or loops to a waistband or supporting-belt, as shown at Fig. 1. By this means I protect the battery from atmospheric influence and action in a great degree, and thereby prevent the exciting-liquid from being too quickly evaporated, while I also keep the battery from soiling and staining the clothing and person of the wearer. The action of the elements is rendered more uniform and

lasting by being thus inclosed within a protecting-tube. From various points in this belt the current is conducted and applied to the parts to be treated by means of suitable conductors in the usual manner.

Having thus fully described my invention, what I claim, and desire to secure by Letters Patent, is—

The electric belt herein described, consisting of the two central plates, *b b*, of dissimilar metals, their inner faces resting against each other, the outer disks or plates, *a a*, each of dissimilar metal to the metal of the central disk adjacent thereto, and having extensions or ears *E*, provided with orifices *f* for the reception of rings *f'*, by which each battery is secured to its adjacent battery, the washers *c* between each outer disk and the outer face of each inner disk, the insulated rivet *d*, passing through the center of said disks *a b* and washers *c*, the spring *G* for distending said belt, and the casing or tube *D*, as described.

In witness that I claim the foregoing I have hereunto set my hand and seal.

HENRY CONRAD WARNER. [L. S.]

Witnesses:

EDWARD E. OSBORN,
WM. F. CLARK.