(No Model.)

E. H. MUNSON.

CONNECTOR FOR ELECTRIC WIRES.

No. 513,949. Patented Jan. 30, 1894.

Fig. 3.

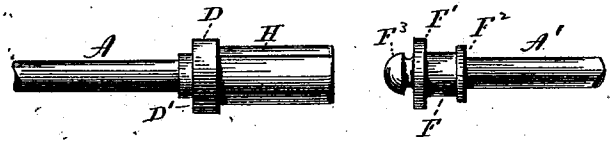


Fig. 1

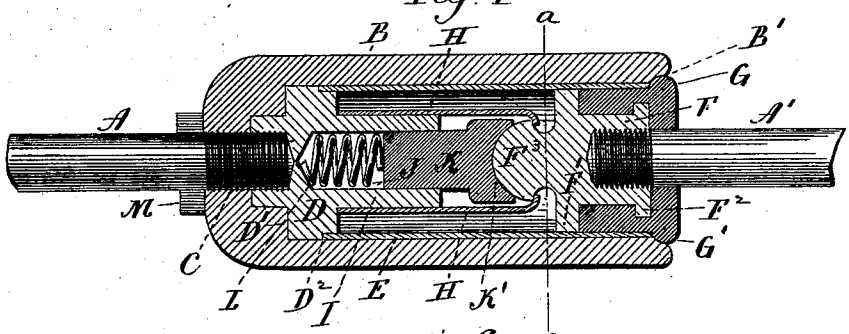
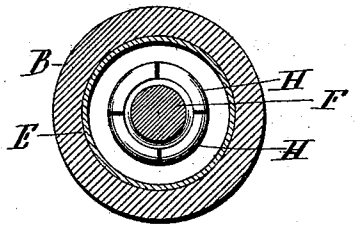


Fig. 2.



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CONNECTOR FOR ELECTRIC WIRES.

SPECIFICATION forming part of Letters Patent No. 513,949, dated January 30, 1894.

Application filed May 9, 1892. Serial No. 432,297. (No model.)

To all whom it may concern:

Be it known that I, EDWARD H. MUNSON, of New Britain, in the county of Hartford and State of Connecticut, have invented a new Improvement in Coupling Devices for Electric Wires; and I do hereby declare the following, when taken in connection with accompanying drawings and the letters of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawings constitute part of this specification, and represent, in—

Figure 1, a view in longitudinal central section of one form which a coupling constructed in accordance with my invention may assume; Fig. 2, a view thereof in transverse section on the line *a*—*b* of Fig. 1, looking toward the ends of the coupling-springs; Fig. 3, a detached view, on a reduced scale, of the two wires and their coupling connections, exclusive of the means provided to make the joint water-tight.

Heretofore electric-light wires have generally been coupled by joining their ends together, and then excluding moisture from them by inclosing them in an envelope of fabric, applied in long strips, which are wound around the wires by hand. The objection to making joints as above described is, that it requires skill and time, so that frequent and necessary testing of the wires of almost any electric system, requires so many men, and occupies so much time, as to be a heavy item of expense.

The object of my invention is to produce an inexpensive and effective water-tight coupling, which may be broken and re-made with the facility of hose or kindred coupling devices, whereby the expenses of testing the wires of an electric system, may be greatly reduced.

With these ends in view, my invention consists in a shell applied to the end of one wire, and a plug applied to the end of the other wire, and adapted to enter the open end of the shell, and having a soft packing so as to exclude moisture therefrom, the ends of the two wires being connected within the shell. My invention further consists in certain details of construction and combinations of parts, as will be hereinafter described, and pointed out in the claims.

As herein shown, the end of the wire A, is provided with a long cylindrical shell B, preferably made of hard-rubber, and having one end open and the other end closed, except for a threaded perforation C, through which the end of the wire A, passes, the extreme inner end of the said wire being threaded into a metal head D, the rear end of which is provided with a shoulder D′, to which the shell B, is fitted, whereby the same is prevented from being drawn endwise off from the wire A. The threaded connection between the shell and wire, secures a water-tight joint at that end of the shell. A tube E, secured at its inner end in an annular rabbet groove D^2, formed in the said head D, fits tightly within the shell, and extends nearly to the outer end thereof. This tube is not an essential feature of our improved device, but it strengthens the same, and also affords an additional conduit for the current. The end of the wire A′, is provided with a plug, consisting of a metal coupling-head F, into which the end of the wire is threaded, and a packing G, of soft rubber, encircling the outer end of the said head, and adapted in size to close the outer end of the shell, the outer end of the packing being provided with a flange G′, which fits into a flaring seat B′, formed in the said end of the shell. A flange F′ formed at the inner end of the coupling-head F, is adapted in diameter to fit closely into the tube E, to prevent the plug from playing therein, and also for relieving the outward strain upon the packing G, which packing is secured in position by means of a flange F^2, formed at the extreme outer end thereof. The extreme inner end of the said head is provided with a knob F^3, under-cut at its base, so as to receive the inwardly bent ends of four coupling-springs H, the opposite ends whereof are secured to a neck I, formed at the inner end of the head D, the said neck being cylindrical, and each of the springs being approximately quadrantal in transverse section, as shown by Fig. 3 of the drawings. The said neck I, and head D, are longitudinally chambered, as at J, to receive a longitudinally movable contact-piece, which is shaped at one end to form a shank K, fitting closely within the said chamber, and at the other end to form a cup K′, which receives the convex

face of the knob F^3, before mentioned. A spring L, located in the bottom of the chamber, engages with the shank K, of the said contact-piece, and exerts a constant tendency to push the same toward the open end of the shell, whereby the said piece is automatically engaged with the knob of the plug, so as to insure electrical connection between the ends of the two wires, through the coupling; it is not necessary, however, to use this contact-piece inasmuch as if it were dispensed with, the current would flow one way or the other through the tube E, and springs H, but the use of the contact-piece affords an ample conduit, so to speak, for the current, whereas the tube and springs alone would offer more resistance, unless made very heavy, than the wires, which would be undesirable.

The inwardly turned ends of the coupling-springs H, prevent the contact-piece from being displaced by means of its spring L.

It has been already explained that the connection between the closed end of the shell B, and the wire A, prevents any moisture from entering the shell at such point. If desired, however, the joint between the shell and wire may be reinforced by winding a strip of suitable material M, onto the wire, as shown in Fig. 1, of the drawings. As the shell is permanently attached to the wire, there would be no objection to winding on such a strip, although it is not believed that it will be required. When the plug is in position in the open end of the shell, it renders the same perfectly water-tight, and is held in place by the coupling-springs, which clasp the knob at its inner end with sufficient grip to retain it in position under all ordinary circumstances, but yielding under lengthwise strain, to permit the plug to be removed.

In using my improved coupling, each member of it is duplicated, the duplicate parts being attached to wires or parts of the electric system, or carried by the tester, who does the work. The tests are made by simply disconnecting the wires normally joined by the coupling, and re-uniting their ends through the duplicate members in such a manner as to cut the object or part in which it is thought there may be a defect, out of the circuit; then if the test shows a current of full strength, it will be apparent that the part cut out is defective, but otherwise the normal couplings will be restored, and the tester will pass on to the next point where it is thought that there may be a defect in the circuit.

The device may be used to advantage in electric-light systems, and also in electric railways, in which it would be used in much the same manner as car-couplings are used, but in case the coupling is adapted for use with electric railways, it will probably be found most convenient to make its two ends in duplicate, so that there will be no question of rights and lefts. I would therefore have it understood that I do not limit myself to the exact construction described, but hold myself at liberty to make such changes and alterations as fairly fall within the spirit and scope of my invention.

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

1. The combination with a shell adapted to be secured to the end of one wire, of a plug secured to the end of the other wire, and adapted to fit closely within the open end of the shell, and having a soft packing for sealing the said open end, the ends of the two wires being electrically connected within the shell, substantially as described.

2. The combination with a shell adapted to be secured to the end of one wire, of coupling-springs located within the said shell, and having inturned ends a plug secured to the end of the other wire, and constructed to fit closely into the open end of the shell and to be clasped by the inturned ends of the coupling-springs therein, the ends of the two wires being electrically connected within the shell, substantially as described.

3. The combination with a shell adapted to be secured to the end of one wire, of coupling-springs located within the said shell; a plug secured to the end of the wire, and consisting of a coupling-head and a rubber packing encircling the same, the said head being constructed to be clasped by the said coupling-springs, and the ends of the two wires being electrically connected within the shell, substantially as described.

4. The combination with a shell adapted to be secured to the end of one wire, of coupling-springs located within the said shell, a plug secured to the end of the other wire, and consisting of a coupling-head constructed to be clamped by the springs, and a packing encircling the same, and adapted to fit closely into the open end of the shell; and a movable contact-piece confined within the shell and forming a connection between the ends of the wire, substantially as described.

5. The combination with a shell having one end open, and the other closed except for a perforation, of a head located within the closed end of the shell and having one wire entered into its outer end through the said perforation in the closed end of the shell, coupling-springs attached to the inner end of the said head, and a removable plug attached to the end of the other wire and consisting of a coupling-head constructed to be engaged by the said springs, and of a packing encircling the outer end of the plug, and constructed to seal the open end of the shell, substantially as described.

6. The combination with a shell adapted to be secured to the end of one wire, a chambered head located within the closed end of the said shell, and secured to the said wire, coupling-springs attached to the outer end of the head, a removable plug attached to the end of the other wire, and consisting of a coupling-head and a packing; and a spring-actu-

ated contact-piece located in the chamber of the head, and engaged by the coupling-head of the plug when the same is in place in the shell, substantially as described.

7. The combination with a shell of insulating material, secured to the end of one wire, of a chambered metal head located within the said shell, and also attached to the wire, a metal tube fixed to the inner end of the head, and fitting against the inner face of the shell, coupling-springs also attached to the said end of the shell, a plug secured to the end of the other wire, and consisting of a coupling-head constructed to be engaged by the said springs, and a packing adapted to enter and seal the open end of the shell, and a spring-actuated longitudinally movable contact-piece located in the chamber of the head, and engaged by the coupling-head when the plug is in place in the shell, substantially as described.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

EDWARD H. MUNSON.

Witnesses:
EDWIN COOPER,
THOMAS CORSCADEN.