

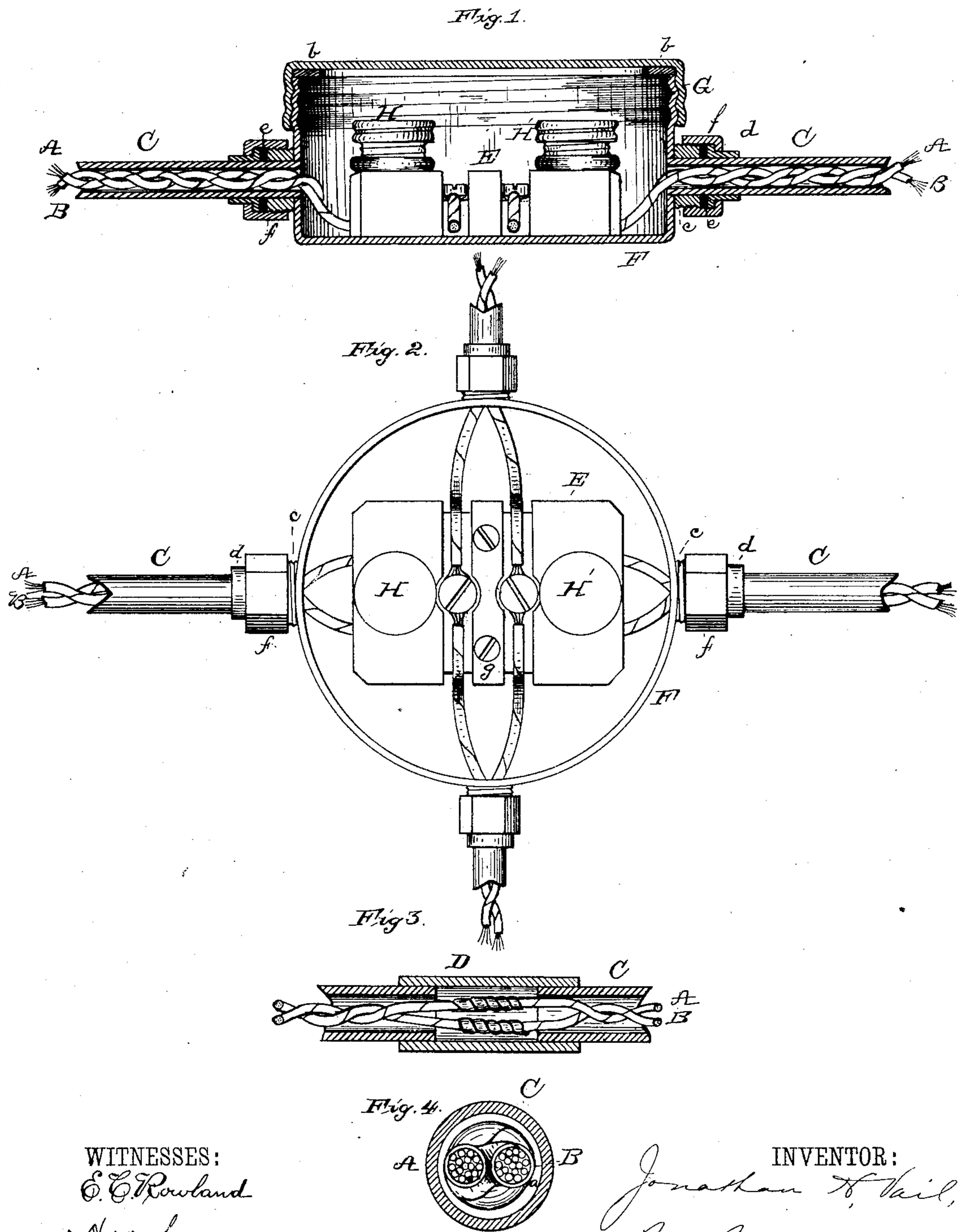
(No Model.)

J. H. VAIL.

ELECTRIC LIGHT CONDUCTOR FOR STRUCTURES.

No. 308,713.

Patented Dec. 2, 1884.



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ELECTRIC-LIGHT CONDUCTOR FOR STRUCTURES.

SPECIFICATION forming part of Letters Patent No. 308,713, dated December 2, 1884.

Application filed December 12, 1883. (No model.)

To all whom it may concern:

Be it known that I, JONATHAN H. VAIL, of New York city, in the county and State of New York, have invented a certain new and useful Improvement in Systems of Electric-Light Conductors for Structures, of which the following is a specification.

I have found by experience that in using the incandescent electric light in structures where there is excessive moisture, and especially upon steam-vessels where the conductors and connections are exposed to the action of salt-air as well as to moisture, such conductors are acted upon injuriously, the insulating-covering being soon destroyed or the conductors themselves eaten away. This action also takes place at the connections, oxidizing them and producing imperfect contact, the result of which is the ultimate destruction of the connections. The condensing of the moisture upon the surface also often has the effect of forming a short circuit. Where the connections are made upon blocks of wood or other insulating material in which are located the safety-catch plugs or cut-outs, as in the Edison system, not only are the connections oxidized, destroyed, and short-circuited, but the blocks themselves soon fall apart or become warped and fail to perform their function of properly supporting the connections. The object I have in view is to provide means for overcoming this difficulty, such means being also capable of general use for electric-light conductors and connections in the wiring of structures. This I accomplish by inclosing the conductors and connections throughout the system of main and branch conductors in a moisture-excluding covering. The invention embraces this broad feature, and the more specific feature of inclosing the connections in such a covering independent of the manner of covering the conductors, and also a specific construction of the parts for accomplishing the end desired and for wiring for electric lights of the incandescent type.

In the accompanying drawings, forming a part hereof, Figure 1 is a vertical section through a moisture-excluding box inclosing connections and the coverings of conductors leading thereto; Fig. 2, a top view of these

parts with the cover of the box removed; Fig. 3, a longitudinal section through a joint of the covering for the conductors, and Fig. 4 a cross-section of one pair of conductors.

Like letters denote corresponding parts in all the figures.

To protect the conductors from the effects of moisture, and to provide conductors suitable for wiring structures for incandescent lamps where considerable flexibility is desirable, I form the conductors in pairs, A B, and each conductor is made up of a number of small wires bunched together and covered with a water-proof insulating covering—such as a winding, *a*, of tape saturated with a bituminous compound; or other suitable flexible insulation may be employed. Two conductors formed in this way are twisted loosely together and inserted in a lead pipe, C, which effectually excludes moisture and possesses the requisite flexibility. Where it is necessary, by reason of the length of the conductor, to joint the lead pipe, the ends of the sections of the pipe may be brought together and be covered by a sleeve, D, Fig. 3, which is securely soldered to the pipe, making a moisture-excluding joint; or any ordinary or suitable moisture-tight joint for lead piping may be employed. If the conductors are also connected at that point, the meeting ends of the lead pipe may be separated somewhat to give more room for making and wrapping the connection, the whole being covered by the sleeve; but if the pipe is large enough such a connection as this can be drawn into the pipe. Where, however, connections are made for one or more branch circuits and safety-catches are employed, such connections and safety-catches are mounted upon a block, E, of wood or other insulating material. This block is located in a moisture-excluding box, F, which may be spun up of metal, or be made of sheet metal with tight joints to make it light and cheap, and is provided with a cover, G, which is forced down by a screw, clamp, or other means upon a gasket, *b*, of rubber or other suitable material, to make the box air and moisture tight. The box F is provided with perforated bosses *c*, secured to its sides, and into these project the ends of the lead pipe

C. The pipes near their ends have flanged sleeves *d* soldered to them, between which and the bosses *c* are placed packing-washers *e*. The bosses *c* are screw-threaded on their exterior surfaces, and upon them turn the screw-threaded flanged collars *f*, which secure the parts together, making moisture-tight joints.

H H' are the safety-catch plugs, which, with the block and connections, are of the construction usual in the Edison system.

The box may be secured in position by the screws *g*, which hold the block in place, or other screws may be employed for this purpose.

It is evident that the form of the box and block is immaterial, and that they may be both round or square, and not of different shapes, and that the block may be made to receive a greater or less number of connections than shown.

In the drawings main conductors are shown as passing from opposite sides of the box, and branch conductors from opposite sides at right angles to the main conductors; but it is evident that only two or three of the openings may be utilized, in which case the box may have a smaller number of openings than shown, or the openings not used may be closed air-tight by moisture-excluding caps or other means.

By the use of tight boxes of the kind described, of lead pipe-coverings for the conductors, and the moisture-excluding joints it will be seen that the entire system of main and branch conductors and their connections for supplying light to a structure is inclosed in a moisture-excluding covering, so as to be protected from moisture and from salts or acids carried by the air.

What I claim is—

1. In systems of electric-light conductors for structures, the combination, with connected

conductors, of a block of insulation upon which the connections are made, and a moisture-excluding metallic box inclosing such block of insulation and said connections and permitting ready access to the connections, substantially as set forth.

2. In systems of electric-light conductors for structures, the combination, with connected conductors inclosed in a flexible moisture-proof covering, of a block of insulation upon which the connections are made, and a moisture-excluding metallic box inclosing such block of insulation and said connections, and permitting ready access to the connections, substantially as set forth.

3. In systems of electric-light conductors for structures, the combination of connected conductors, lead pipes inclosing the same, a block of insulation upon which the connections are made, a moisture-excluding metallic box inclosing such block of insulation and said connections and permitting ready access to the connections, and the moisture-tight screw-joints between said lead pipes and box, substantially as set forth.

4. In systems of electric-light conductors for structures, the combination, with moisture-excluding boxes inclosing the connections, of conductors arranged in pairs in moisture-excluding lead pipes, each conductor of each pair being composed of a number of wires bunched together and insulated from the other conductor, substantially as set forth.

This specification signed and witnessed this 6th day of December, A. D. 1883.

JONATHAN H. VAIL.

Witnesses:

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