

(No Model.)

I. GRAY.

THERAPEUTICAL GALVANIC BELT.

No. 246,387.

Patented Aug. 30, 1881.

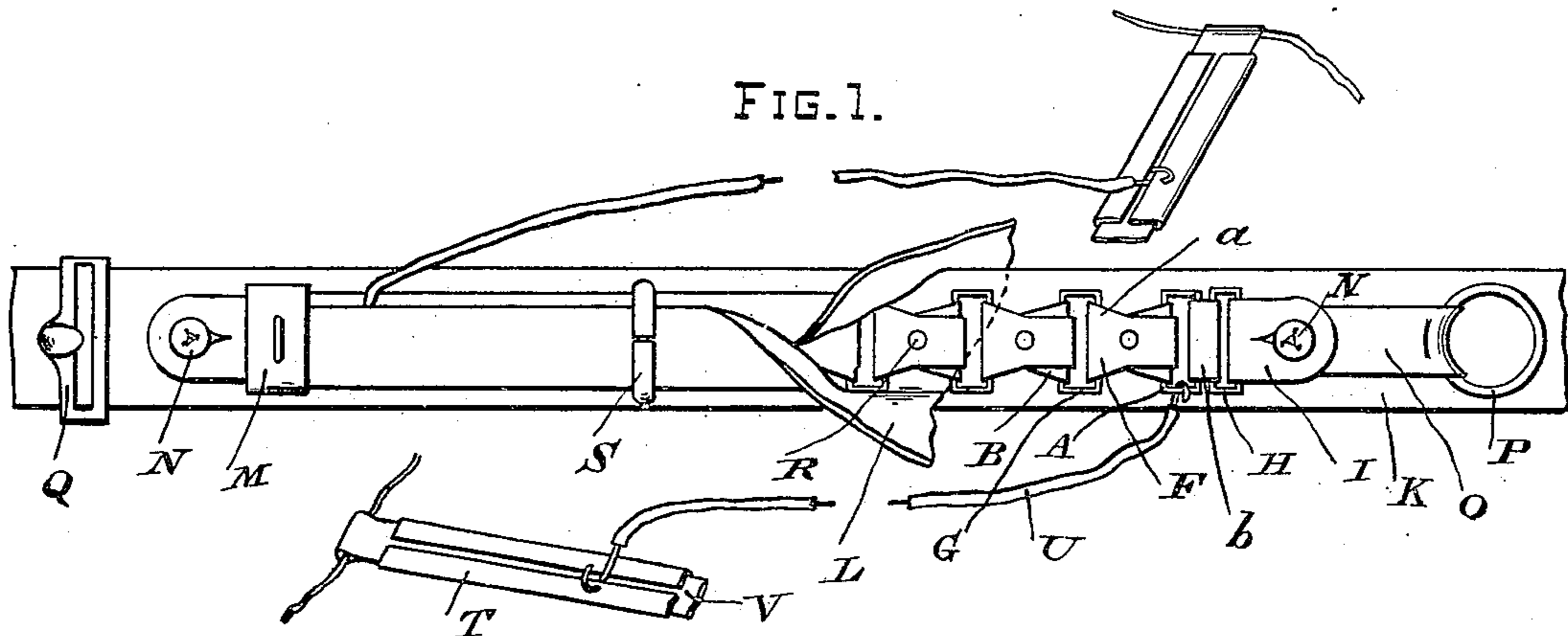


FIG. 2.

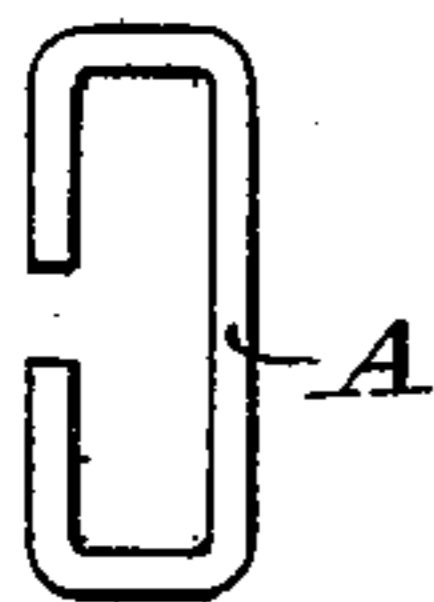


FIG. 3.

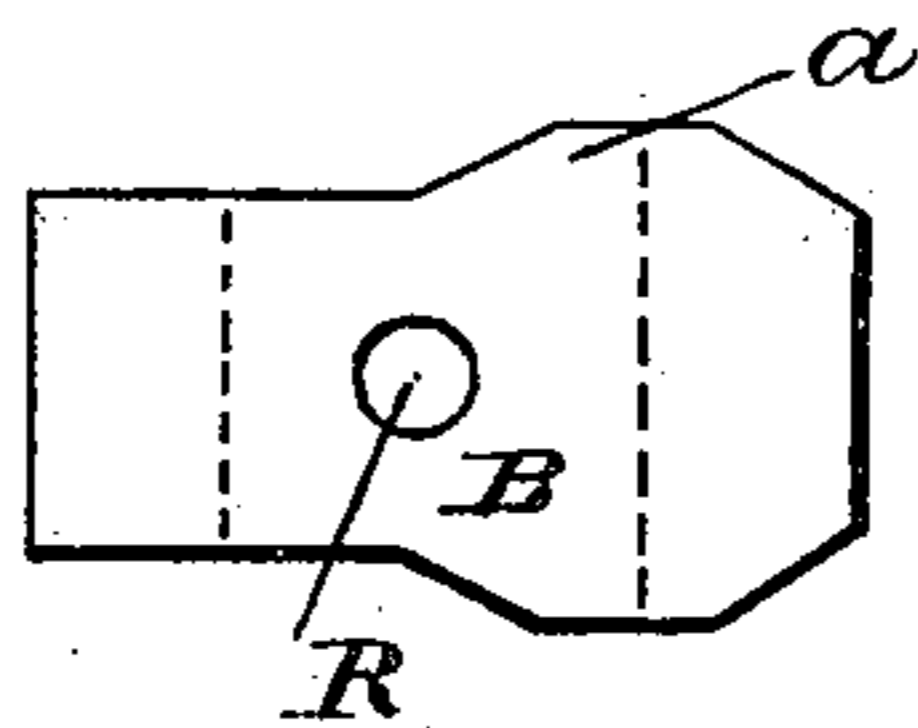


FIG. 4.

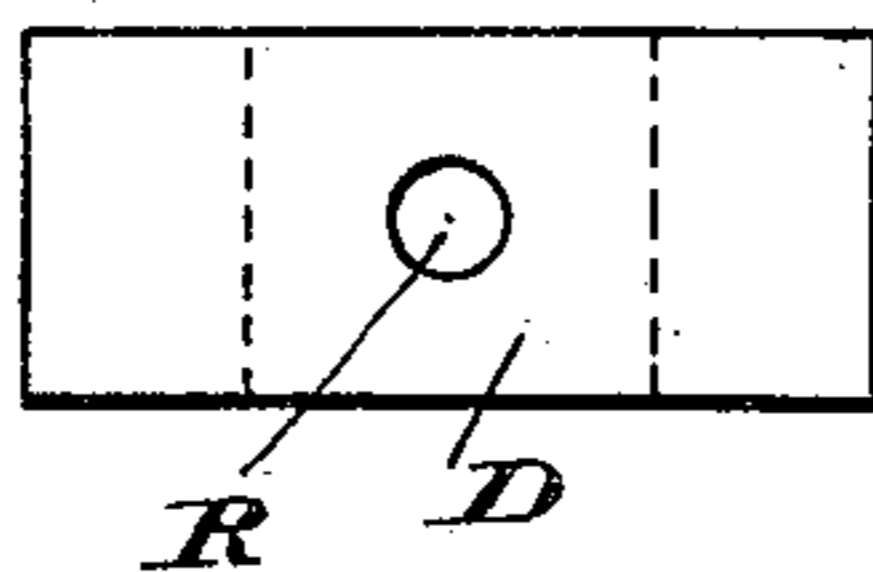


FIG. 5.

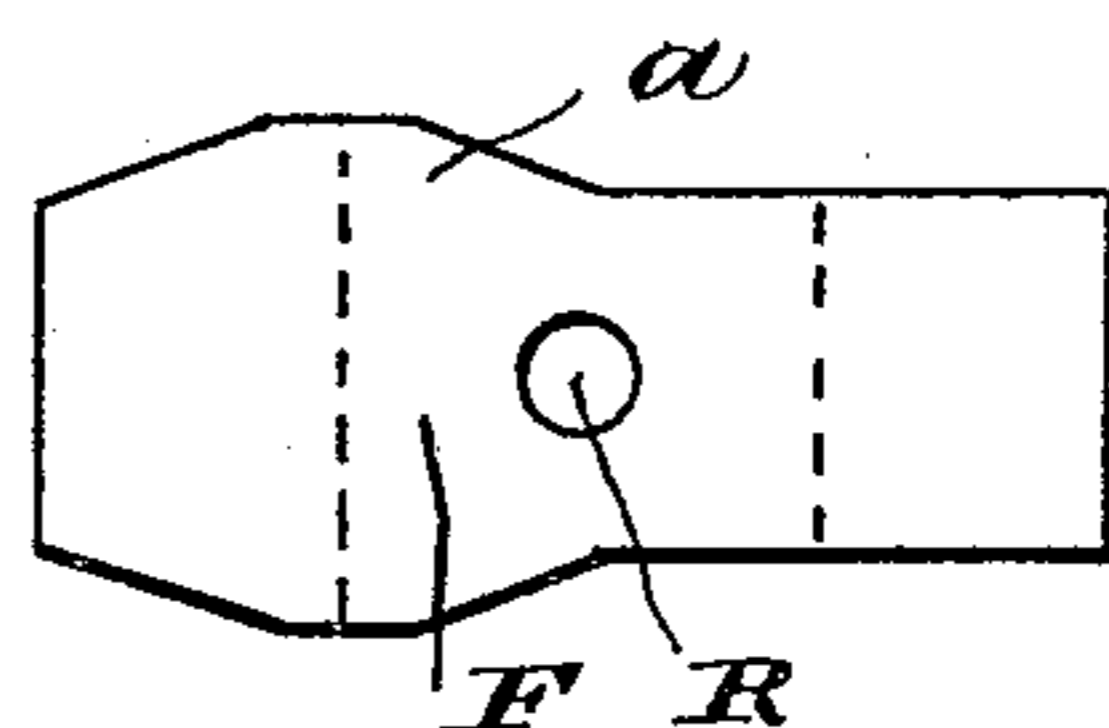


FIG. 6.



FIG. 7.

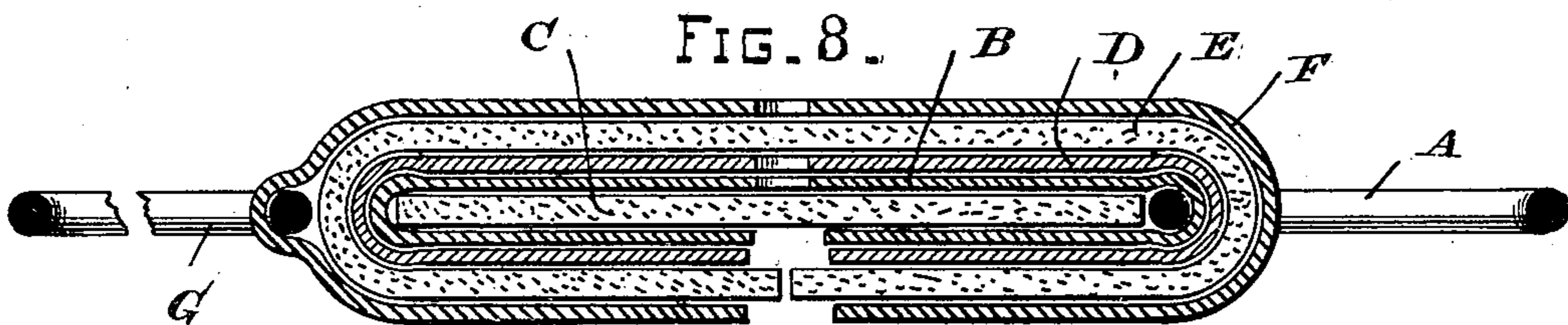
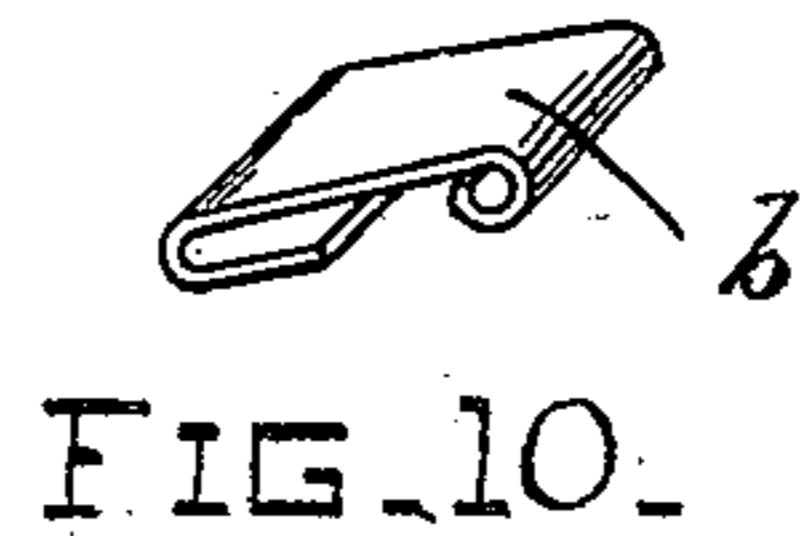
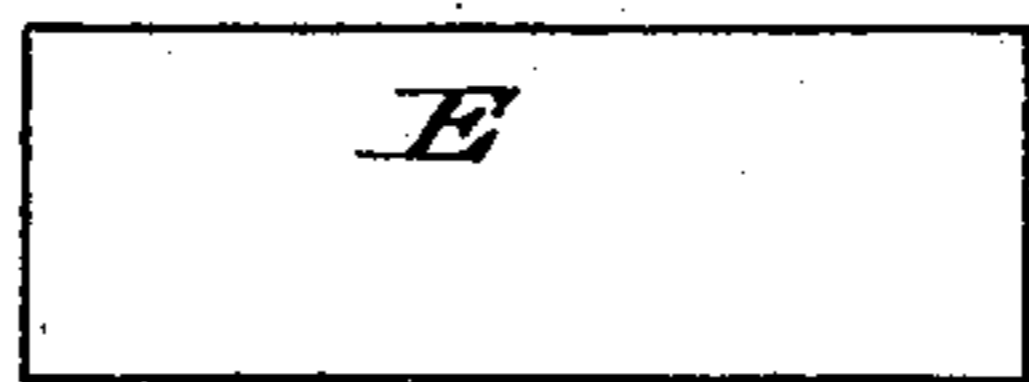
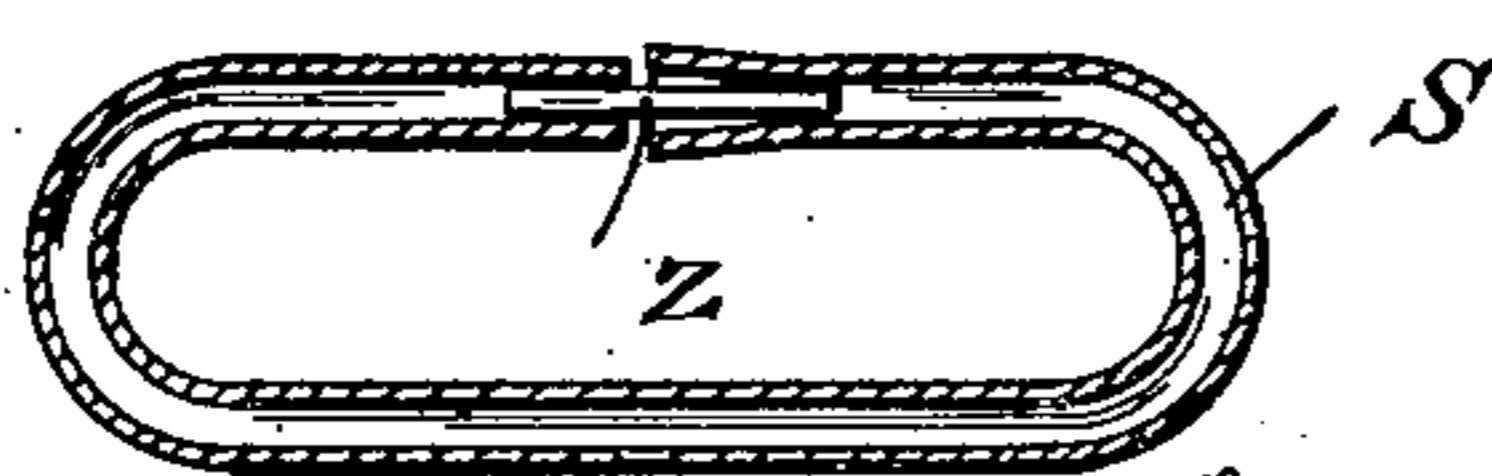


FIG. 9.



WITNESSES

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UNITED STATES PATENT OFFICE.

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THERAPEUTICAL GALVANIC BELT.

SPECIFICATION forming part of Letters Patent No. 246,387, dated August 30, 1881.

Application filed May 16, 1881. (No model.)

To all whom it may concern:

Be it known that I, IRA GRAY, a citizen of the United States, and residing at San Francisco, in the county of San Francisco and State of California, have invented certain new and useful Improvements in Therapeutical Galvanic Belts, of which the following is a specification.

The object of my invention is to provide a galvanic belt for the curing of diseases, in which the power and quantity of the current to be applied may be regulated according to the number of cells brought into the circuit; second, to provide a peculiar-shaped plate for the battery-cells, and also to provide a new and peculiar combination and arrangement of the plates of the cells, whereby the polarity of the cells will be permanently established and improper contact of the several parts of the cells and connections thereof avoided. These objects I accomplish by means of the construction shown in the accompanying drawings, in which—

Figure 1 is a plan view, showing the india-rubber covering of the battery partially removed. Fig. 2 is a plan view of the link by which the different cells of the battery are connected. Figs. 3 and 5 are plan views of the copper plates, the dotted lines showing the points at which they are to be bent. Fig. 4 is a plan view of the zinc plate. Figs. 6 and 7 are plan views of the acid-absorbing pads. Fig. 8 is a central longitudinal section through one cell of the battery. Fig. 9 is a longitudinal section through the loop or band S which holds the india-rubber covering in place. Fig. 10 is a perspective view of the hook *b*.

Similar letters of reference are used to designate like parts throughout the several views.

I construct my improved therapeutical galvanic belt as follows, to wit: I first take a link of copper wire, A, which is to be only partially closed, in order that the galvanic current may not return upon itself, and insert therein the flanged end of the copper plate B, which is to be bent or doubled over so as to inclose the pad C. This pad may be of felt or any other suitable material; but I prefer to employ felt. Then bend over the copper plate the strip of zinc D, and then bend over the zinc the strip of felting E. I then bend over this last-named

strip of felt another strip of copper, F, passing the flanged end of this last-named strip through the link G, binding the link upon the open side thereof, and which, in turn, will receive the inner copper plate of the next cell, and so on until the desired number of cells have been constructed, working forward until the battery is completed.

It will be seen that by this construction the durability of the battery is greatly increased, as the inner copper plate, B, preserves the socket-joint or point of contact with the connecting-link, while the flanges *a* upon the copper plates, by being placed at the opposite ends of the cells, prevent all danger of accidental contact by the links with the plates of the cell, or of one cell with another.

It should here be observed that I do not confine myself to the use of copper or zinc, as any suitable metal may be employed.

When the requisite number of cells have been connected together, I attach at either end, by means of links H and hooked plate *b*, the piece of rubber-cloth I, which is doubled over upon itself, the closed end forming a socket-joint for the link H. The battery is then to be inclosed with a covering or wrapping of india-rubber sheeting, L, which prevents evaporation and protects the clothing and person of the patient from contact with the acid, and secures it at either end by a band of thin sheet metal, M. The battery is then attached to the piece of non-elastic web or belt K by means of the hooked link *b*, strips I, and the buttons N, which are secured to the said belt K, and to one of which is also secured the piece of elastic webbing O, provided upon its outer end with a ring, P, in which engages the tongue of the buckle Q, adjustably attached to the opposite end of the belting K, which secures the battery about the waist of the patient.

When it becomes necessary to apply the belt to a patient the flaps of the india-rubber covering L are unfolded and the battery unhooked from the belt and dipped in an acidulated solution, (preferably diluted sulpho-glyceric acid,) which is absorbed by the alternating pads C and E, and which produces the chemical action upon the metallic plates necessary to produce a current of galvanic electricity; and it should here be observed that the metallic plates B, D,

and F are each provided at their centers with a perforation, R, which admits of the absorption, saturation, and percolation of the acidulated solution from one layer of padding to the other in each cell, and in the said aperture
 5 may be inserted the hooked end of the conducting-cord U. When the saturation has been completed the battery is replaced and the india-rubber covering or sheet is folded
 10 back to its place and secured at intervals by the bands or clasps S, which are constructed of a piece of rubber tubing, in one end of which is cemented a tongue of whalebone, Z, which is to be forced into the opposite end of the
 15 tube, as is seen in Fig. 9, and thus confine the covering L to its proper place. The belt is then applied to the body of the patient with the belt K next the skin, and then apply to the opposite sides of that portion to which it
 20 is desirable to apply the galvanic current the plates T T, which are formed of sheet metal folded around a central core of doubled rubber-cloth, V, through the projecting looped ends of which a tape may be passed for the
 25 purpose of confining the said plates in place. The said plates T T are connected to the battery by means of insulated tinsel conducting-cords U U by passing the hooked ends thereof through the end links which connect the bat-
 30 tery to the belt; or one of these insulated cords may be attached to the battery at any intermediate point, according to the force of the current desired.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is— 35

1. In a galvanic belt, a series of battery-cells composed of a central absorbent pad, C, copper plate B, inclosing said pad and connected with the adjoining cell by a copper link, 40 A, and the zinc plate D, surrounding the inner copper plate and separated by a felting strip, E, from the outer inclosing copper plate, F, which is connected by a link, G, with the adjacent cell, said metallic plates being perforated 45 for the passage of an acidulated solution, as and for the purpose specified.

2. In a galvanic belt, the combination, with a series of battery-cells connected by suitable links, of the belt K, having buttons N, strips 50 I, attaching-links b H, and rubber covering-strip L, secured by clasps M S, as and for the purpose set forth.

3. The combination, with a galvanic belt, of the current-applying plates T T, composed 55 of a metallic strip folded around a core of doubled rubber cloth, V, and provided with insulated cords U U and suitable attaching devices, as shown and described.

In testimony that I claim the foregoing I 60 have hereunto set my hand and seal this 5th day of May, 1881.

IRA GRAY. [L. S.]

Witnesses:

WILLIAM HARNEY,
 WILMER BRADFORD.