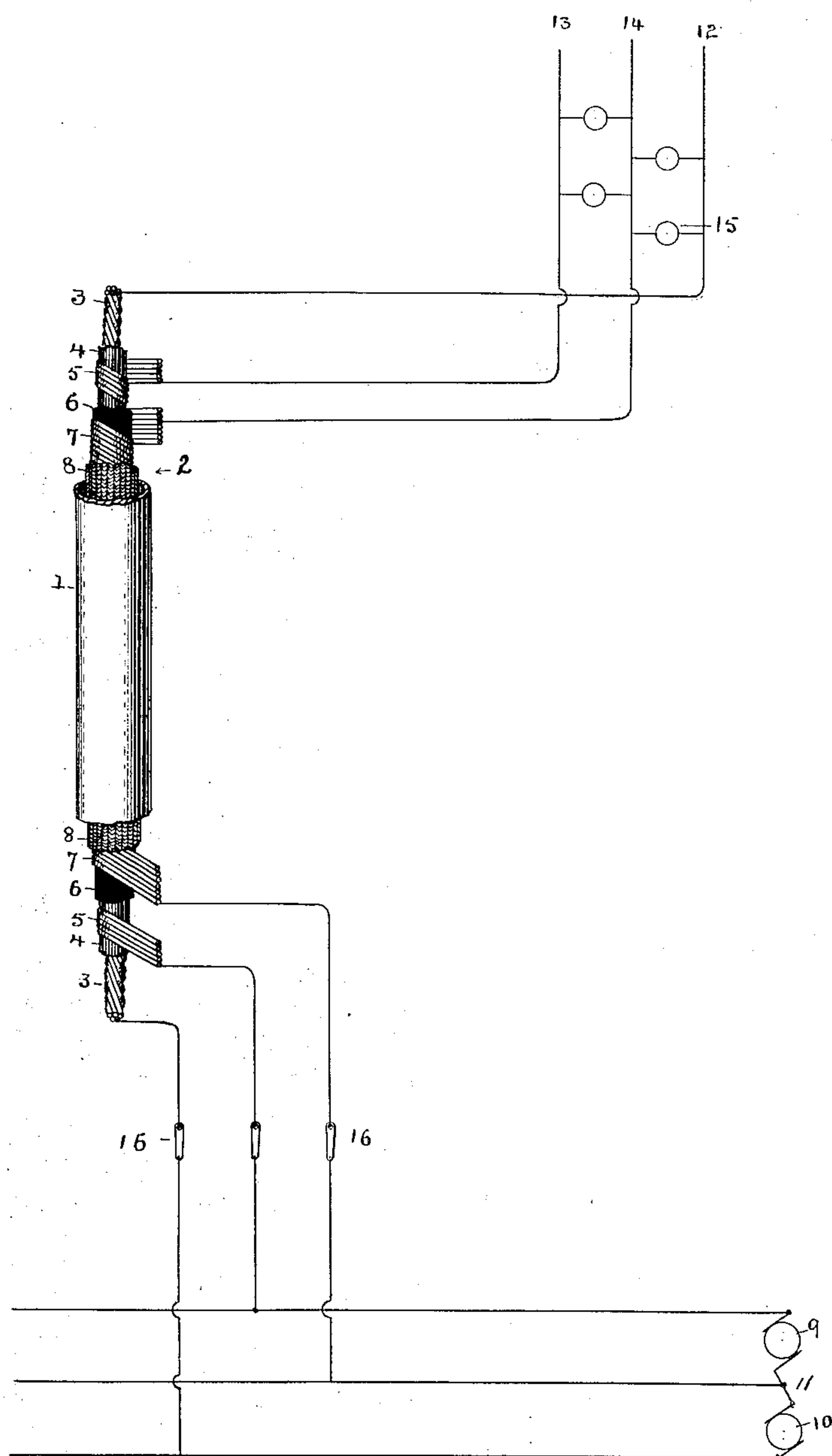


(No Model.)

E. H. JOHNSON.
CONDUCTOR FOR THREE WIRE SYSTEMS.

No. 462,489.

Patented Nov. 3, 1891.



Witnesses
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 Eugene Cousan

Inventor
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UNITED STATES PATENT OFFICE.

EDWARD H. JOHNSON, OF NEW YORK, N. Y.

CONDUCTOR FOR THREE-WIRE SYSTEMS.

SPECIFICATION forming part of Letters Patent No. 462,489, dated November 3, 1891.

Application filed September 2, 1891. Serial No. 404,513. (No model.)

To all whom it may concern:

Be it known that I, EDWARD H. JOHNSON, a citizen of the United States, residing at New York city, in the county and State of New York, have invented a certain new and useful Improvement in Conductors for Three-Wire Systems, of which the following is a specification.

The present invention relates to an improved construction and arrangement of conductors for three-wire systems, such as are now in use in many electric-lighting plants.

The main object is to provide simple, safe, and economical disposition of the conductors for wiring buildings, and in connection with an interior conduit system, said conductors being connected to a three-wire supply system.

The accompanying drawing is a general view, partly diagrammatic, illustrating the construction of the conductor employed and its connection to the generators and to the house-conductors of a three-wire lighting or other consumption circuit.

1 is either an insulating or a metallic tube or conduit in which the cable 2 is led to the point of consumption of the current. The cable is provided with a central conducting-strand 3, covered with any suitable insulation 4. Preferably this consists of a layer of rubber composition and a braid of cotton. Over this insulating layer is a second conductor 5, composed of several fine wires, as shown, and oversaid conductor is a second layer of insulation 6, which may be of rubber or any suitable insulating composition. Over this layer is a third conductor 7, also preferably made up of several fine wires. This conductor may be of an inferior conducting metal, the number of strands being increased to make the total conductivity equal to or greater than that of either of the central conductors, or the conductor 7 may be made of the same metal as the central conductors and at the same time have a larger number of strands. This is useful in cases in which it is sometimes desirable to use the cable in connection with a multiple-arc system, in which case the two inner conductors would together form one limb or side of the circuit and the outer conductor the other limb; but, however the conductors are connected, the outer one forms a practical en-

velope inclosing the others. Over the conductor 7 is an insulating coating of braid 8, suitably waterproofed, and preferably quite thin.

It is not essential that the three conductors 3 5 7 should each be made of several strands of wire, as illustrated, although this gives conductors of sufficient conductivity and a strong and flexible cable, and one which presents a smooth cylindrical exterior. The fine wires of which the central conductors are made are preferably of copper coated with tin. The outer conductor may be of inferior copper, of iron, or of other metal. At the generating station are suitable generators 9 10, connected to the mains in the usual manner. The positive and negative mains are connected, respectively, to the two inner conductors 3 5 of the cable. The intermediate or neutral point 11 is connected to the neutral main and to the outer conductor 7 of the cable. At the opposite end of the cable, which is at or near the place of consumption, the two inner conductors are connected to the positive and negative mains 12 13 of the three-wire circuit. The outer conductor is connected to the neutral wire 14. 15 are lamps or other translating devices. 16 are fusible conductors or safety devices through which the cable conductors are connected to the current-supply conductors.

With the arrangement described—namely, with the neutral conductor surrounding the other conductors—it will be evident that it is the neutral conductor which is most likely to be accidentally grounded, and that such grounding is not likely to do harm, especially in three-wire systems, in which the third conductor is not infrequently normally grounded. It will also be clear that there is no possibility of contact between either the positive or negative conductor and exterior objects, except through the neutral conductor, and that this establishes a short circuit, whereby the safety-catches are immediately burned out, opening the circuit before damage is done.

What I claim is—

1. In a three-wire system, a cable having three conductors, one surrounding the other two, and the outer conductor being connected to the neutral wire of the system, substantially as described.

2. In a three-wire system, a cable having three concentric conductors, one surrounding the other two, and the outer conductor being connected to the neutral wire of the system, 5 substantially as described.

3. In a three-wire system, a cable having three conductors, one surrounding the other two, the outer conductor being connected to the neutral wire, and a tube inclosing said 10 cable, substantially as described.

4. In a three-wire system, a cable having three conductors, one surrounding the other two, the outer conductor being connected to the neutral wire of the system, and safety de-

vices in circuit with said conductors, substan- 15 tially as described.

5. In a cable for three-wire systems, three conductors insulated from each other, one surrounding the other two and forming a pro- 20 tecting covering therefor, substantially as de- scribed.

This specification signed and witnessed this 24th day of August, 1891.

EDWD. H. JOHNSON.

Witnesses:

F. A. MASON,
EDWARD F. SEXAS.