

(No Model.)

J. H. CURRY.

AUTOMATIC SAFETY JOINT FOR ELECTRIC CONDUCTORS.

No. 505,032.

Patented Sept. 12, 1893.

Fig. 1.

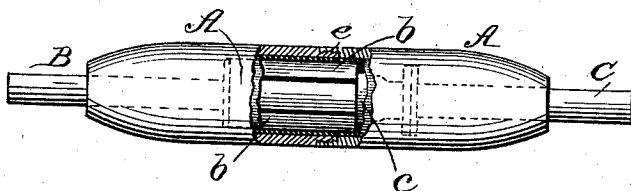


Fig. 2.

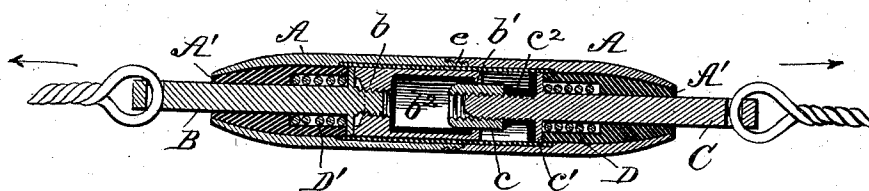


Fig. 3.

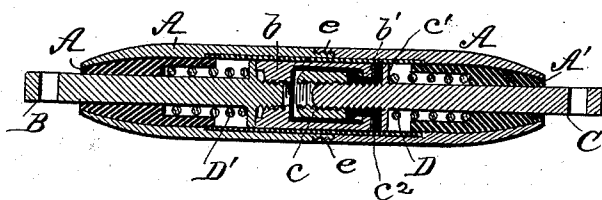
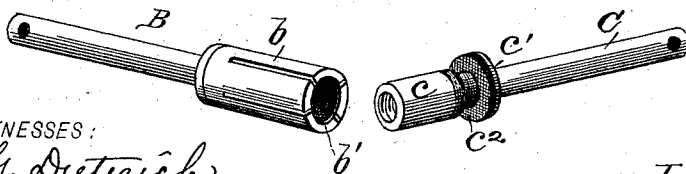


Fig. 4.



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UNITED STATES PATENT OFFICE.

JAMES H. CURRY, OF WILKINSBURG, PENNSYLVANIA, ASSIGNOR OF EIGHTY-THREE ONE-HUNDRED-AND-TWENTY-EIGHTHS TO FRANK B. TOMB, OF SAME PLACE, AND SAMUEL J. GRAHAM, A. H. CHILDS, AND ROBERT A. GILLESPIE, OF PITTSBURG, PENNSYLVANIA.

AUTOMATIC SAFETY-JOINT FOR ELECTRIC CONDUCTORS.

SPECIFICATION forming part of Letters Patent No. 505,032, dated September 12, 1893.

Application filed November 18, 1892. Serial No. 452,394. (No model.)

To all whom it may concern.

Be it known that I, JAMES H. CURRY, residing at Wilksburg, Allegheny county, in the State of Pennsylvania, have invented a new and Improved Automatic Safety-Joint for Electric Conductors, of which the following is a specification.

The object of my invention is to provide an improved automatic safety joint for electrical conductors.

In the Patent No. 431,516 in connection with another inventor, I provided, a coupling, in which the wire conductors were formed with buttons or heads within a hollow metal casing, between which heads and the ends of the casing springs were arranged which, when tension was put on the wire by stringing the same on poles, caused the said heads or buttons to compress the springs and bear against and form electrical connection with the casing, and when tension on the conductor was relieved, by the accidental breaking of the wire, would allow the springs to throw the buttons or heads out of bearing against the ends of the casing and break connection in the wires for some distance on each side of the point of severance, so that these terminals are no longer live wires and involve no danger to persons accidentally touching the same, or to the line men in handling them for repairs. In the electrical contact formed in this case by tension on the wire, the separation of the contact faces is effected not only by the severance of the wire, but by very slight relaxations of tension in the wire, such as expansion from heat, the leaning of a pole, and such other causes as ought not to interfere with the continuity and normal operation of the circuit. Furthermore as the electric circuit was made through the casing the latter was a "live" surface. My present invention comprises a special construction in which the outer casing is always insulated from the line currents and is never a "live" surface, thus reducing danger to the line men, and in which contact is made or broken between two terminals concentrically arranged within the casing in a manner to provide for slight variations in tension of the wire, and in which construc-

tion also the contact surfaces are locked in their separated positions when the line is broken, so that the cut-out when once made is permanently maintained until the breech is repaired all as hereinafter more fully described.

Figure 1 is a side view of the automatic safety joint. Fig. 2 is a central longitudinal section of the device when under normal tension and the circuit closed. Fig. 3 is a similar view with the parts in the position which they assume when tension is entirely relieved by the severance of the wire, and the current through the joint is broken, and Fig. 4 is a view in perspective of the two adjacent parts of the sliding contact.

In the drawings A represents the outer casing of the joint which may be made either of metal or other suitable material as there is no current which passes through the casing as a conductor. The casing is made of two conical sections united in the middle by a screw joint, each section being, when made of metal, lined inside with an insulating or non-conducting bushing.

Through the two sections of the casing there pass the two conductor stems BC which have outside the casing perforations into which are inserted the ends of the line wire and secured by twisting in the usual manner. The stem B terminates inside the casing in a hollow cylindrical metal sleeve *b*, which is preferably made detachable from the stem B and screwed onto the same as shown. This sleeve has an inwardly projecting flange *b'* at its outer edge, and inside of this flange the sleeve has a non-conducting lining *b²* of insulating material, while four longitudinal slots divide this sleeve into as many spring tongues. The stem C terminates in a metal boss or hub *c* which is preferably made of a separate piece and screwed on as shown. Just behind the hub and retained between it and a flange *c'* on the stem is a grooved collar *c²* of insulating material whose groove is of less diameter than the hub *c*, and whose groove is also wide enough to receive the flange *b'* of the sleeve on the other stem. Behind the flange *c'* of stem C there is disposed about the stem a spiral spring D

which bears at its outer end against the insulating bushing of the case and tends to throw the stem C inwardly. Behind the sleeve b of the stem B is another spiral spring D' which tends also to throw that stem inwardly. Now when the joint is in place in a circuit wire, and the proper normal tension is on the two stems B and C, the intumed flange b' of sleeve b rests upon the hub c of the other stem with a pressure determined by the elasticity of the spring tongues and electrical contact is made from one stem to the other. If any variation in tension on the line wire occurs from causes which should not break the circuit, the hub and sleeve simply slip with the sliding contact the one into or out from the other, still preserving, however, the electrical contact, and this compensating sliding contact may be as great or as little as may be desired, usually from one to three inches. If, however, an actual break or severance of the wire occurs, then the spiral springs throw the two stems inwardly to their full extent, and the hub slipping into the sleeve allows the intumed flange b' of the sleeve to drop into the grooved collar c' of insulating material, thus breaking the circuit and locking the parts of the safety joint in this position.

In carrying out my invention it will be seen that only one contact is used and when this is broken it is broken by their contact surfaces passing by or past each other, in contradistinction to using two contacts that simply separate. Furthermore no current is ever transmitted through the case, and as the case is not a live surface, it need not be covered by any webbing or electrical jacket of insulating material.

In my invention as described, I have only shown one form of the sliding contact, *i. e.*, the slotted cylindrical sleeve and internal hub, but it is obvious that any form of spring

tongues with opposite contact surfaces might be employed without departing from my invention.

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

1. An automatic safety joint for electric conductors consisting of an insulated containing case, conducting stems passing through the ends of the same, springs for forcing these stems inwardly, and two sliding electrical contact surfaces arranged upon the inner ends of these stems and adapted to break circuit by being moved inwardly past each other, and insulation disposed between the conducting stems and contacts on the one hand, and the containing case on the other, to maintain a permanent insulation for the containing case in all positions of the parts, substantially as described, and shown.

2. An automatic safety joint for electric conductors, consisting of an insulated containing case, conducting stems passing through the ends of the same, springs for forcing these stems inwardly, two sliding electrical contact surfaces arranged upon the inner ends of these stems, and a non-conducting locking seat of insulating material arranged upon one of the stems behind its contact surface, for the other contact surface to drop into, substantially as shown and described.

3. The conducting stem B, with slotted metal shell having an intumed flange at the end and insulation within; in combination with the conducting stem C having a metal hub with a non-conducting grooved collar behind it, springs for forcing the stems inwardly, and an outer insulated containing case, substantially as shown and described.

JAMES H. CURRY

Witnesses:

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