

(No Model.)

J. H. FLEMING.  
ELECTRIC CONNECTION.

No. 461,868.

Patented Oct. 27, 1891.

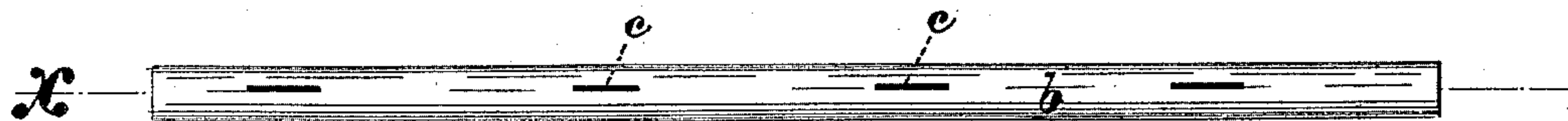


Fig. 1.

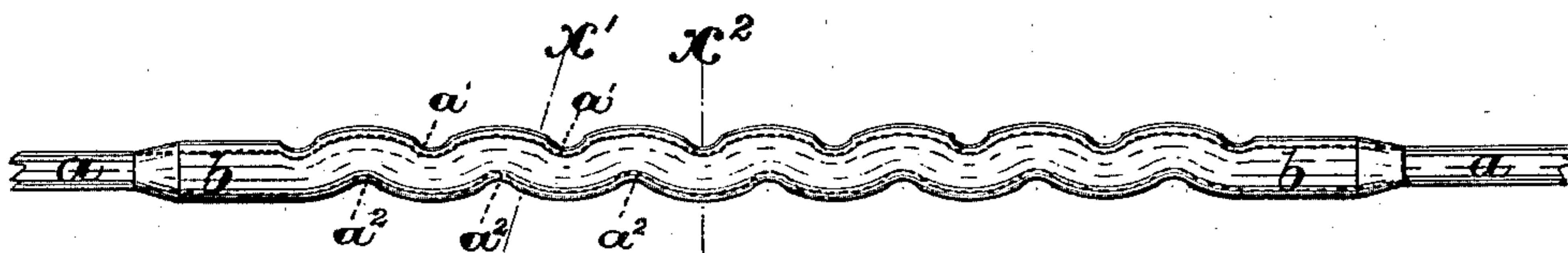


Fig. 2.

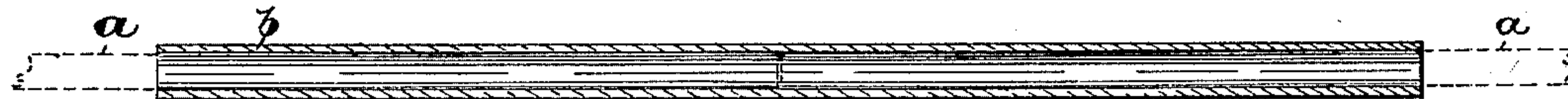


Fig. 3.



Fig. 4.



Fig. 5.



Fig. 6.

Witnesses

Inventor:

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# UNITED STATES PATENT OFFICE.

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## ELECTRIC CONNECTION.

SPECIFICATION forming part of Letters Patent No. 461,868, dated October 27, 1891.

Application filed January 9, 1891. Serial No. 377,204. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES H. FLEMING, a citizen of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Wire Joints; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

The object of this invention is to provide an electric wire joint of increased simplicity and neatness and with adequate tensile strength and ability to hold the conducting-wires together; to avoid the shoulders which were heretofore formed when the ends of the wires were arranged side by side and twisted or tied; to reduce the cost of the coupling; to enable broken wires to be reunited at the break more perfectly and with greater strength and perfection of contact without the preliminary disarrangement or rearrangement of said wires at the nearest supports, and all without the aid of set-screws, wedges, or such like means, and to secure other advantages and results, some of which may be given in connection with the description of the working parts.

The invention consists in the improved electric wire joint and in the process of making the same, and in the arrangements and combinations of parts, substantially as will be hereinafter set forth, and finally embodied in the clauses of the claim.

Referring to the accompanying drawings, in which like letters of reference indicate corresponding parts in each of the several figures, Figure 1 is a plan of the coupling-piece, and Fig. 2 a view of the joint complete. Fig. 3 is a longitudinal section on line  $x$ , and Figs. 4 and 5 are respectively sections taken on lines  $x'$  and  $x''$ . Fig. 6 illustrates a variety in construction.

In said drawings,  $a$   $a$  are the conducting-wires, and  $b$  indicates a metallic coupling-sleeve, the bore in which is of about the same diameter as that of the wires  $a$ . The said sleeve is open at its opposite ends to receive the said wires, as shown in Fig. 3. The wires

are inserted in said sleeve, entering at the opposite ends and abutting at or about the center. Should the wire be a broken one the parts of which remain fastened to the poles or other fixtures, the parts may be drawn together, or nearly so, or be caused to meet within the sleeve without the fastenings at said poles or fixtures being disturbed, as will be clearly understood. The sleeve and wire ends having been brought together, they are secured and firmly held in such relation by being bent in the manner indicated in Fig. 2, the sleeve and the inserted wires all being bent simultaneously, so that the complete fastening is but a matter of operation of an instant, shoulders  $a' a' a^2 a^2$  being formed by the bending-tool on the sleeve, which extend into corresponding recesses in the ends of the abutting wires. The shoulders  $a' a^2$ , formed by the bending-tool, differ in quality from continuous curved or spiral surfaces, such as would be formed by bending the tube spirally, the said shoulders presenting more positive resisting-surfaces against tensile power, and thus producing a more perfect union of parts. The forcing of the parts  $a' a^2$  into the metal of the wires throws the latter out of a true annular shape, and thus the shoulders increase the tensile strength of the joint. The shoulders  $a'$  on one side of the sleeve alternate with the shoulders  $a^2$  on the opposite side, and the wires are shaped in close correspondence, the surfaces of the wire and those of the interior of the sleeve remaining in close engagement at all points within the sleeve, so that the holding-surfaces are of greater extent and are better re-enforced than in those cases where a set-screw forces the wire into a slot of the sleeve, and the opportunity for the inflow and retention of water in the joint is greatly reduced.

The sleeve  $a$  is provided at suitable intermediate points between the ends thereof with longitudinal slots  $c$   $c$ , adapted to allow the inflow of solder to the interior of the sleeve after the joint is formed by bending in the manner described, the said slots being employed in preference to round perforations, such as have been before used, because by the improved construction the openings are sufficiently large to allow an adequate inflow of solder, but do not materially reduce the

tensile strength of the sleeve. The slots are preferably formed by means of saws of small diameter. The ends of the sleeve are beveled, by preference, and thus no abrupt angles are formed which will cause the joint to catch when employed in what is known as "roof-work."

The bending of the sleeve and wire ends is done preferably by a tool having series of alternating fingers or bending projections, and the projections  $a'$   $a^2$  may be all formed simultaneously. By this means the joint is formed with greater regularity and neatness. The projections may, however, be formed one by one by means of ordinary pliers or other tools.

In completing the joint prior to soldering, I prefer to turn or press down the ends of the sleeve into close electrical contact with the wires with pliers, whereby perfect conductivity is gained. Any openings are then filled with solder to prevent the entrance of water and frost to the joints. The ends of the sleeve may be reamed out, as in Fig. 6, to re-

ceive insulating material  $d$ . In this construction all shoulders are avoided.

Having thus described the invention, what I claim as new is—

1. The improved telegraph or electric wire joint combining, with the wires  $a$   $a$ , a tubular sleeve open at opposite ends and receiving the oppositely-projecting ends of the wires, the said wires and sleeve having coincident and alternating bends on opposite sides thereof, substantially as set forth.

2. The process or method of uniting electric conducting-wires, which consists in abutting the wire ends within a tube and simultaneously bending the tube and the abutting ends out of a true line, substantially as set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 8th day of January, 1891.

JAMES H. FLEMING.

Witnesses:

OLIVER DRAKE,  
CHARLES H. PELL.