

(No Model.)

J. M. JÄGEL.

UNDERGROUND CONDUIT FOR ELECTRIC CONDUCTORS.

No. 338,971.

Patented Mar. 30, 1886.

Fig. 1.

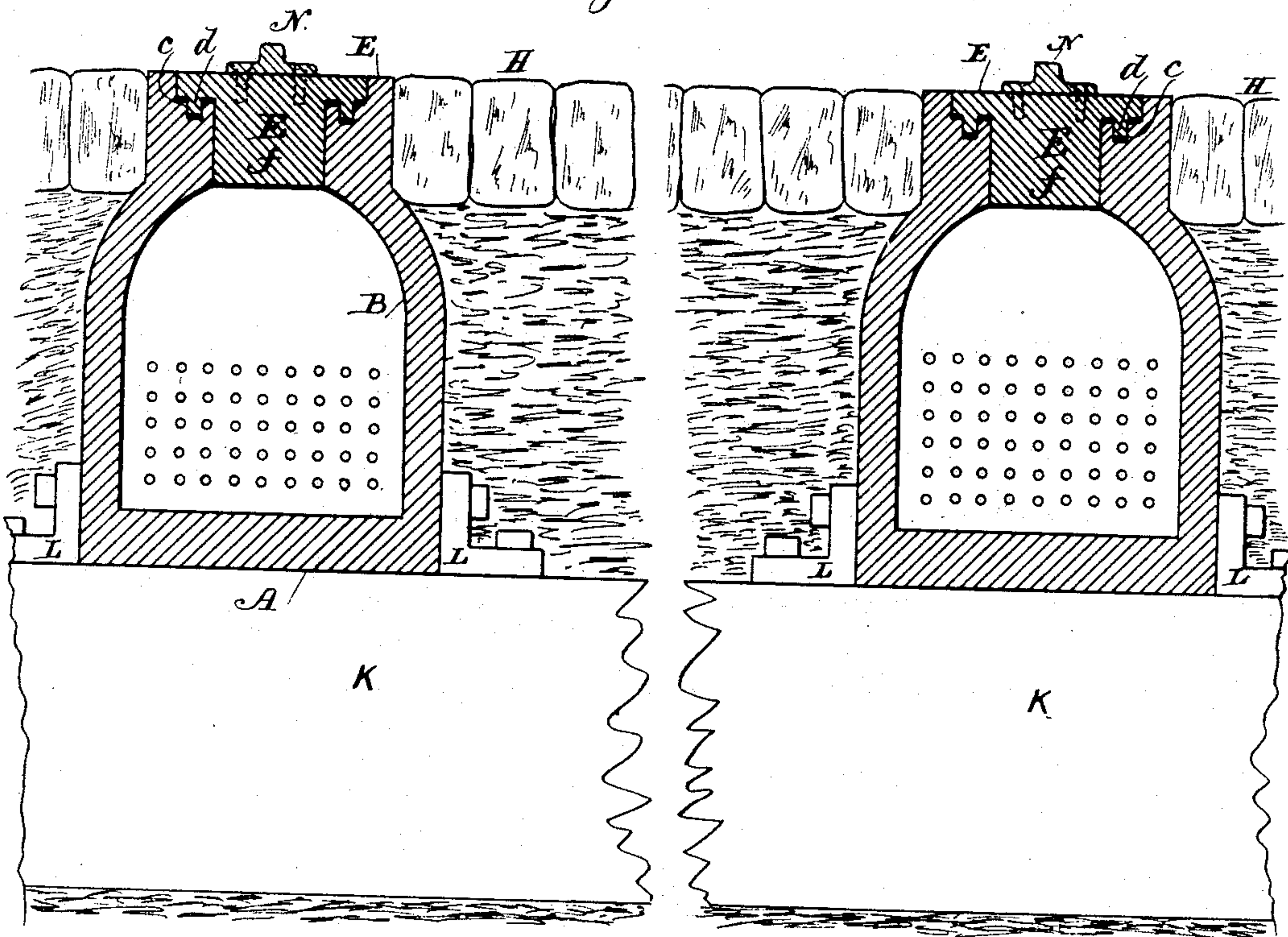


Fig. 2.

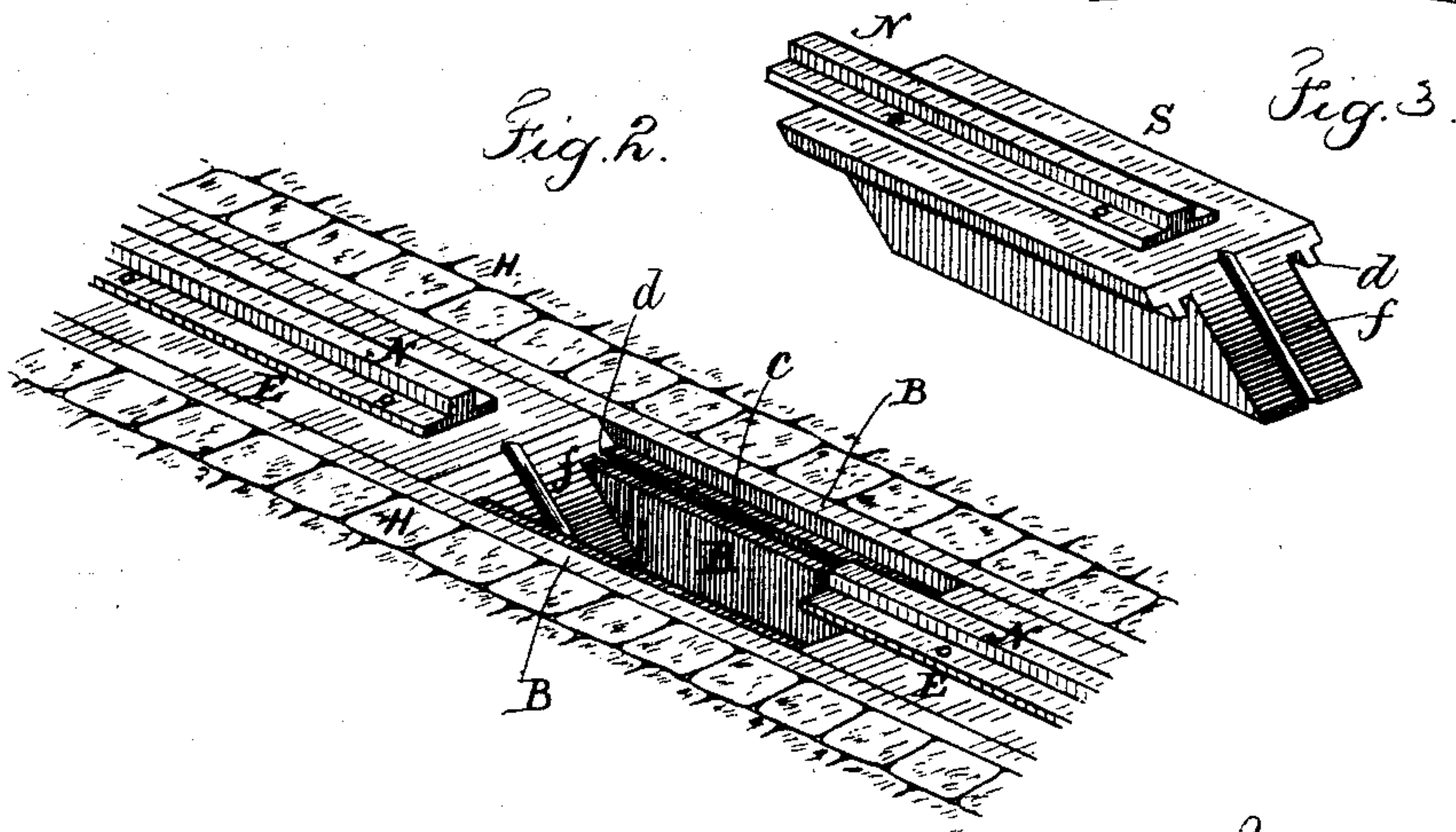


Fig. 3.

Witnesses

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# UNITED STATES PATENT OFFICE.

JULIUS M. JÄGEL, OF BROOKLYN, NEW YORK.

## UNDERGROUND CONDUIT FOR ELECTRIC CONDUCTORS.

SPECIFICATION forming part of Letters Patent No. 338,971, dated March 30, 1886.

Application filed July 13, 1885. Serial No. 171,440. (No model.)

*To all whom it may concern:*

Be it known that I, JULIUS M. JÄGEL, of Brooklyn, in the county of Kings and State of New York, have invented an Improvement  
5 in Cases for Underground Electric Conductors, of which the following is a specification.

Electric conductors have been passed through boxes, tubes, or cases buried in the ground, with proof-boxes at intervals, and in some  
10 instances the cases have been made of the hollow two-part rails employed in city railways.

My invention is made for giving easy access to the conductors, and at the same time  
15 forming the sleepers for tramways for ordinary travel or for the rails of city railways, that give great firmness and durability to the tram or rail way.

In the drawings, Figure 1 is a cross-section  
20 of the cases and a portion of the roadway. Fig. 2 is a perspective view of the case with a removable section of the cover taken out, and Fig. 3 is a perspective view of said removable section.

25 The case is composed of a range of cast-iron boxes set together. Each box has a bottom, A, and sides B. The upper portions of the sides are inclined and approach toward each other, so that there is a long narrow  
30 opening from end to end along the tops of the boxes. These boxes are of a convenient length, and they are set together end to end and secured by bolts to form the continuous case into which the conductors are to be placed, and at  
35 the joints between the respective cases water-tight packings of india-rubber or similar material are introduced. Provision is made for expansion and contraction in the metal of the case by elongated bolt-holes.

40 The upper edges of the case are channeled longitudinally, as at *c*, for the reception of the ribs *d* upon the under sides of the covers E, and there is a central rib, *f*, that passes in between the upper edges of the sides B, so that  
45 the covers E tightly close the top of the case, and the joints are to be made water-tight by tar or other water-proof material introduced into the channels *c*.

50 The upper surfaces of the covers E are roughened to prevent horses from slipping, and the cases are inserted into the streets with the top surfaces of the covers level with the

surface of the pavement H, as shown in Fig. 1. These cases take the places of the ordinary wooden sleeper for railways or tramways, 55 and do not occupy necessarily any more space; hence I utilize the spaces for the sleepers and make a case that becomes a better sill or sleeper than the wooden ones heretofore used, and I avail of the same to hold the  
60 electric conductors.

In most cities electric-light wires and telephone-wires are suspended in the atmosphere, and where efforts have been made to place electric conductors under ground it has been  
65 found that the telephone-conductors should be out of the reach of the inductive influence of the light or telegraph-wires. Usually, therefore, it is preferable to have two or more of the lines of cases, and to rest them upon and connect  
70 them with the cross-ties K by means of the angle-irons L. These cross-ties should be of wood prepared so as to prevent them rotting, and the cases are to be placed at the usual  
75 distances apart of car-tracks, so that the tops of the cases become tramways for vehicles or receive the rails N for car-tracks. These rails N are to be bolted to the tops of the covers, as shown.

In order to introduce the insulated con- 80 ductors into the cases, it is only necessary to lift off the covers to the cases, introduce, remove, repair, or replace the conductors into such cases and then replace the covers.

It is preferable to provide removable sec- 85 tions S in the covers, so that access can be given to the conductors at suitable distances apart, and any known devices—such as endless cords around pulleys—may be provided for drawing in conductors and passing them  
90 along from one opening to the next. If desired, hand-holes or openings with covers may be provided in the sides at suitable distances apart.

The covers are of sufficient weight to retain 95 their positions; but bolts may be employed to screw them down, if desired; and the removable sections S are provided with interlocking ribs, as shown, and the ends are preferably beveled, so as to interlock and hold the section  
100 in place, and tar or similar material is to be introduced to make the joints water-tight.

It is preferable to provide lateral connections through holes in the sides of the boxes,



which connections project opposite to each building, so that the connections of the conductors to the respective buildings can be made at any time without having to open the case.

It is apparent that this improvement avails of the space usually occupied by the wooden sleepers for railways or tramways and allows for using the same to hold the electric conductors. I therefore do not limit myself to the cases having removable covers, as the conductors may be introduced in any convenient manner into the hollow cases that form the sleepers for the track.

I am aware that a hollow base has been made for a railway-rail, and that conductors have been placed therein; but the rail, itself becoming the cover and subject to wear, displacement, and removal, was not adapted to excluding water, and the capacity of the conduit was necessarily limited. A conduit-box has also been made with the upper part contracted to receive removable covers, and the same was to be laid along the gutter. This device is not adapted to street-crossings, and it is likely to be covered by water and become filled in case of any leakage.

In my improvement the cover of the conduit is independent of the rails, but adapted to receive the same, and the arching sides of

the conduit are adapted to sustain the weight of the passing load without risk of injury or leakage, and the conduit being at the crown of the street is above the accumulation of water in the gutters, and the covers, having parallel vertical sides, can be crowded into the opening at the top of the conduit, and the spring of the metal and the passing cars tend to grip these covers and hold them so firmly that they cannot work loose.

The broader features of this invention are not claimed herein, as they are expressly reserved for an application which I have executed February 20, 1886, and filed March 1, 1886, Serial No. 193,617.

I claim as my invention—

The combination, in a case or inclosure for electric conductors, of a range of boxes connected together end to end to form a continuous case open at the top, removable covers with ribs entering corresponding grooves in the edges of the case, and removable sections having inclined and interlocking ends, substantially as set forth.

Signed by me this 9th day of July, A. D. 1885.

JULIUS M. JÄGEL.

Witnesses:

GEO. T. PINCKNEY,  
WILLIAM G. MOTT.