R. E. HOUSE.

MEANS AND APPARATUS FOR JOINING TELEGRAPH WIRE.

No. 180,098. Patented July 25, 1876.

Fig. 1.

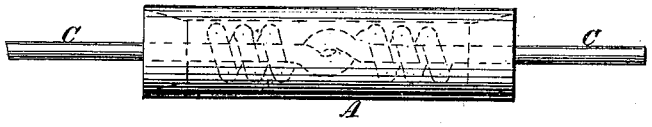


Fig. 2.

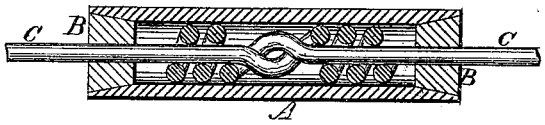


Fig. 3.

Fig. 4.

Fig. 5

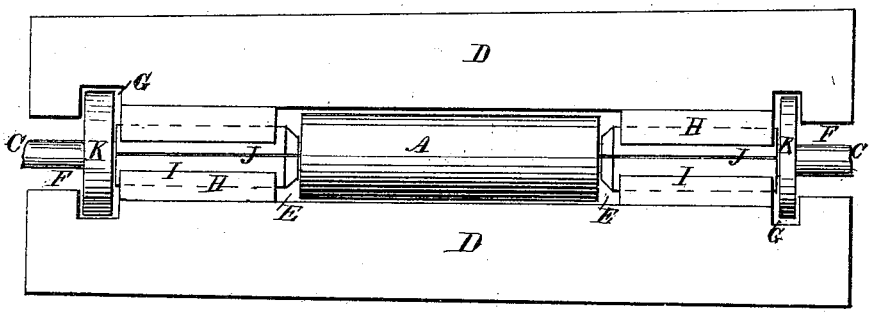


Fig. 6.

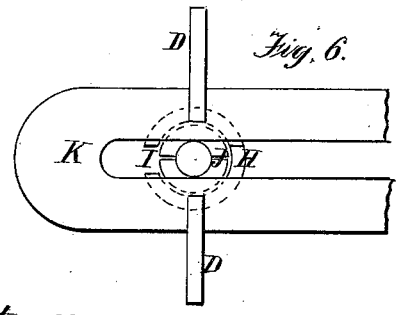
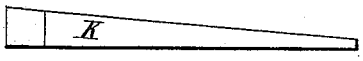


Fig. 7.



Witnesses.
Granville Lewis
M. Schmucker

Inventor
Royal E. House.
By Hill & Ellsworth
His attorneys.

UNITED STATES PATENT OFFICE.

ROYAL E. HOUSE, OF BINGHAMTON, NEW YORK.

IMPROVEMENT IN MEANS AND APPARATUS FOR JOINING TELEGRAPH-WIRES.

Specification forming part of Letters Patent No. **180,098**, dated July 25, 1876; application filed October 21, 1874.

To all whom it may concern:

Be it known that I, ROYAL E. HOUSE, of Binghamton, in the county of Broome and State of New York, have invented a new and useful Improvement in the Mode of Connecting the Ends of Telegraphic or other Electric Conductors; and I declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a side elevation of my improved joint-protector applied to the joint of a telegraph-wire. Fig. 2 is a longitudinal section of the same. Figs. 3 and 4 are, respectively, an end and a side view of the plugs for closing the ends of the cylindrical case which surrounds the joint. Fig. 5 is a plan view of a machine for forcing the plugs into the ends of the cylindrical case. Fig. 6 is an end view thereof, and Fig. 7 is an edge view of one of the slotted wedges which are employed as a part of the machine, for forcing the plugs into the cylindrical case.

Similar letters of reference in the accompanying drawings denote the same parts.

The present application is a division of an application for Letters Patent of the United States filed by me June 17, 1870.

The ordinary mode of connecting the separate pieces which constitute a telegraph-wire has heretofore consisted in knotting or twisting them together, either with or without a covering of solder. In consequence of the rusting of the joints, which are sometimes necessarily made when the wire has been broken and mended under circumstances unfavorable for soldering, as during a storm and before the line is worn out by use, an increased amount of electrical conducting-resistance is produced, due to the oxidation of the wire at the joint, which has to be compensated for by an electrical current of increased intensity, in order to work the instruments of the line. The increase of intensity in the current acts to a disadvantage in a moist atmosphere, and therefore, to avoid this difficulty, it is first necessary to remove the cause, to wit, to prevent the oxidation of the joints. The removal or obviation of this difficulty is the primary object of my invention; and to this end it consists, first, in a metal or other suitable protecting-case, adapted to inclose the joint, so as to exclude moisture and protect the joint from oxidation; secondly, in the mode or method of applying the protecting-case to the joint; and, thirdly, in the instrument by which the protecting-case is applied to the joint and rendered water-tight.

One mode of carrying my invention into practice consists in providing an iron tube, A, of sufficient size to slip easily over the joint after it is made, and having its ends beveled outward, as shown, to receive beveled or wedge-shaped plugs B. These plugs are formed of lead or other soft metal, or any equivalent material, and are provided each with a central hole for the passage of the wires C C. In order to inclose the joint within the tube, one of the plugs is placed in the end of the latter, and one of the wires passed through the plug and tube, so that its end shall protrude sufficiently for forming the joint. The other plug is strung upon the opposite wire, with its widest end outward, and the two ends of the wire are then twisted or knotted to form the joint. When this is completed the tube is moved along over the joint, and the loose plug forced into its end by suitable means. The two soft-metal plugs, when they are set up to their places within the ends of the tube, form water-tight joints both around the wires and between the plugs and tube, and therefore prevent the joint from oxidation by exposure to the weather.

Instead of soft-metal plugs for closing the ends of the tube, any suitable material may be employed that will exclude moisture from the joints.

To press the tapering plugs or stoppers into the tube sufficiently for making water-tight joints, a small, light instrument, (shown in Figs. 6 and 7,) made of steel, may be employed.

The frame D of the instrument is made in one piece with a central slot, E, two end slots, F F, and two slots, G G, near the ends, at right angles to the slots F F. Between the slots G and central slot E, at each end of the frame, is formed a die-holder, H, slotted along one side, as shown at I, the slot being somewhat wider than the diameter of the wire. The interior of the die-holders is made circular, to receive two divided dies, J J, as shown.

To press the plugs into the ends of the tube with this instrument, the tube is placed in the central slot E, as shown in Fig. 6, the wires upon which the tube is mounted entering the slots of the die-holders laterally. The divided dies are then moved inward within the die-holders, so that their ends shall bear against the outer ends of the plugs. After this has been effected a slotted wedge, K, straddling the wires, is driven, transversely of the frame D, through each of the slots G G, so as to force the dies inward against the plugs, and thus press the latter firmly within the ends of the tube, to form the water-tight connections above described.

To liberate the wire and joint-protector, the wedges are withdrawn, the dies slipped outward endwise along the wire to clear the die-holders, and the frame removed from the wires, the latter passing through the slots I in the sides of the die-holders.

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

1. A metal or other suitable protecting-case, adapted to inclose the joint of a telegraph-wire, to prevent it from oxidation, substantially as described.

2. The metal or other suitable protecting-tube inclosing the joint of a telegraph-wire, and closed at the ends by suitable plugs or stoppers, which form water-tight joints with the tube and around the wires, substantially as described, for the purpose specified.

3. The mode or method of applying the protecting-case to the joints of telegraph-wires, substantially as described, for the purpose specified.

4. The machine or instrument for applying the protecting-case to the joints of telegraph-wires, consisting of the slotted frame D, the slotted die-holders H H, the divided dies J J, and the slotted wedges K K, substantially as described.

ROYAL E. HOUSE.

Witnesses:
M. CHURCH,
WM. H. MINNIX.