

No. 691,820.

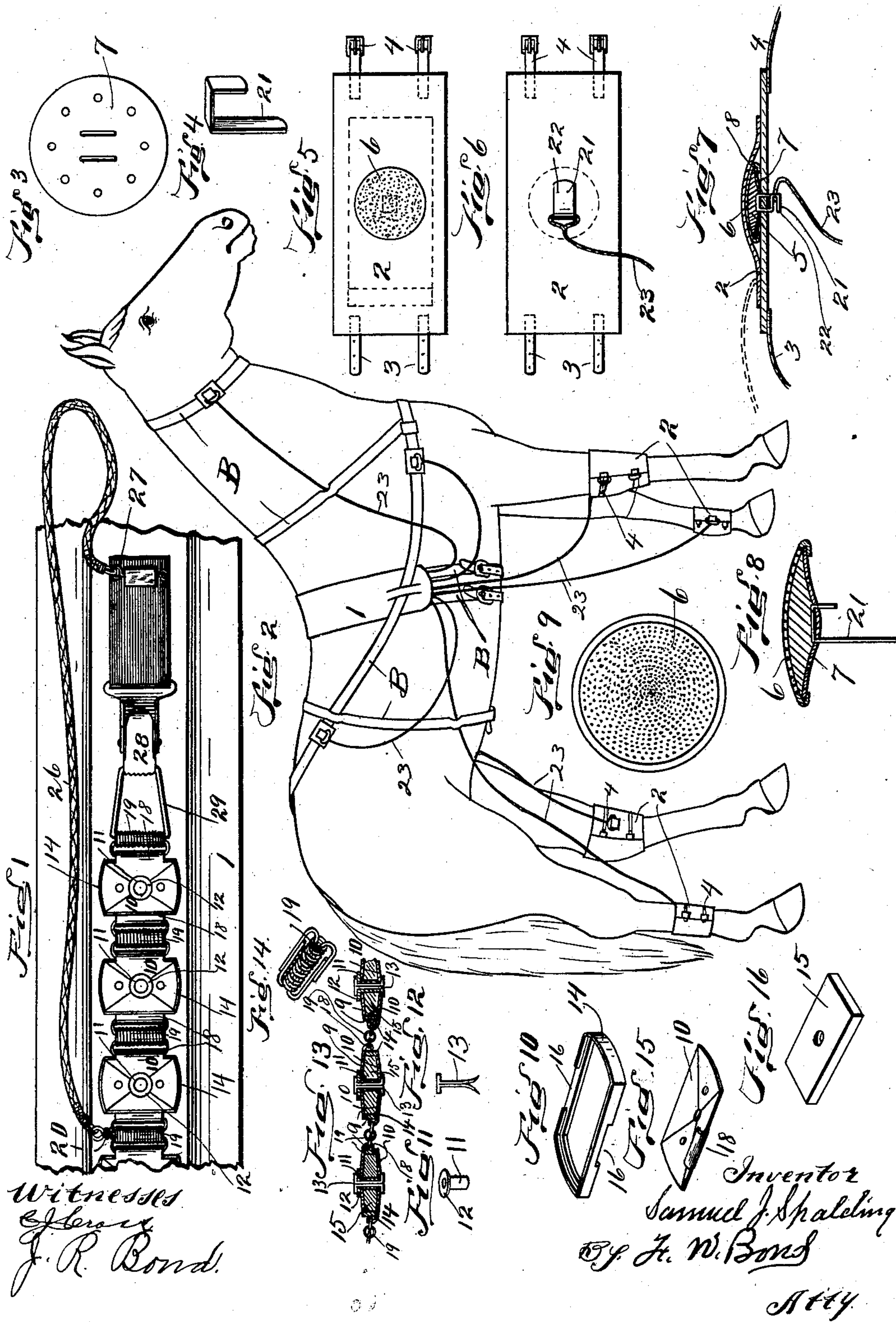
Patented Jan. 28, 1902.

S. J. SPALDING.
ELECTROMEDICAL BELT.

(Application filed Aug. 23, 1899.)

(No Model.)

2 Sheets—Sheet 1.



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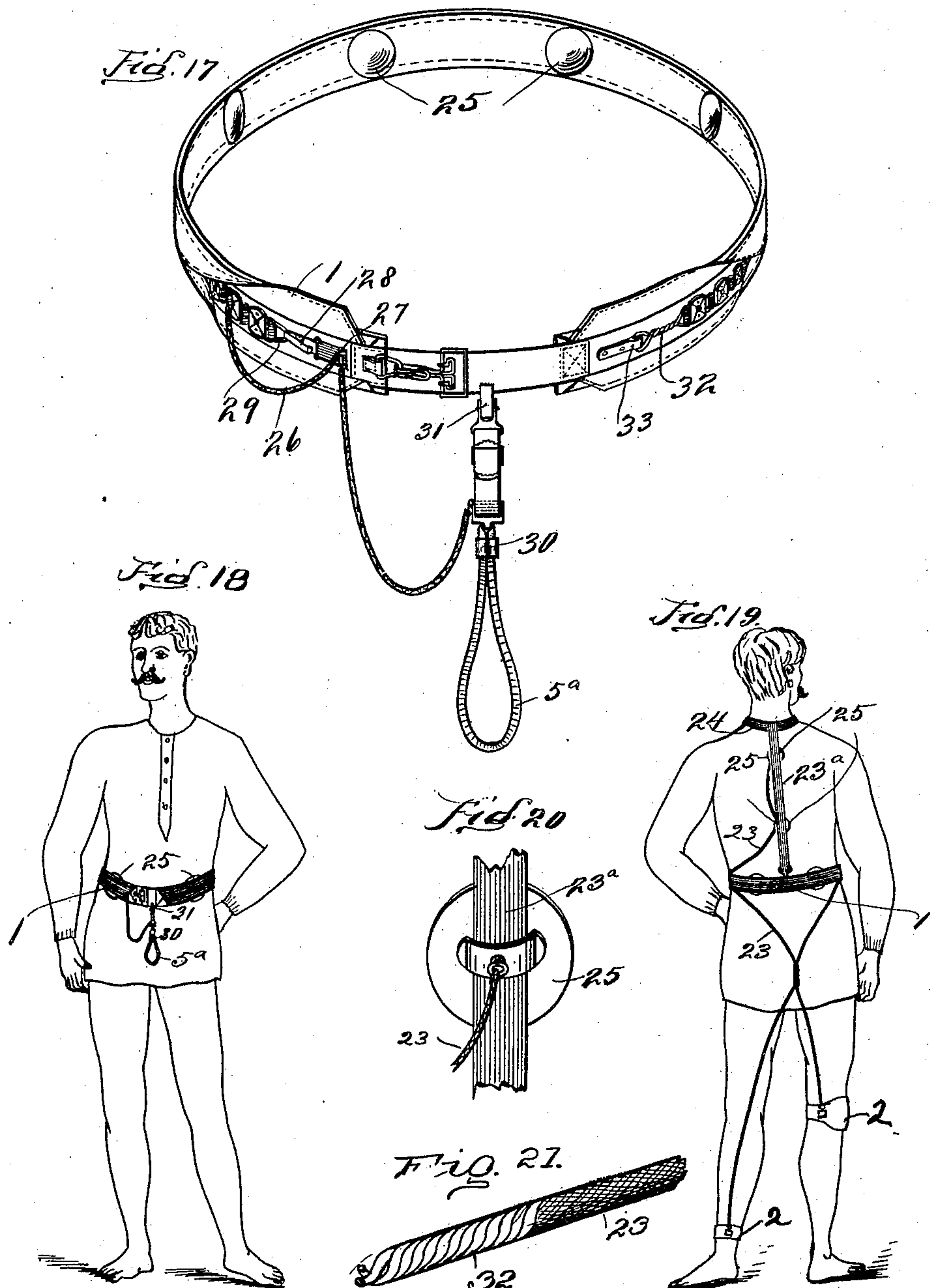
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2 Sheets—Sheet 2.



Witnesses
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Atty.

UNITED STATES PATENT OFFICE.

SAMUEL J. SPALDING, OF CANTON, OHIO, ASSIGNOR OF ONE-THIRD TO
ISAAC N. WILLARD, OF SYRACUSE, NEW YORK.

ELECTROMEDICAL BELT.

SPECIFICATION forming part of Letters Patent No. 691,820, dated January 28, 1902.

Application filed August 23, 1899. Serial No. 728,165. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL J. SPALDING, a citizen of the United States, residing at Canton, in the county of Stark and State of Ohio, have invented certain new and useful Improvements in Electric Galvanic Belts; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon, in which—

Figure 1 is a view showing a portion of the belt-casing and illustrating a number of cells properly connected together to form a battery. Fig. 2 is a view showing the belt properly attached to a horse and illustrating a number of electrodes applied to different parts of the horse and connected to the belt. Fig. 3 is a detached view of one of the electrode-plates. Fig. 4 is a detached view of the staple for connecting the electrode proper to the belt-casing or to an electrode-bandage. Fig. 5 is a detached view of an electrode-bandage, showing the electrode properly connected thereto. Fig. 6 is a detached view of the electrode-bandage, showing the connecting-hook and the wire connected thereto. Fig. 7 is a longitudinal section of the electrode-bandage, showing the electrode-cover to protect the parts coming in direct contact with the electrode. Fig. 8 is a detached sectional view of the electrode, showing the position of the attaching-staple before it is bent. Fig. 9 is a view showing the face side of one of the electrodes. Fig. 10 is a detached view of the cell-frame. Fig. 11 is a detached view of the cell-thimble. Fig. 12 is a detached view of the pin for connecting the plates of the cell together. Fig. 13 is a longitudinal section of the cells, showing three cells properly hinged together. Fig. 14 is a detached view of one of the cell-hinges. Fig. 15 is a detached view of the cell-plates. Fig. 16 is a detached view of one of the pads. Fig. 17 is a detached view of a belt, showing its different parts properly assembled, also showing the suspensory connected thereto. Fig. 18 is a view showing the belt proper placed for use as applied to a human being. Fig. 19 is a view showing the belt properly at-

tached with spinal, ankle, and knee attachment. Fig. 20 is a view showing a portion of the spinal web, also showing an adjustable electrode connected thereto and illustrating a conductor-wire properly connected to said electrode. Fig. 21 is a detached view of the twisted plug.

The present invention has relation to electric galvanic belts designed and calculated for man and beast; and it consists in the different parts and combination of parts hereinafter described, and particularly pointed out in the claims.

Similar letters and numerals of reference indicate corresponding parts in all the figures of the drawings.

In the accompanying drawings, 1 represents the casing or cover, which is constructed of a size to carry out the objects of the invention and may be and preferably is constructed in the ordinary manner, reference being had to properly attaching and adjusting the different parts of the belts, said cover being folded so as to properly inclose the cells and their different attachments.

The belt or cover 1 may be provided with any desired number of electrodes, which are constructed substantially as hereinafter described; but to carry out the objects of my invention it is not necessary to provide the cover 1 with any electrodes, inasmuch as they may be attached to separate bandages or attachments and properly connected to the batteries by means of suitable wires, as hereinafter described.

For the purpose of attaching the belt 1, together with its different parts, to a horse or other animal, straps, such as B, may be provided, which straps may be provided with suitable electrodes at any desired point or points, thereby providing a means for locating electrodes upon different parts of the body.

When it is desired to attach electrodes to the legs or arms, bandages, such as 2, are provided, which bandages are provided with suitable straps, such as 3 and 4, said straps being connected together by means of buckles or their equivalents.

For the purpose of providing an electrode that will have the proper amount of ventilation the face-plate of the electrode is formed

convexo-concave and perforated, substantially as shown in the drawings.

For the purpose of causing the electrode to be active when placed upon a dry surface the felt 5 is placed between the convexo-concave plate 6 and the attaching or connecting plate 7, as illustrated in Fig. 7, and said felt moistened preferably with water.

It will be understood that by providing the convexo-concave plate 6 and perforating the same I am enabled to provide proper ventilation, and thereby prevent the electrode from blistering or burning the parts coming in contact with said electrode.

When it is desired to more securely protect the body from injury by a strong current, the plate 6 may be covered with a belt, such as 8.

For the purpose of insulating the cell-plates 9 and 10 the thimbles 11 are provided, which thimbles are preferably formed of hard rubber or other insulating material.

The thimbles 11 are provided with collars 12, which collars are for the purpose of overlapping a portion of one of the cell-plates.

The thimbles 11 are passed through one or both of the cell-plates and connected together by means of the split pins 13, which split pins are passed through the thimbles, as illustrated in Fig. 13.

Between the cell-plates 9 and 10 are located rubber frames or jackets 14, within which jackets are located the absorbent pads 15.

The object of the jacket 14 is to form a cell that will be perfectly insulated and do away with other transverse fastenings for connecting the plates, except the insulated pin 16, and also when decomposition of the zinc plate takes place a new one may be replaced without mechanical skill or disarranging the battery, the new plate being attached by simply removing the pins 16, at which time the old plates are free to be removed and new ones supplied.

The frame or jacket 14 is provided with the notches 16, which notches are located upon opposite sides of the frame or jacket, as illustrated in Fig. 10, said notches being for the purpose of receiving the hooked extended portion 18 of the plates 9 and 10, said hooked extended portions being open to form eyes, which eyes are for the purpose of hinging the battery-cells together by means of the open coiled hinges or connections 19.

The object and purpose of hinging the cells together by means of the open coiled hinges 19 is to provide room for easily attaching the plug 20, which plug can be removed and placed between any desired cells, thereby cutting in or out to increase or decrease the battery force.

The electrode-plates 6 and 7 are connected together by bending the plates 6 over the plates 7, as illustrated in Fig. 8.

For the purpose of ventilating the electrode and also the pad contained therein the plate 6 is perforated, as illustrated in Figs. 5 and 9.

For the purpose of providing means for con-

necting the electrodes to the bandages or the belt proper the staples 21 are provided, which staples are substantially of the form shown in Fig. 4 and are bent, as illustrated in Fig. 7, the long prong of said staple being bent to form the hook 22, which hook is for the purpose of connecting the wires, such as 23, to the electrode.

By providing the frames or jackets 14 and locating the same between the cell-plates 9 and 10 I am enabled to surround and inclose the absorbent pads 15, thereby providing against rapid evaporation and producing a belt that will retain its usefulness much longer.

In Figs. 18 and 19 I have illustrated the manner of attaching my improved belt, and in Fig. 20 a spinal strap or web 23 is illustrated connected to the belt and to the neckband 24, said connections being made in any convenient manner, inasmuch as it is immaterial as to the particular manner of attaching the spinal strap.

The object and purpose of providing the spinal strap 23 is to provide a means for locating electrodes 25 upon the spinal column of the wearer.

For the purpose of attaching the electrodes 25 so as to bring them at any desired point said electrodes are adjustably connected to the strap 23^a.

For the purpose of producing a plug, such as 20, that will be easily detached said plug is formed by twisting two wires together, by which arrangement the convolutions of the hinge 29, together with the convolutions of the plug, will prevent said plug from becoming easily detached. It will be understood that the plug is for the purpose of cutting in and out the battery, said plug being connected to the insulated wire 26, said insulated wire being connected to the eye 27.

For the purpose of holding the batteries in proper position and with the belt 1 the clasp-hook 28 is provided, which clasp-hook engages the link 29.

For the purpose of adjusting the size of the suspensory 5^a the sliding clasp 30 is provided, said sliding clasp being located upon the suspensory, as illustrated in Fig. 17, and said suspensory being held in position by means of the belt and the snap-hook 31 or its equivalent.

The series of batteries are held to the belt at their fixed ends by means of the link 32, which link is connected to the eye 33, said eye being properly connected to the belt 1 in any convenient and well-known manner.

It will be understood that when my improved belt is applied to animals it is to be formed of a size to properly fit the animal and adjusted with reference to the size and shape of the animal upon which it is to be placed. It will also be understood that I do not desire to be confined to the exact location of the electrodes shown in the drawings, inasmuch as they may be differently located and

differently connected without departing from the nature of my invention.

For the purpose of making proper connection from the batteries to any electrode the flexible insulated conductors, such as 4^a, are employed, it being understood they are to be properly connected to close the circuit.

For the purpose of providing means for producing perfect action of the batteries under all circumstances and preventing the perforated electrode from becoming inactive by clogging the perforations by the excrementitious matter I place an absorbent pad back of the electrode, bringing the electrode between the absorbent pad and the body. From long use I have discovered that by placing covers over the electrode upon the body contact-face thereof the air becomes excluded and the ventilation cut off by the accumulation of excrementitious and oily matters from the body, therefore preventing the air and electric current from passing through the same. Therefore I place the perforated convexo-concave metallic plate on the outside of the absorbent pad. The object of using the perforated metallic plate is to secure a metal surface and at the same time to allow a free circulation and ventilation of air through the electrode, to allow the admission of the air over the surface of the electrode, which also prevents blistering the skin where the electrode comes in contact. By this construction I have found from long experience that a perfect circulation of air insuring a perfect circuit and no interruption of electrical energy is secured. Hence it will be understood that in order to derive the greatest benefit a free circulation of electricity must be maintained between the batteries proper and the body, and it is quite important that the electrodes be non-insulated; hence the importance of maintaining under all circumstances a well-ventilated electrode, which must be provided to accomplish the above result. By placing the absorbent pad back of the electrode and allowing the contact-face of a metallic electrode to come in direct contact with the body or upon the undergarments insures the above results and perfect success.

It will be understood that when the contact-face of the electrode is covered poisonous matters will be collected; but by my peculiar location of the parts this objectionable feature is entirely overcome.

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

1. In an electric galvanic belt, the casing or covering 1 having connected thereto a series of batteries consisting of the convexo-concave plates 9 and 10, non-metallic jackets located between the plates, pads located within the jackets, and between the plates and electrodes, substantially as and for the purpose specified.

2. In an electric galvanic belt a casing or covering provided with a series of cells hinged together, an electrode consisting of the perforated convexo-concave plate, a plate connected to said convexo-concave plate, and an absorbent pad located back of the electrode, and between the plates, substantially as and for the purpose specified.

3. The combination of plates 9 and 10, a non-metallic thimble located through one or both of the plates, the pin 13 extended through the thimble, the jacket 14 located between the cell-plates and surrounding the absorbent pad, substantially as and for the purpose specified.

4. The combination of the jacket 14 formed of insulating material and provided with notches and located upon opposite sides, and edges of said jacket, the plates 9 and 10 provided with hooked edges, the open coiled hinge or connection 19 and the plug 20, substantially as and for the purpose specified.

5. In an electric galvanic belt, a covering having connected thereto a series of batteries, the open coiled hinge or connection 19 located between the batteries, and the twisted plug 20, substantially as and for the purpose specified.

6. The combination of a belt, a jacket or housing formed of insulating material, an absorbent pad located within the jacket, plates 9 and 10 connected together and located upon opposite sides of the absorbent pad and the jacket, substantially as and for the purpose specified.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

SAMUEL J. SPALDING.

Witnesses:

J. A. JEFFERS,
J. R. BOND.