

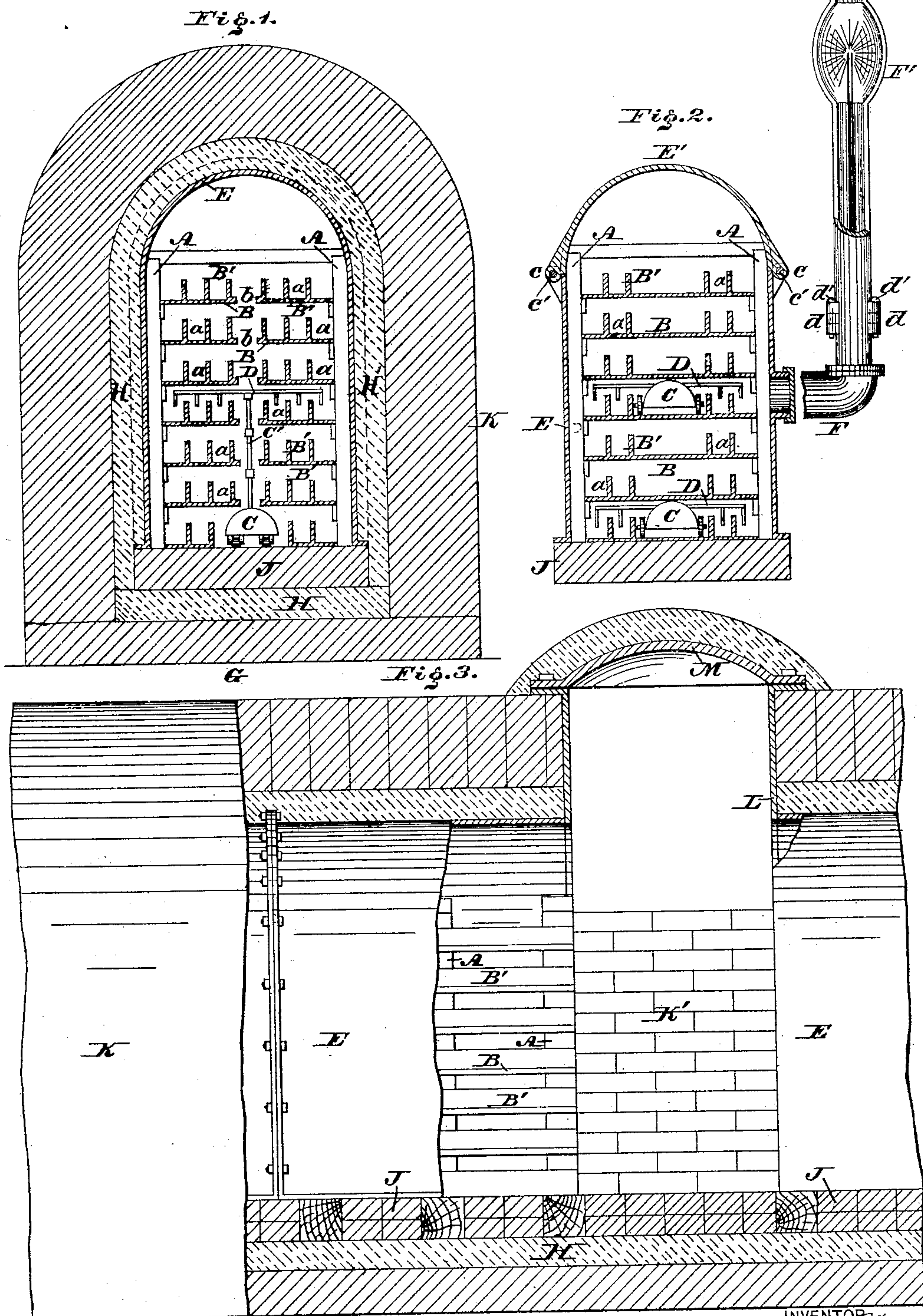
(No Model.)

J. S. DU BOIS.

UNDERGROUND CONDUIT FOR ELECTRIC WIRES.

No. 272,221.

Patented Feb. 13, 1883.



WITNESSES:

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# UNITED STATES PATENT OFFICE.

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## UNDERGROUND CONDUIT FOR ELECTRIC WIRES.

SPECIFICATION forming part of Letters Patent No. 272,221, dated February 13, 1883.

Application filed August 3, 1882. (No model.)

*To all whom it may concern:*

Be it known that I, JOSIAH S. DU BOIS, a citizen of the United States, residing in the city and county of Camden, State of New Jersey, have invented a new and useful Improvement in Underground Conduits for Electric Wires, which improvement is fully set forth in the following specification and accompanying drawings, in which—

10 Figure 1 is a transverse vertical section of the conduit embodying my invention. Fig. 2 is a similar view of a portion thereof. Fig. 3 is a side elevation thereof, partly sectional.

Similar letters of reference indicate corresponding parts in the several figures.

The said invention consists of a method of inclosing and shielding the ledges.

It also consists of a peculiarly-constructed station or vault and its cover.

20 It also consists of other details of construction, as will be hereinafter set forth.

Referring to the drawings, A represents upright pieces or standards, on which are supported a series of ledges or shelves, B, arranged on tiers, and provided with vertical partitions B', which thus form pockets *a a* in each shelf, the standards being supported, as will be hereinafter described.

30 C represents a motor which is employed for drawing the wires through the conduit, and operated by steam, electricity, or other force, and adapted to be sustained on either of the shelves or tracks formed therein.

40 Rigidly connected with the motor is a cross-bar or cross-head, D, which extends transversely above a shelf of the conduit, and is formed with a number of depending arms, corresponding with the number of the pockets *a*, whereby wires may be drawn through the conduit and simultaneously laid in the several pockets of each shelf.

45 In Fig. 1 the shelves are separated or spaced, as at *b*, and the cross-head is connected with the motor by a rod, C', which occupies a position in the space *b*, and is adjustable in length, so that the cross-head may be fitted over either shelf, while the motor remains at the top or bottom of the conduit. In Fig. 2 the space *b* is avoided, in which case there may be a motor for each shelf; or the motor may be transferred from one shelf to the other.

It will be seen that the pockets *a* permit the

wires to be laid in independent series, whereby the series do not interfere with each other, and either series is accessible without disturbing the others. 55

The standards are secured to or fitted within a sheathing, E, which envelops the standards and ledges, and consequently the wires, said sheathing, formed as hereinafter specified, 60 having a cap or cover, E', which is hinged to the body of the conduit, the hinges *c* being on opposite sides, so that the cap has two hinges.

When it is desirable to reach the interior of the conduit, either for the introduction or removal of the motor and appurtenances, or for access to the ledges or wires, or other purposes, either of the pintles *c'* of the hinges is withdrawn, whereby the cap may be swung up and over, thus uncovering the conductor. 70

This feature of the double hinge is serviceable in cases where the conduit is laid near the curb or gas, water, or sewer pipes, or, according to circumstances of the street, where the cap is required to be swung either to the right or left in order to be opened and permit access to the conductor. Communicating with the interior of the conduit by means of suitable branches, flanges, or couplings are pipes F, through which wires are led from the conduit to the surface, for lighting streets, houses, &c., said pipes being formed in sections doubly hinged, as at *d*, whereby either section may be swung to the right or left, according to the nature of the sidewalk, street, &c. In some cases a section must be opened to the left, in others to the right, in order to permit access to the interior of the pipe. For this purpose the proper pintle *d'* is removed and the section is swung back on the other pintle. The sectional pipes also admit of ventilation and provide access to the wires placed in the pipes. 85 90

When the wires are located in the conduit and the cap is closed the double hinges of the cap E' serve to hold the same firmly in position on the body of the conduit without leaving a joint or seam at the top of the cap. The double hinges of the sectional pipes F serve to hold said sections firmly together and prevent accidental opening thereof on either side. 100

G represents a foundation laid in a suitable trench, and formed of brick or other masonry or material, on which is placed a mass, H, of cement or other material that will harden, and



is of moist or water-proof nature. A row, J, of bricks or stone is then laid on the mass H, and between the bricks or stones, at intervals, are anchored ties or timber, to which the standards are secured. The sheathing E is then applied and sustained on the bricks or stone J, the sections of the sheathing being formed of sheet-iron or other suitable material bolted together or otherwise properly secured.

The sheathing is coated with cement or other material, as at H', thus completely enveloping and protecting it from the action of the earth, moisture, &c. Brick-work or masonry is then built on the foundation G, thus forming the exterior wall, K, of the conduit, cement being preferably employed for the brick or stone in the formation of said wall.

If desired, the foundation G and wall K may be made first, the mass H next applied, and the sheathing E, constructed in sections, with the attached standards and shelves, then run into position, after which the coating H' between the sheathing and wall is applied in liquid form and allowed to harden, without, however, producing different results than those stated.

In the top of the conduit are openings at intervals, forming entrances to the conduit, as vaults or stations for testing, repairing, applying, and removal of wires, the walls of the openings having applied to them linings L, to which are bolted the lids or caps M, the latter being covered with cement or other suitable water and moisture resisting substance, which may, however, be removed when access to either of the caps is required.

In the construction of the vaults or stations the sheathing E is dispensed with, and in lieu thereof I build a wall, K', which I term the "inner" wall, the other sections of the conduit opening into said vaults or stations, and the coating and outer wall being employed, as in the previous case, the vaults or stations being found strong and durable.

In my former Letters Patent No. 260,548, I showed a carriage connected with the motor for conveying and laying the wires. The present construction avoids the weight and friction of said carriage, as the cross-bar overhangs the shelves without being necessarily in contact therewith.

In order to ventilate the conduit, I employ an electric light, F', inclosed within a

pipe, casing, holder, or globe, which communicates with the pipe F, thus creating an upward draft in said pipe F, and consequently in the conduit, the effect whereof is to ventilate the conduit, as is evident, it being noticed that the wire for the electric light is directed from the conduit, and the light may be above or below the surface of the ground, as desired.

After the sheathing E has been incased in cement and masonry, as hereinbefore described, the cover E' cannot be raised until said masonry and cement has been partly removed. It will nevertheless obviate the necessity of removing the remainder of the masonry and cement or of breaking the sheathing itself whenever there is need to cleanse, repair, or inspect the shelves and cross-heads within said sheathing.

The motor and cross-bar, in combination with the ledges for the wires, may form the subject-matter of a separate application.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In an underground conduit for electric wires, sheathing E, support J, and the coating of cement enveloping them, in combination with the outer wall, K, and foundation G, of masonry, and the shelves and their standards or supports within said sheathing, substantially as set forth.

2. An underground conduit for electric wires, provided with a vault or station formed of inner and outer walls, with foundations, a cap or lid, and a coating enveloping said inner wall and its foundation and said cap or lid, substantially as and for the purpose set forth.

3. An underground conduit for electric wires, formed with a cap or cover having hinges at each end, substantially as and for purpose set forth.

4. An underground conduit for electric wires, provided with a pipe formed in sections, with a hinge on each side, whereby the sections may be swung to the right or left and provide means for ventilating the pipe and access to the interior thereof, substantially as and for the purpose set forth.

JOSIAH S. DU BOIS.

Witnesses:

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