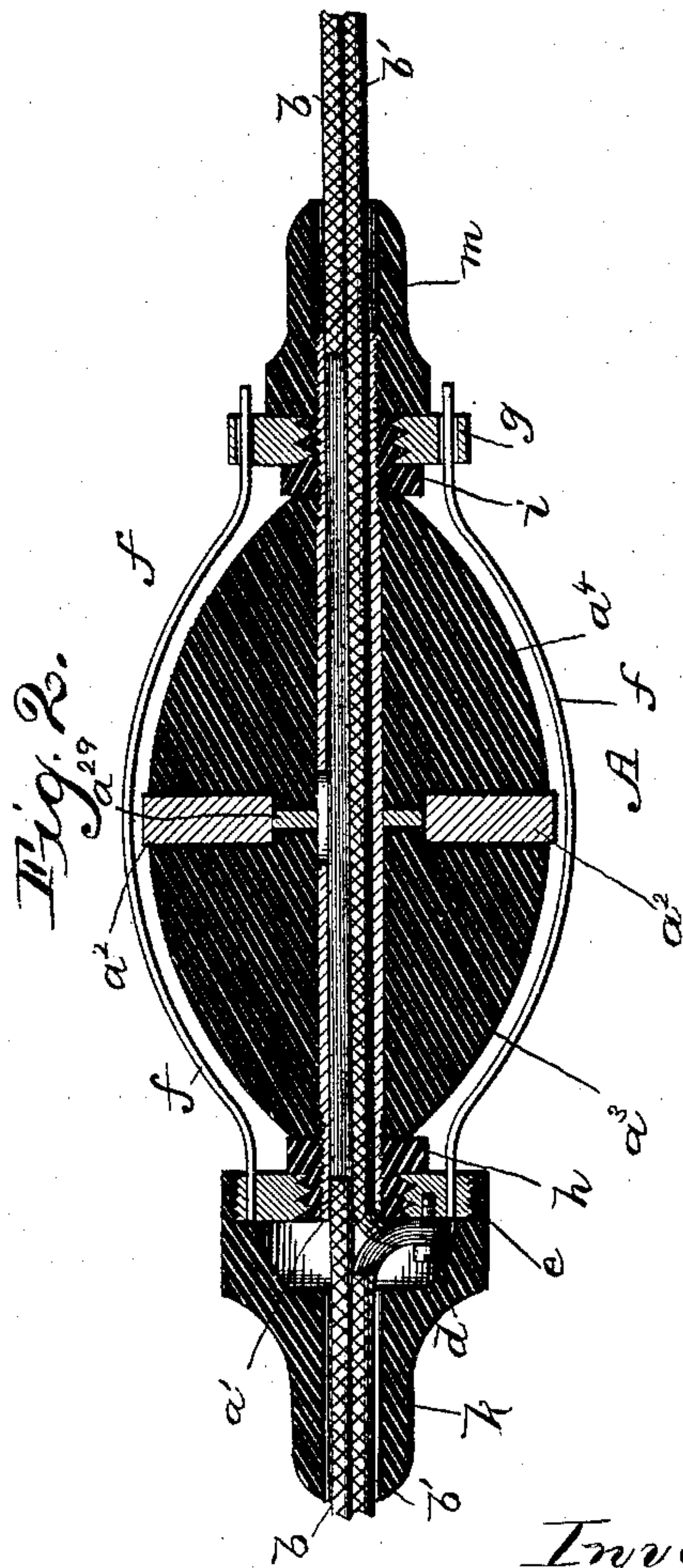
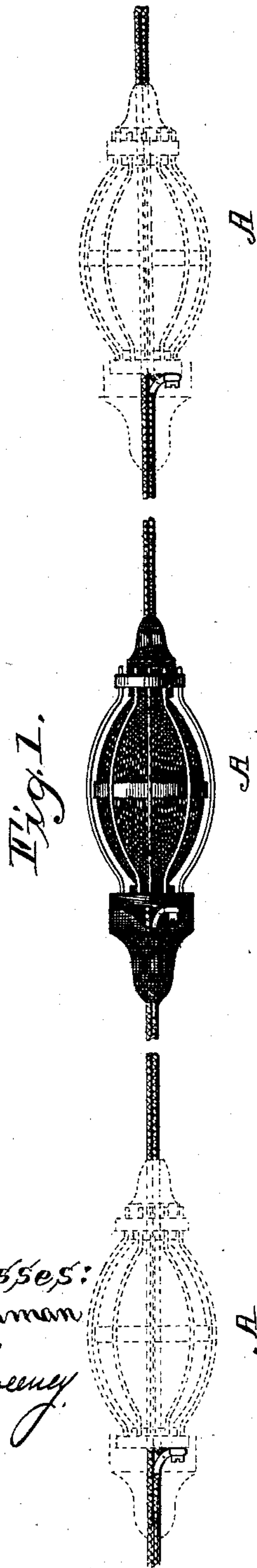


(No Model.)

C. H. DELANO.
CIRCUIT CLOSER.

No. 473,499.

Patented Apr. 26, 1892.



Witnesses:
A. Buchman
B. M. Sweeney

Inventor:

Charles H. Delano,
By Maceo Balver & Randall
His Attorneys

UNITED STATES PATENT OFFICE.

CHARLES H. DELANO, OF WOBURN, MASSACHUSETTS.

CIRCUIT-CLOSER.

SPECIFICATION forming part of Letters Patent No. 473,499, dated April 26, 1892.

Application filed September 16, 1891. Serial No. 405,889. (No model.)

To all whom it may concern:

Be it known that I, CHARLES H. DELANO, a citizen of the United States, residing at Woburn, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Circuit-Closers, of which the following is a specification, reference being had therein to the accompanying drawings.

My present invention is designed as an improvement on the circuit-closer shown in United States Letters Patent to Percival D. Richards, No. 458,343, granted August 25, 1891.

It is my aim to fit circuit-closers constructed in the manner disclosed in the aforesaid patent for use in series upon a pair of conducting-wires and to enable a number of such circuit-closers to be applied at different points to one and the same pair of conducting-wires. A pair of wires having the circuit-closers applied thereto at suitable intervals may be strung along the side of a railroad-car in a manner to place a circuit-closer within reach of the occupant of every seat or along the wall of a dining-room in a manner to dispose of a circuit-closer adjacent to each of a number of tables or otherwise, so that the circuit-closers of the series which is applied to a given pair of conducting-wires shall be distributed and arranged in any desired and convenient manner.

My invention consists in an improved construction which will first be described with reference to the accompanying drawings, and will be particularly defined in the claims at the close of this specification.

In the drawings, Figure 1 is a view showing a series of circuit-closers strung upon a pair of conducting-wires, two of the circuit-closers being shown in dotted lines. Fig. 2 is a view in section of my improved circuit-closer.

In its general construction my circuit-closer is the same as that which is shown and described in the patent to Richards.

A is the circuit-closer in its entirety, it being fitted to be grasped by the hand and having a body formed wholly or in part of a conducting material adapted to be placed in connection with one conducting-wire and an exterior series of flexible strips or wires formed of conducting material and adapted to be placed in connection with the other conduct-

ing-wire, whereby when the circuit-closer is grasped by the hand and compressed the strips or wires are forced into contact with the body and the circuit is closed.

Save in one essential respect the construction of the circuit-closer need not depart from that disclosed in the patent to said Richards.

The body of the circuit-closer may be made wholly or in part of conducting material. I prefer, however, to make it only in part of conducting material, and have shown it so made.

In the drawings, a' is a short section of rod, which is screw-threaded exteriorly at each of the ends thereof. A ring or flange a^2 is formed on or applied to the rod a' at mid-length. I have shown a separately-formed ring a^2 , having an aperture through the same, which is greater in diameter than the rod a' and applied so as to surround a second ring a^{29} , which fits upon the exterior of rod a' and is of sufficient diameter to fit closely within the ring a^2 . I may employ this construction or one in which a ring or flange a^2 is integral with the rod a' , according as I may find it most convenient in practice. The ring a^2 is in contact with ring a^{29} , and the latter is in contact with the rod a' . Ring a^2 is of greater thickness than ring a^{29} . Upon rod a' , on opposite sides of the rings $a^2 a^{29}$, are strung blocks $a^3 a^4$, in this case of hard rubber, these blocks being formed with hub-like portions fitting within the eye or aperture of ring a^2 and bearing closely against the sides of ring a^{29} . To the opposite ends of rod a' I apply nuts or sleeves of insulating material, these nuts or sleeves being lettered $h i$, respectively, and being screw-threaded interiorly to enable them to be turned up on the rod a' against the ends of the blocks $a^3 a^4$, and also being screw-threaded exteriorly to receive upon them the interiorly-threaded metallic disks or plates $e g$. The disk or plate e has secured therein one end of each of a series of flexible metallic strips or wires f , these strips or wires being bent to follow the outline of the body of the circuit-closer in the direction of the length thereof and normally standing a slight distance away from the surface of the said body. The disk or plate g is perforated, and through the perforations pass loosely the other ends of the strips or wires f , so as to permit of end-

wise movement of the strips or wires when they are compressed to carry their middle portions into contact with the conducting portion of the body. A thimble or cap *k* is
 5 screwed upon the disk or plate *e*, so as to give a finished appearance to the corresponding end of the circuit-closer and to cover and protect the said end, and another thimble or cap
 10 *m* is screwed upon the end of rod *a'* outside of the disk or plate *g*, so as to finish the corresponding end of the circuit-closer.

In so far as it has yet been described the circuit-closer does not differ materially from the circuit-closer shown and described in the
 15 patent aforesaid. In accordance with my invention, however, I make the rod *a'* tubular, so as to afford a tubular passage through the body of the circuit-closer, and through the interior thereof I thread side by side the two con-
 20 ducting-wires *b b'*, with which the circuit-closer is to be connected. These wires are to be covered with insulating material, as usual; but I remove this material from the wires at certain points. Thus that one *b* of the wires which it
 25 is desired to place in electrical connection with the body of the circuit-closer has the insulating material removed from that portion of the same which is received within the interior of the rod *a'*, in order that the wire itself
 30 may come in contact with the interior of the rod. From the other wire *b'* I remove a small portion of the insulating material at a point adjacent to one end of the body of the circuit-closer, and this bared portion I connect by
 35 means of the binding-screw *d* to the plate *e*. In this manner I place the parts of the circuit-closer in proper communication with the conducting-wires.

The manner of using the circuit-closer and
 40 the mode of operation thereof remain the same as in the case of the construction heretofore patented.

It will be seen that any desired number of circuit-closers embodying my invention may be strung upon a single pair of conducting-
 45 wires, and that the said wires may be strung in a manner to place or locate the circuit-closers as mentioned herein at the outset hereof.

Having described my invention and the manner of reducing the same to practice, I
 50 claim and desire to secure by Letters Patent—

1. A circuit-closer fitted to be closed by the hand and provided with a body formed wholly or in part of a conducting material, having a tubular passage therethrough for conducting-
 55 wires, an exterior series of flexible strips or wires of conducting material, and a plate of conducting material located at one end of the body, but insulated from the conducting material of the latter and having the said strips
 60 or wires connected therewith, substantially as described.

2. The combination, with a circuit-closer which is fitted to be grasped by the hand and which is provided with a body formed wholly
 65 or in part of a conducting material, having a tubular passage therethrough, an exterior series of flexible strips or wires of conducting material, and a plate of conducting material located at one end of the body, but insulated
 70 from the conducting material of the latter and having the strips or wires connected therewith, of a pair of conducting-wires passing through the tubular passage aforesaid, one of the said wires being in electrical connection
 75 with the said body and the other in electrical connection with the said plate, substantially as described.

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

CHARLES H. DELANO.

Witnesses:

WM. A. MACLEOD,

CHAS. F. RANDALL.