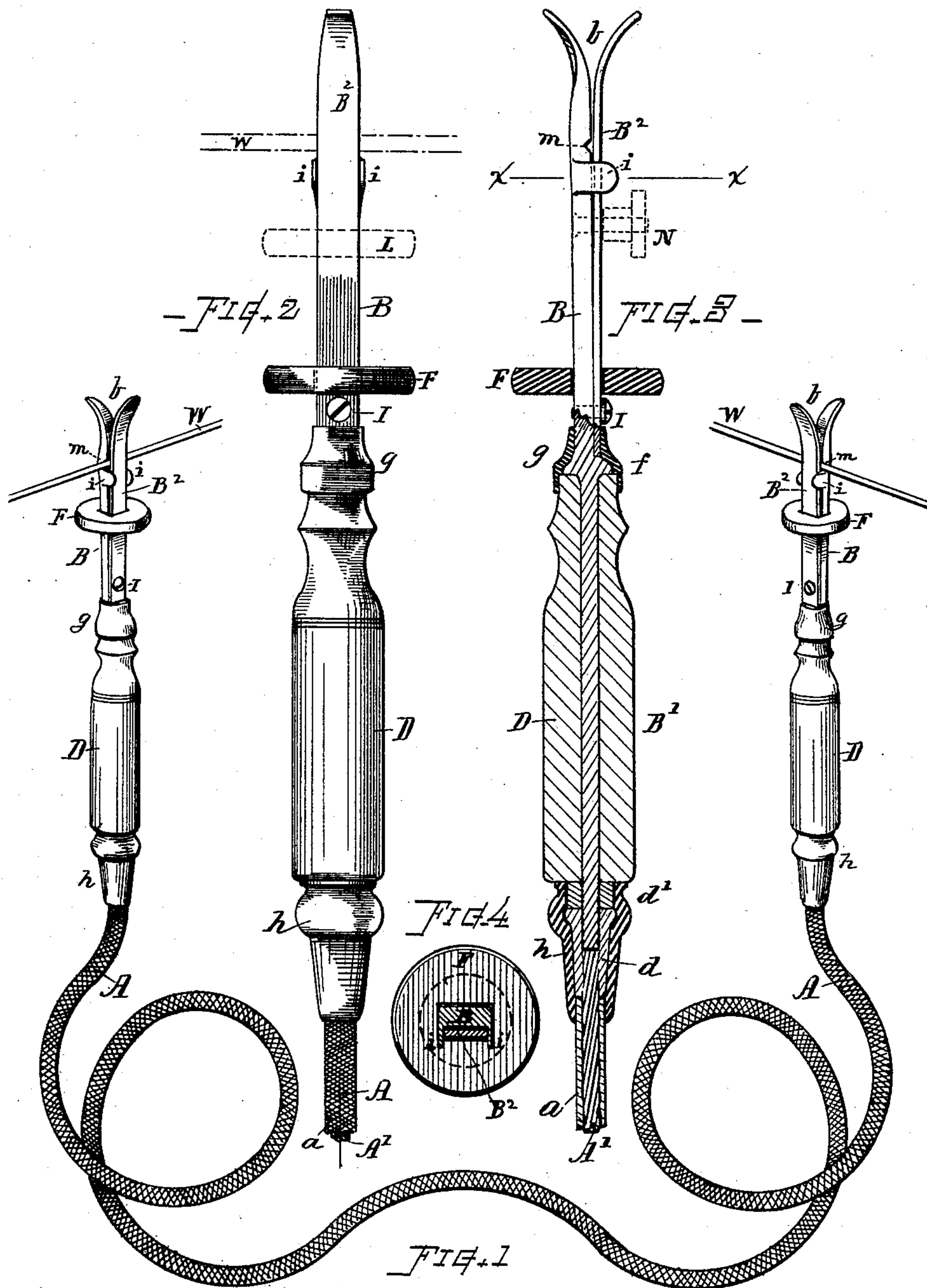


(No Model.)

W. H. COUGHLIN.
INSTRUMENT FOR CONNECTING LINE WIRES.

No. 411,093.

Patented Sept. 17, 1889.



Witnesses.

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INSTRUMENT FOR CONNECTING LINE-WIRES.

SPECIFICATION forming part of Letters Patent No. 411,093, dated September 17, 1889.

Application filed April 29, 1889. Serial No. 308,907. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. COUGHLIN, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Instruments for Connecting Across Line-Wires in Electric-Lighting Circuits, and for Similar Purposes, of which the following, together with the accompanying drawings, is a specification sufficiently full, clear, and exact to enable persons skilled in the art to which this invention appertains to make and use the same.

The object of my present invention is to provide an instrument or appliance for connecting across the line-wires at any position in electric-lighting circuits for temporarily cutting off portions of the circuits to facilitate making repairs, or for other purposes, which instrument can be conveniently and safely applied to and removed from the wires while the electric current is on the line.

Another object is to provide an instrument for the purpose above named having spring-jaws which can be readily and conveniently put upon and removed from the line-wire when making or breaking the temporary cross-connection.

Another object is to provide an instrument for the purpose above named having suitable jaws for gripping the line-wire, and also provided with means for positively clamping or locking said jaws firmly thereon to avoid liability of accidental disengagement.

Another object is to provide an instrument for the purpose above named having gripping-jaws suitably adapted for temporary connection with the line-wires, and convenient non-conducting handles fixed on the shanks of said jaws for the manipulation thereof, as more fully hereinafter explained.

These objects I attain by an instrument organized and adapted for use substantially as described, the particular subject-matter claimed being hereinafter definitely specified.

In the drawings, Figure 1 is a perspective view of my instrument for cross-connecting electric-lighting lines. Fig. 2 is a side view of one end of the instrument, showing the handle and attaching parts. Fig. 3 is a longitudinal sectional view of the same, illustrating

the detail of construction; and Fig. 4 is a transverse section at line *xx*, Fig. 3.

My improved instrument consists of a flexible conductor A, provided at each of its two ends with a metal jack-bar, having a jaw *b*, within which the wire can be conveniently entered and held for attaching it to the lines, and preferably provided with a suitable jaw-locking device for clamping the jack-bars in position on the line-wires.

The flexible conductor A is best made about six feet (more or less) in length, and of a size suitable to carry the currents employed in electric-lighting circuits. It is preferably composed of a cable of copper wires A', with the exterior thereof protected by a suitable non-conducting or insulating covering *a*. The ends of the wires A' are soldered or fixed into couplings *d*, whereby they are connected with the jack-bars B. Suitable non-conducting handles D are arranged on the ends of the respective bars B, the shank B' of the bar extending through said handle, which latter is fixed thereon by the coupling *d* or a nut *d'*, screwed onto the end of the shank, so as to hold the handle firmly between the screw-nut and a collar or shoulder *f* on the bar.

The metal portions at the ends of the handle can be covered with rubber or other non-conducting material, as at *g* and *h*.

To insure electrical connection the contact-surface on the bar B is best furnished with a notch or depression *m*, disposed transversely across its face, for receiving the wire W, whereto it is held by an elastic metal leaf B², that is attached to the bar at I and extends along the same to form a portion of the wire-holding jaws. Ear projections *i* at the sides of the bar serve to retain the spring-plate laterally, and also serve as a stop against the wire when the jaw is pressed onto the line. The outer ends of the parts are disposed with an outward curve to facilitate the entrance of the wire to the jaw.

A jaw-closing device F, preferably consisting of a block or disk of non-conducting material having a central opening and fitted to slide upon the bar B, serves for locking or clamping the jaws upon the wire by sliding said disk upward to the position indicated in dotted lines at L on Fig. 2.

In lieu of the sliding piece F, other means may be employed for clamping the jaws, as a screw and thumb-nut, as indicated by dotted lines at N on Fig. 3; or, if in any instance desired, the clamping-slide can be omitted and the gripping-pressure of the spring B² depended upon for maintaining the hold of the jack upon the line-wire.

The operation of the instrument is as follows: In the event of any defect or needed alterations in a line, the lineman, taking the instrument, ascends some adjacent pole and forms a cross-connection from the inward to the outward wire in the circuit. This he does by first removing a small portion of covering from the outward line-wire and pressing the jaw at one end of the instrument thereon, so that said line-wire is fast in the notch *m*. He then in similar manner secures the jaw at the other end of the instrument to the inward line-wire, thus quickly and conveniently establishing electrical connection across from the outward to the inward wire at any position of attachment, and by short-circuiting cutting out the current from all outlying portions of such line, so that repairs or alterations thereon can be effected. When the repairs have been completed, the locking of the jaws is released by simply sliding back the disk F, and the instrument is removed from the lines by drawing the jaws of the jacks, one at a time, off from the wire W by means of their non-conducting handles. This with my improved appliance can be safely and easily done regardless of the amount of current in operation at the time, as the spark or arc which follows the jaw at the breaking of the short circuit is taken by bar B and conductor A.

The instrument affords facility for repairing lines while the lights are running and without shutting off the entire circuit. It also affords a practical means for quickly ascertaining the place or location at which breaks or other defects in the line occur, and is of great assistance and utility in the efficient and economical maintenance of electric-lighting circuits in proper working condition.

What I claim as of my invention, to be secured by Letters Patent, is—

1. An instrument for the purpose specified comprising a flexible conductor provided at each of its respective ends with a metal bar having a transverse notch or recess near its end for the reception of the line-wire of an electric-lighting circuit, and a spring or jaw adapted for pressing the wire into said notch and holding it in connection therewith, substantially as set forth.

2. An instrument for the purpose specified comprising a flexible insulated wire-conductor provided at its two ends with metal bars, each having a seat or notch across its face adapted for receiving and holding the line-wire, in combination with a movable jaw on the side of said bar overlying said seat, and a jaw-clamp for locking the jaw thereon, all substantially as described.

3. In an instrument for the purpose specified, the combination of the flexible conductor, the metal attaching-bars coupled at their shanks to the respective ends of said conductor, and each having a seat or notch for receiving the line-wire, with slide-ears adjacent thereto, the spring-jaw overlying said notch and retained laterally by said ears, the handles of non-conducting material arranged on the shanks of said attaching-bars, and a locking disk or slide for positively clamping the jaws upon the line-wire, substantially as set forth.

4. The combination of the conducting metal bar B, having a notch or seat for holding the wire, and the shank B', shouldered at *f* and threaded at its end, the non-conducting handle D, fixed on the shank of said bar, the jaw *b*, overlying the wire-holding seat, the flexible insulated conductor A, the coupling *d*, connecting said conductor to the end of the bar-shank, the insulating-ferrules *g* and *h*, and the non-conducting sliding disk F, fitted over the bar and jaw for forcing them together, substantially as shown and described.

Witness my hand this 26th day of April, 1889.

WILLIAM H. COUGHLIN.

Witnesses:

CHAS. H. BURLEIGH,
ELLA P. BLENUM.