

T. E. MURRAY.

JUNCTION BOX.

APPLICATION FILED JAN. 31, 1914.

1,132,673.

Patented Mar. 23, 1915.

2 SHEETS-SHEET 1.

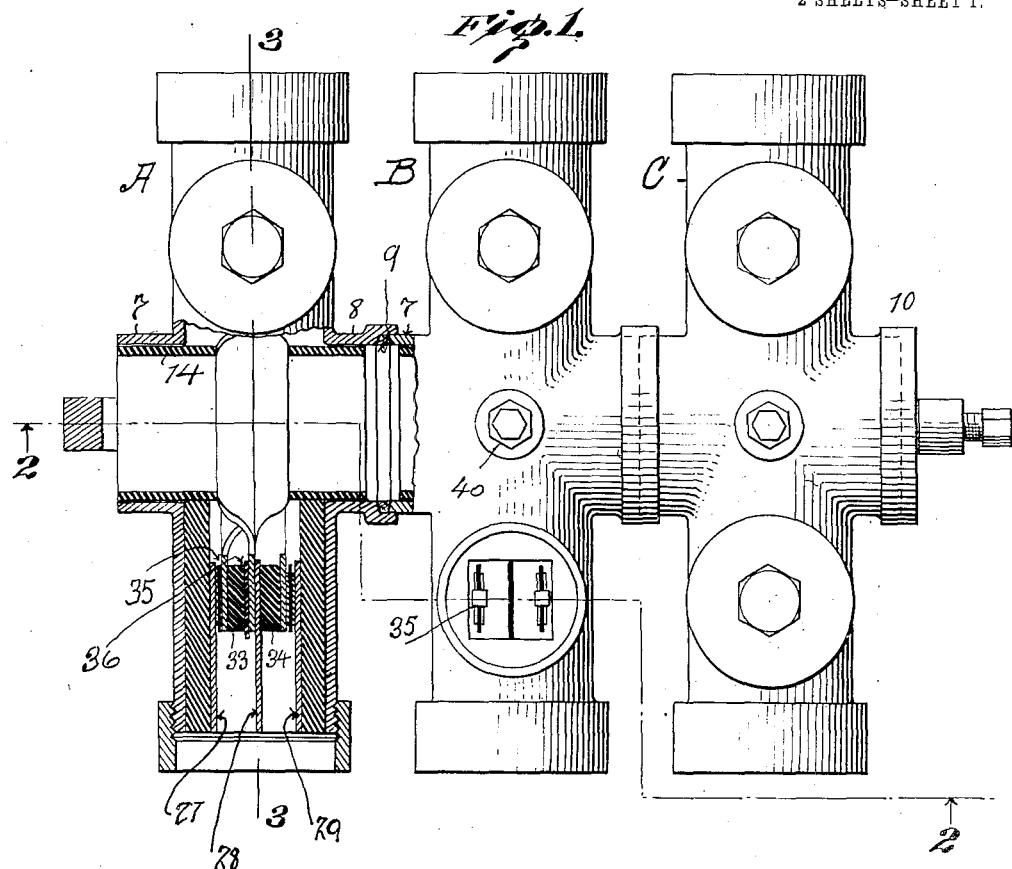
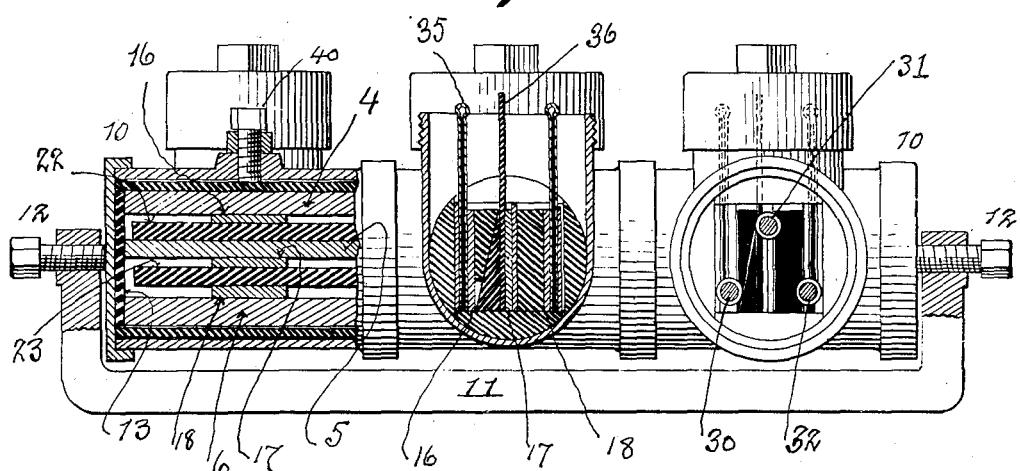


Fig. 2.



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Paul Reymann

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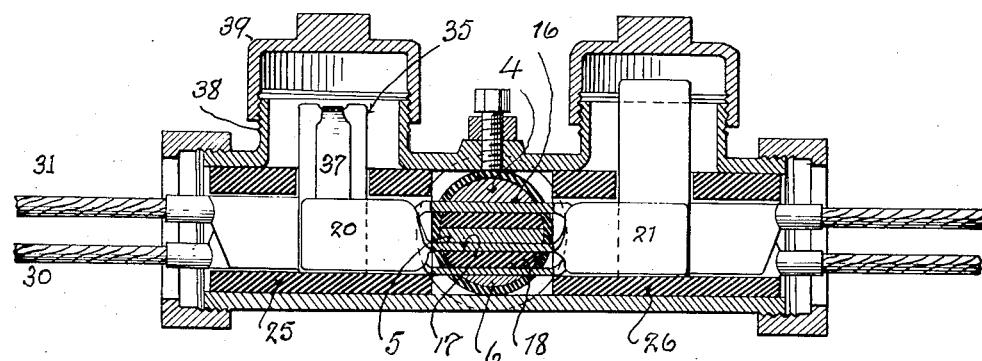
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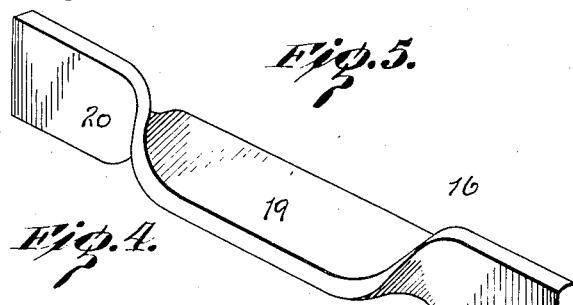
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2 SHEETS—SHEET 2.

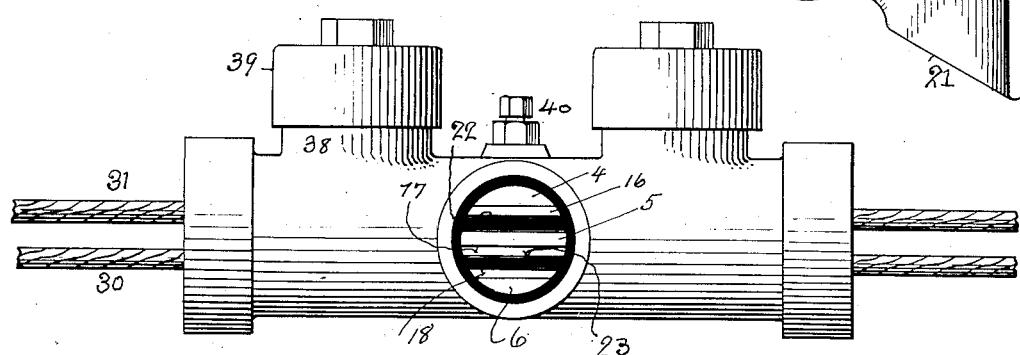
*Fig. 3.*



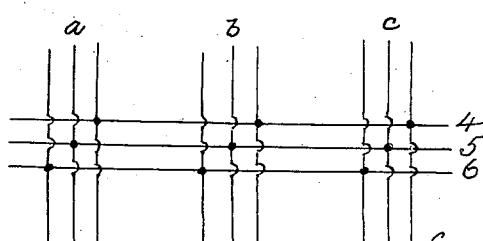
*Fig. 5.*



*Fig. 4.*



*Fig. 6.*



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# UNITED STATES PATENT OFFICE.

THOMAS E. MURRAY, OF NEW YORK, N.Y.

## JUNCTION-BOX.

1,132,673.

Specification of Letters Patent. Patented Mar. 23, 1915.

Application filed January 31, 1914. Serial No. 815,652.

To all whom it may concern:

Be it known that I, THOMAS E. MURRAY, a citizen of the United States, residing at New York, in the county of New York and 5 State of New York, have invented a certain new and useful Improvement in Junction-Boxes, of which the following is a specification.

The invention is a junction box for circuit 10 leads, which may be constructed of unit sections of metal tube, each section having side offsets which may be jointed together when said tube sections are assembled in any desired number. By making the sections of 15 metal tubing, I cheapen and simplify the construction, and save space—an important consideration in a device of this kind when used in the confined areas of subways and other ducts for underground conductors. 20 By making the device in sectional units all alike, I can adapt it for use with any number of circuits by simply adding or subtracting units. I also provide a construction, the parts of which are very easily 25 assembled or separated: and which permits of the introduction of fuses in any or all of the interconnected circuits.

In the accompanying drawings—Figure 1 is a plan view of my junction box as arranged for six three-wire cables. Fig. 2 is a section on the line 2, 2 of Fig. 1. Fig. 3 is a section on the line 3, 3 of Fig. 1. Fig. 4 is an end elevation. Fig. 5 shows one of 35 6 is a diagram showing the electrical connections.

Similar numbers and letters of reference indicate like parts.

Referring first to Fig. 6: 4, 5, 6 represent 40 three bus-bars, with which are connected six groups of leads of three wires each, the groups *a*, *b*, *c* being on one side of the bus-bars, and the groups *d*, *e*, *f* on the other side. Any group, as *a*, may be considered 45 the main feeder, in which case the remaining groups *b*, *c*, *d*, *e*, *f* may be branches leading in different directions. This is the arrangement of connections in the present embodiment of my invention, but it is to be understood that I do not limit myself to 50 the particular number of groups of leads here shown, or to groups composed of three wires each.

The device is to be built up of structural 55 units, each a tube section. Three sections are shown in the drawings at A, B, C. Each

tube section has tubular offsets 7, 8 on opposite sides. One projection on each section, as projection 8 of unit A, may be enlarged at its end to receive the opposite 60 projection, as 7, of the next unit, as B, and in this way any desired number of unit sections may be assembled in succession. Gaskets, as 9, may be interposed in the joints. The end projections of the series 65 may be provided with screw caps 10 and clamped together by a yoke bar 11, having set screws 12 bearing upon said caps, as shown in Fig. 2, insulating washers, as 13, being interposed between said caps and the 70 ends of the bars.

The three bus-bars 4, 5, 6 extend through the off-sets 8, 9 of all three of the units. Each offset is provided with a lining tube 14 of insulating material. In each unit section are three copper connecting bars 16, 17, 18, one of which is shown in Fig. 5. Each bar has its middle portion 19 twisted so as to stand at ninety degrees to its end portions 20, 21. The middle portions 19 of 80 the three bars 16, 17, 18 are in contact with the bus-bars 4, 5, 6. Thus in Figs. 2 and 3, the bar 16 is directly below and in contact with the bus-bar 4, the bar 17 is directly below and in contact with the bus-bar 5, 85 and the bar 18 is directly above and in contact with the bus-bar 6. The bus-bar 5 is separated from the bar 16 by an insulating plate 22, Fig. 2, and the bars 17 and 18 are separated by an insulating plate 23. Each 90 connecting bar 16, 17, 18 is, therefore, connected at its middle portion 19 to a different bus-bar 4, 5, 6. The bus-bars, connecting bars and insulating plates may be clamped together by set screws 40. The end portions 95 20 and 21 extend into lining tubes 25, 26 of the tube section, as A. In each of said tube sections are three plates 27, 28, 29 of metal, as best shown in Fig. 1, to which plates the circuit leads 30, 31, 32 (Fig. 2) are connected in any suitable way. Normally the connecting bars 16, 17, 18 make contact with the plates 27, 28, 29, but they are so arranged that between each bar and its associated plate a fuse plug may be inserted. 100 This will best be understood from Fig. 1, from which it will be seen that the insulating blocks 33, 34, which are interposed between the plates 27, 28, 29, are of such width as to permit resilient play of the end portions of bars 16, 17, 18; so that it is possible to introduce a fuse plug, as 35, between any 110

plate and its associated bar, or, if desired, the plug may be removed and plate and bar held in contact by introducing a thin plate 36, Figs. 1 and 2, of insulating material between the back of the bar and the adjacent insulating block. The fuse plugs are formed of preferably a thin plate of insulating material, over one end of which the fuse strips 37, Fig. 3, is bent, the arms of the strip being secured to the plate in any suitable way. In order to provide access to the fuses, I form tubular externally threaded projections 38 on the tube section, and also openings in the insulating lining tubes, and 15 I provide covers 39 fitting on said projections.

One of the insulating blocks, as 33, may be made in two wedge-shaped portions, one shorter than the other, as shown in Fig. 2. 20 By driving down the upper portion, the width of the spaces for the insertion of the fuses may be regulated, or after the fuses have been inserted, the fuses, plates and connecting bars may be clamped together. 25 The clamping screw 40 serves to bind the bars 16, 17, 18 and 4, 5, 6, and also the insulating plates 22, 23, firmly together.

I claim:

1. A tube section, tubular offsets on opposite sides thereof, a group of conductors longitudinally disposed in said tube, a group

of conductors disposed in said offsets, crossing said first-named conductors and respectively in contact with said first-named conductors, and means extending through a wall of said tube for clamping said conductors together at their places of contact. 55

2. A tube section, tubular offsets on opposite sides thereof, a group of flat-surfaced parallel conductors longitudinally disposed in said tube, and a group of flat-surfaced parallel conductors disposed in said offsets, the members of one of said groups of conductors having their middle portions turned at ninety degrees to their end portions; the 45 said middle portions crossing the members of the other group of conductors and respectively in contact therewith.

3. A case, and two groups of flat parallel conductors therein, the members of one of said groups having their middle portions turned at ninety degrees to their end portions, and the said middle portions crossing and being respectively in contact with the conductors of the other group. 55

In testimony whereof I have affixed my signature in presence of two witnesses.

THOMAS E. MURRAY.

Witnesses:

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MAY T. McGARRY.