

No. 828,890.

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C. A. JOHNSON.
TELEGRAPHY.

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Fig. 1.

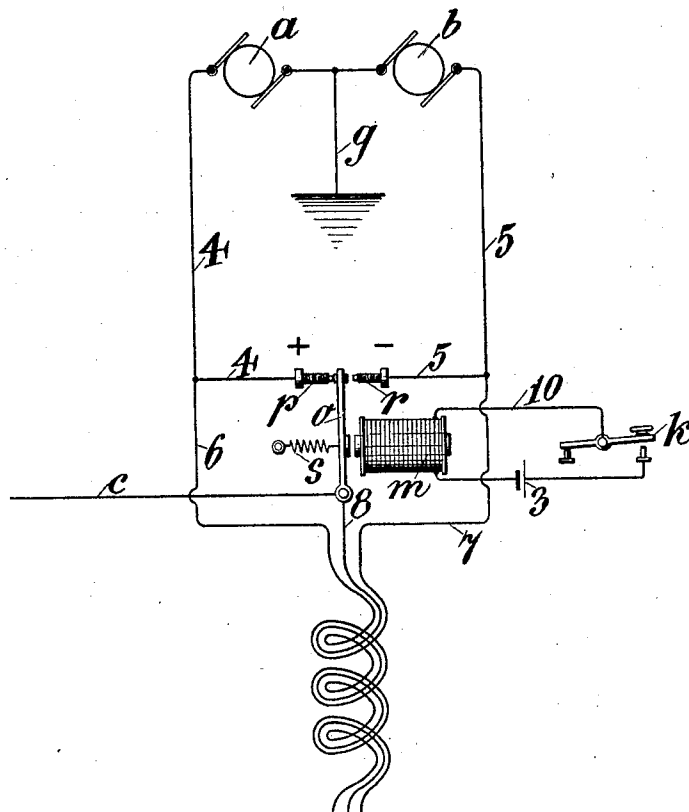
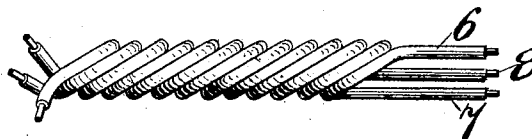


Fig. 2.



Witnesses
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UNITED STATES PATENT OFFICE.

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TELEGRAPHY.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, CHARLES A. JOHNSON, a citizen of the United States, residing in Meadville, Crawford county, Pennsylvania, have made certain new and useful Improvements in Telegraphy, of which the following is a specification.

This invention relates to circuit-changers or circuit-breakers, such as the transmitters used to direct electric-current impulses of alternately-opposite polarity onto a main telegraph-line.

The object of this invention is to neutralize or prevent sparking at the contact-points.

The invention is shown and described as applied to the ordinary pole-changing transmitter; and it consists in combining with the contact-points three sections of conductor open at one end, insulated from each other, located in inductive relation with respect to each other, as by coiling, and having their ends or terminals connected with the three contact-points, respectively.

The accompanying drawings illustrate the invention.

Figure 1 shows a pole-changing transmitter with the coils of insulated wire in inductive proximity electrically connected therewith, and Fig. 2 is a detail view of one arrangement of the three sections of conductor suitably insulated and arranged in inductive proximity.

The pole-changing transmitter consists of a vibratory armature-bar *o*. Its retracting-spring is shown at *s*, the positive contact at *p*, the negative contact at *n*, and the operating-magnet at *m*. The Morse key *k* controls local circuit 10, including local battery 3 and magnet *m*.

a and *b* represent any suitable form of continuous-current generators having their opposite poles grounded. The positive terminal of generator *a* is connected by conductor 4 to the positive contact *p*, and the negative terminal of generator *b* is connected by the conductor 5 to the negative contact *n*. When key *k* is operated and contact *o* is vibrated, a spark occurs between *o* and *n* and between *o* and *p*. To prevent and neutralize this spark, there is provided three sections of insulated copper wire, arranged in inductive proximity, as by coil-

ing, as shown in Fig. 2. These conductor-sections are open at one end. The opposite end of conductor 6 is connected to the positive contact *p* through a section of the wire 4, the corresponding end of the conductor 8 is connected to the vibratory contact *o*, and the corresponding end of the conductor 7 is connected to the negative contact *n* through a section of the conductor 5.

On a five-hundred-mile circuit composed of compound wire measuring 1.7 to two ohms per mile and with generators of three hundred and seventy-five volts each I have employed with success coils composed of No. 24 Brown & Sharpe gage German-silver wire measuring twenty-two and one-half ohms for each conductor. The insulation was cotton and shellac, the outside measurement being thirty-five millimeters. This wire is conveniently wound on a wooden core three-fourths of an inch in diameter and six or seven inches long. The arrangement of apparatus constructed and arranged as described effectually prevents sparking at the contacts.

What I claim, and desire to secure by Letters Patent, is—

1. The combination in a circuit-breaker of a movable contact connected with a main circuit, two fixed contacts connected respectively with sources of electricity of opposite polarity, and three normally open sections of conductor in inductive relation, connected to said contacts, respectively.

2. The combination in a switch or circuit-changer of separable contact-points with means for neutralizing or preventing sparking which consists of sections of insulated conductor arranged in inductive relation, such sections connected respectively to said contacts.

3. The combination of two, fixed, circuit-terminals, a vibratory circuit-terminal alternately engaging said fixed terminals and three sections of conductor insulated and arranged in inductive relation with respect to each other, said sections being connected to said terminals, respectively.

4. The combination with a three-point circuit-changer of means for neutralizing or preventing sparking which consists of three sections of insulated conductor arranged in in-

ductive relation, open at one terminal and connected to said contacts, respectively, at the other terminal.

- 5 5. The combination with two separable contact-points forming the terminals of a divided circuit, of two sections of insulated wire connected to said contacts, respectively, said insulated sections being arranged in coils in inductive relation to each other.
- 10 6. The combination with two separable

contact-points of a divided circuit, of two sections of insulated wire connected to said contacts, respectively, said sections being arranged in inductive relation with respect to each other.

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