

(No Model.)

P. B. DELANY.

DEVICE FOR PROTECTION OF MEN FROM DISASTROUS EFFECTS OF HIGH
TENSION CURRENTS.

No. 318,172.

Patented May 19, 1885.

Fig. 1.

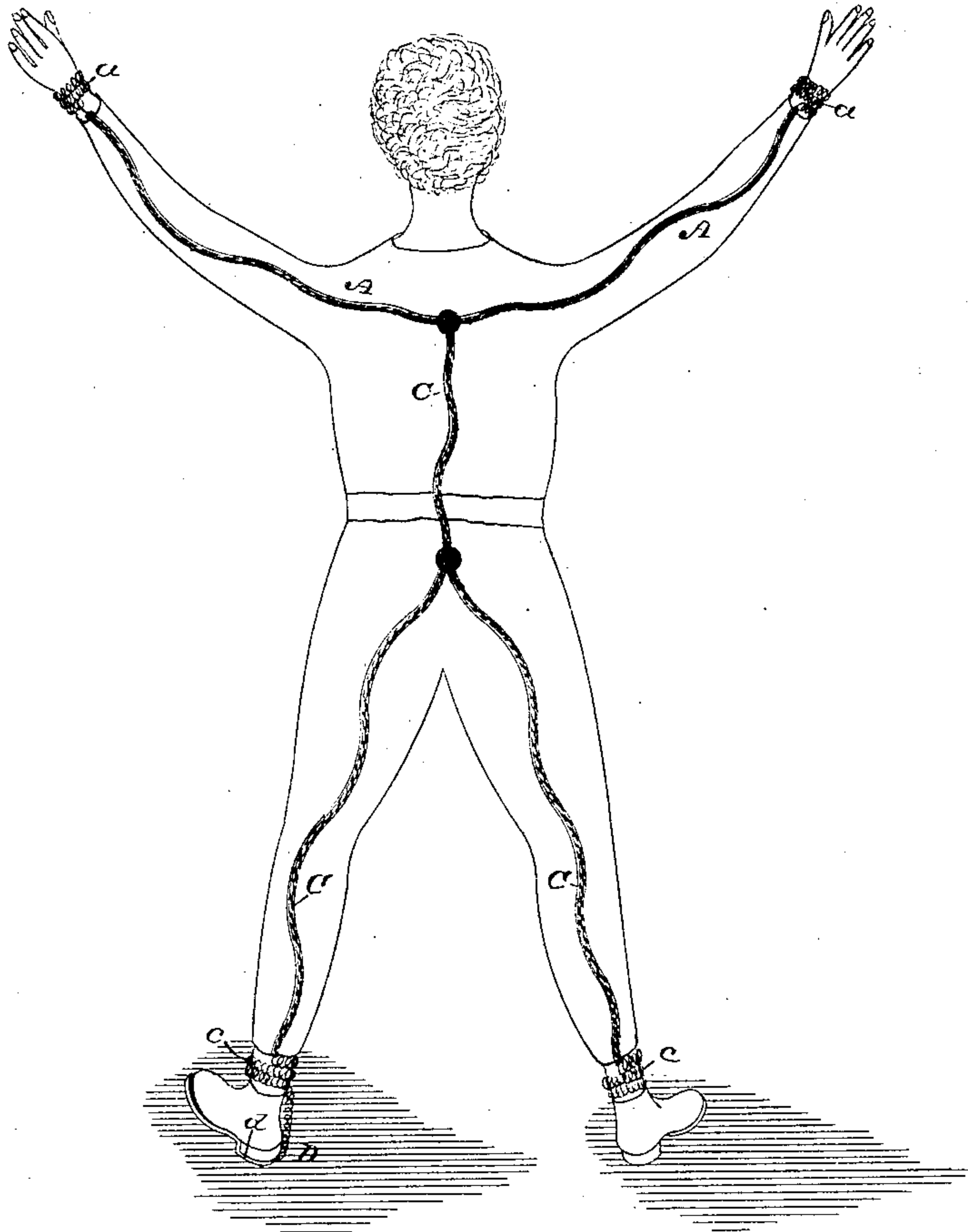


Fig. 2.

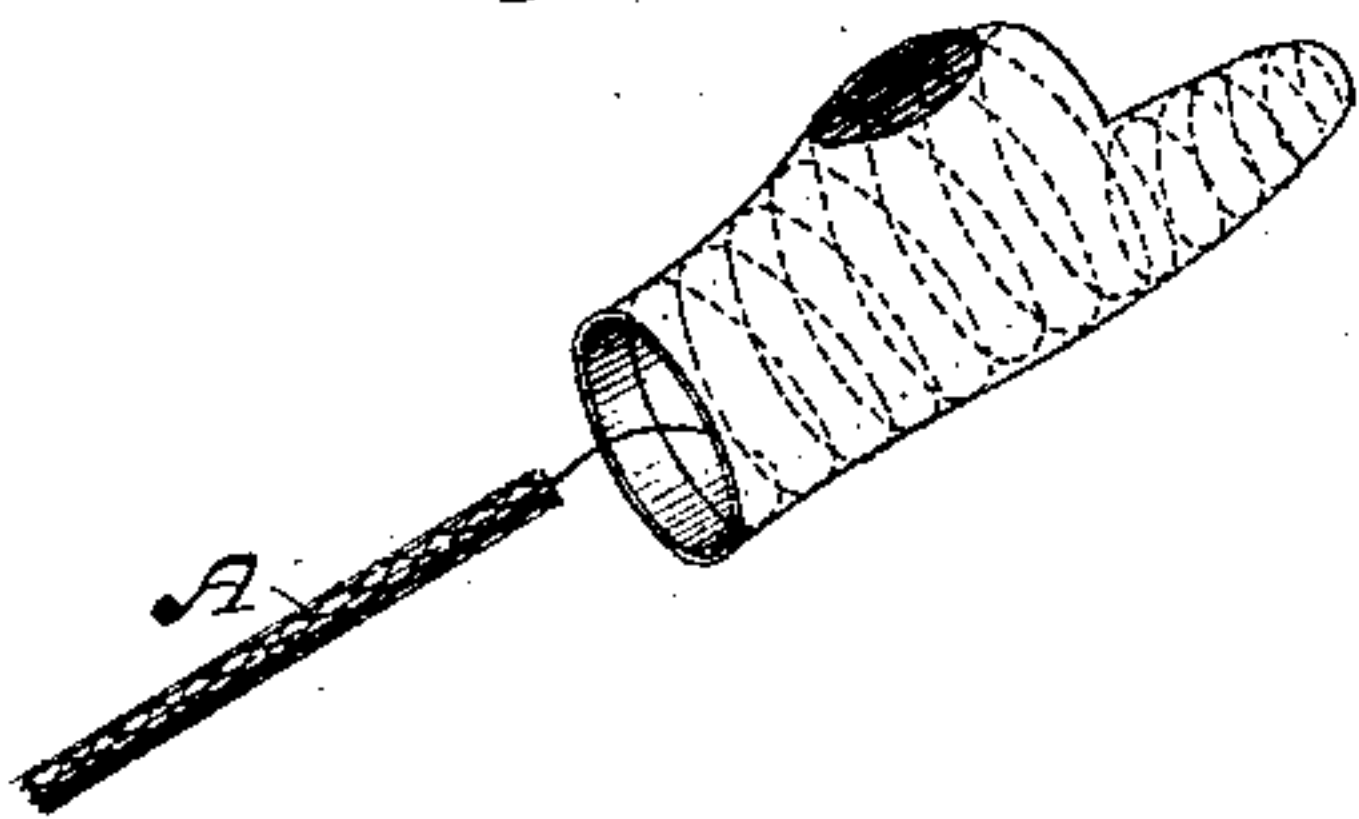
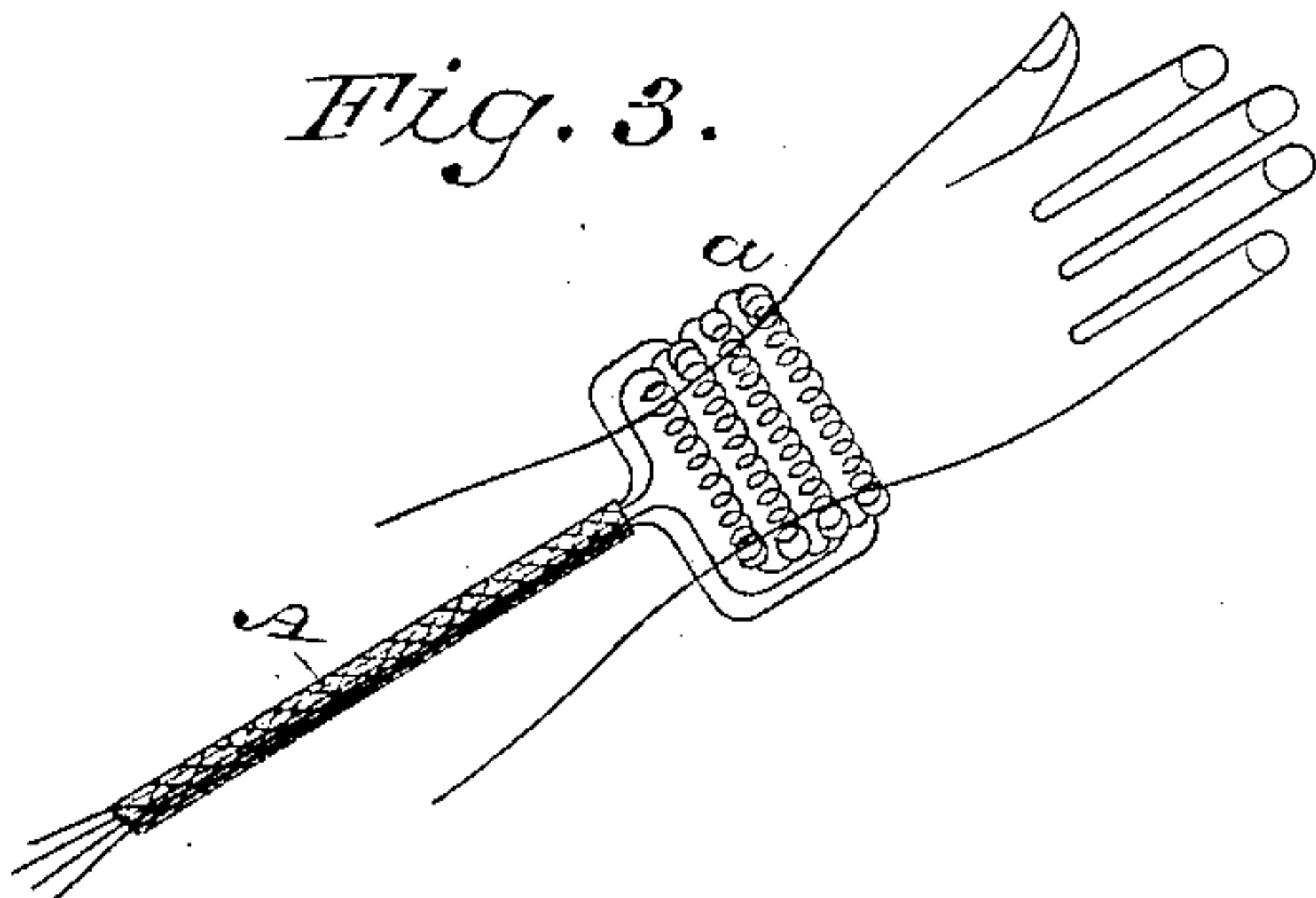


Fig. 3.



WITNESSES

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DEVICE FOR PROTECTION OF MEN FROM DISASTROUS EFFECTS OF HIGH-TENSION CURRENTS.

SPECIFICATION forming part of Letters Patent No. 318,172, dated May 19, 1885.

Application filed January 9, 1885. (No model.)

To all whom it may concern:

Be it known that I, PATRICK B. DELANY, of New York city, State of New York, have invented an Improved Device for the Protection of Men from the Disastrous Effects of High-Tension Currents, of which the following is a specification.

Men who are engaged in handling wires or tending dynamo-electric machines are liable, through carelessness or absent-mindedness, to complete or ground the circuit through their bodies, and when the current traversing the conductor or generated in the dynamo is of a very high tension such acts often result fatally. Quite a number of deaths and serious injuries have occurred through this cause, and the number of such mishaps is constantly increasing with the more extensive introduction of electric lighting. The danger is not confined exclusively to men whose special duty is to handle electric-light wires and tend dynamo-electric machines, but extends also to persons engaged in repairing or handling any of the telephone or telegraph wires, as such wires are liable at any time to come in contact with a highly-electrified electric-light conductor.

The object of this invention is to prevent such fatal results and injurious effects on the human body. The human body being a conductor of electricity when interposed in a path of a powerful current will furnish an avenue for its flow in amount proportioned to the character of the current, the time of its duration, and the condition of the body and the skin at the place of contact with the conductor. The resistance of the human body from one hand to the other will probably vary from five thousand to twenty thousand ohms, according to the condition of the body and the amount of moisture on the hands. If the hands be callous and dry, the sum of the current passing through the body will doubtless be not more than one-quarter of the amount which would ordinarily be taken into the body through a moist hand; but the most callous hands do not furnish sufficient insulation, and therefore some device for protecting all classes of such workmen is necessary.

My invention consists in shunting the body of the operator by means of a suitable electric conductor of requisite lowness of resistance carried upon his person.

In the accompanying drawings, Figure 1 is a view illustrating one form of my invention; Fig. 2, a detail view illustrating another feature or modification of the invention; and Fig. 3 is another detail view showing one way of making the conductor.

The conductor A, which is preferably made of some non-tarnishable, non-oxidizable wire or metallic ribbon, and except at points of contact with the limbs is covered with insulating material, extends across the back and along the arms of the operator, and may be wound spirally at each end, as shown, with a number of convolutions in any suitable way, so as to form elastic or expansible wristlets, *a*, which the operator may readily pass over his hands. The conductor may be worn beneath the coat, and when made flexible in any well-known way and of proper length will not in any manner incommode or inconvenience the operator. If, now, an operator thus equipped should take the plus and minus wires of an electric conductor or the terminals of a dynamo-electric machine into his hands so as to complete a circuit through his body, the current will pass from the hand to the wristlet and across the body by the conductor A, taking the course of least resistance and shunting the body. Such an operation would of course obviate any possibility of a disastrous result. It is true that with such a device it is possible that the hands of the operator might be injured; but the vital parts of the body would not receive any shock. In order to more fully protect the hands, a device similar to that shown in Fig. 2 may be employed. In this case, in addition to the conductor-bracelet *a*, a glove, E, embracing the palm and back of the hand, and, if desired, one or more fingers, may be employed. The interior of this glove may be formed of windings of wires or ribbons over which any suitable cover—such as buckskin, dog-skin, or cloth—may be placed so as to give the appearance of an ordinary glove.

The device thus far described is obviously only adapted to protect the operator where the circuit is completed through his body from hand to hand.

In order to provide against the completion of the circuit to the ground through the body of the operator, which frequently occurs, another conductor, C, is connected with the con-

ductor A between the shoulders of the operator and extended down the back and one or both legs, as shown in the drawings, to expandible anklets *c*, which may be made as before described. With this construction the body would obviously be shunted in case of the completion of the circuit from the electric conductor. As thus far described, however, there would still be the danger of injuring the feet of the operator, and to prevent such a result a device such as shown at D in the drawings may be employed. In that case the conductor C, after forming the anklet, is connected with a conducting-plate, *d*, on the sole of the shoe of the operator.

Such a complete protector, as illustrated in the drawings, could be made perfectly flexible and of ample capacity to shunt any current, and could be worn within the outer garments of the operator without any inconvenience or personal discomfort. Of course the conductor may be arranged so as to make contact with the upper parts of the arms and legs. It would perhaps not be desirable or feasible to have the main conductor at the wrists and ankles undivided and wound, as indicated in Fig. 1, around the wrists and ankles. A better construction would be that illustrated in Fig. 3, in which the conductor A, which may, in fact, be made up of a number of small conductors or may be a single ribbon or wire, is divided at the wrists and ankles into a number of small very flexible conductors, which are wound into the wristlets or anklets.

A protector made merely with anklets or wristlets to make contact with the wrists and ankles may be employed alone or in connection with protecting-gloves or sole-plates, and obviously the details of construction and application to the body may of course be changed in a variety of ways. The invention in not, therefore, in its broadest scope limited to any specific details of construction.

I claim as my invention—

1. A device adapted to be worn upon the human body to short-circuit high-tension electric currents, consisting of the combination of an electric conductor or conductors of a sufficiently low resistance to short-circuit such currents, and the terminals of said conductor or conductors adapted to make contact with the limbs of the wearer and having a sufficiently large conducting contact-surface, so that should the wearer become interposed in the circuit of a high-tension current the current will be shunted around his body.

2. A device adapted to be worn upon the human body to short-circuit high-tension electric currents, consisting of the combination of a conductor or conductors of sufficiently low resistance to short-circuit said currents and terminals of said conductor which make contact with the hands of the wearer, substantially as set forth.

3. A device adapted to be worn upon the human body to short-circuit high-tension electric currents, consisting of the combination of a conductor or conductors of sufficiently low resistance to short-circuit said currents, the terminals of said conductor having a sufficiently large conducting contact-surface and adapted to make contact with the limbs of the wearer, and a sole-plate electrically connected with said conductor.

4. The combination of the conductor A, the hand-contacts or gloves, the conductor C, and the sole-plate, substantially as and for the purpose set forth.

In testimony whereof I have hereunto subscribed my name.

PATRICK B. DELANY.

Witnesses:

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EDWD. A. CALAHAN.