T. E. MURRAY.

JUNCTION BOX.

APPLICATION FILED OCT. 16, 1913.

**1,132,672.**

Patented Mar. 23, 1915.

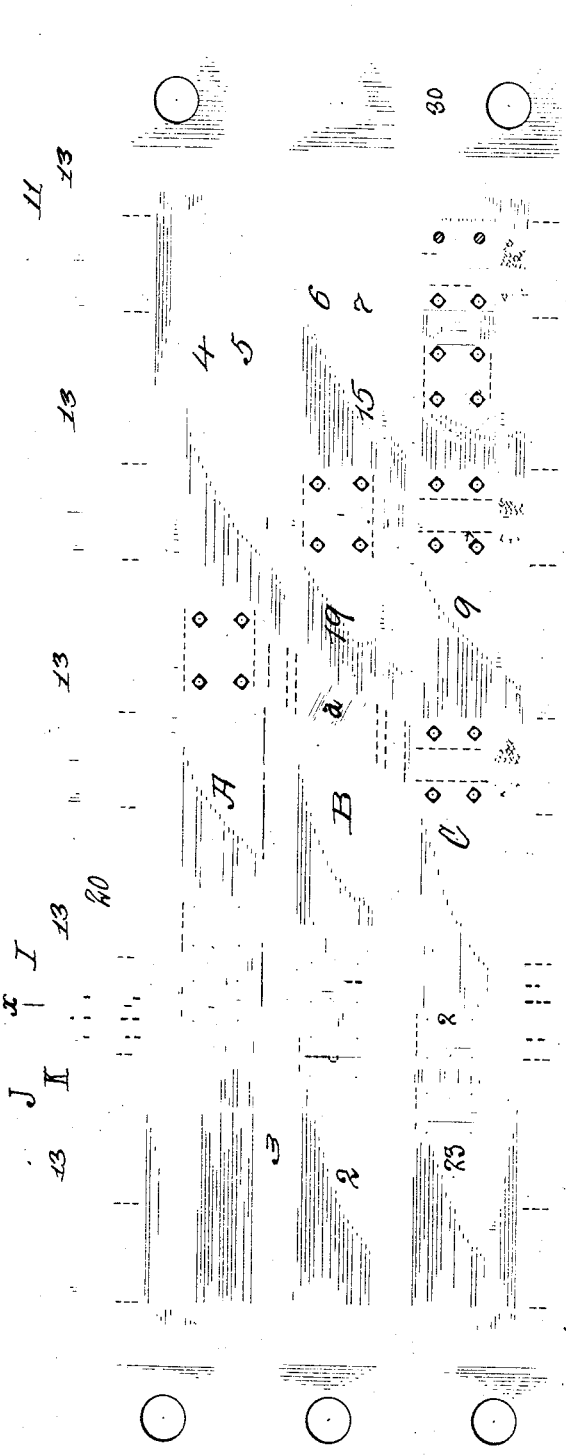

Fig. 1.

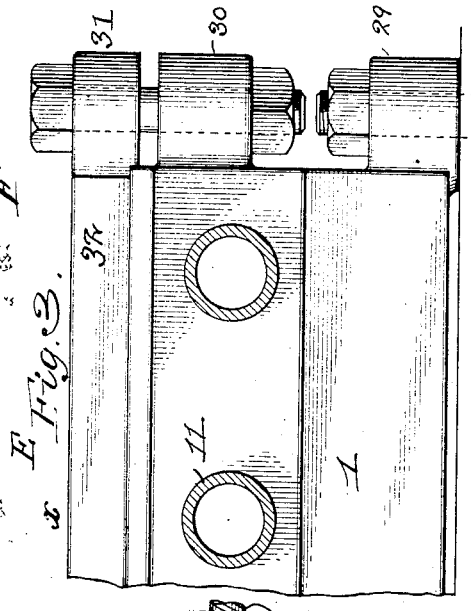

Fig. 2.

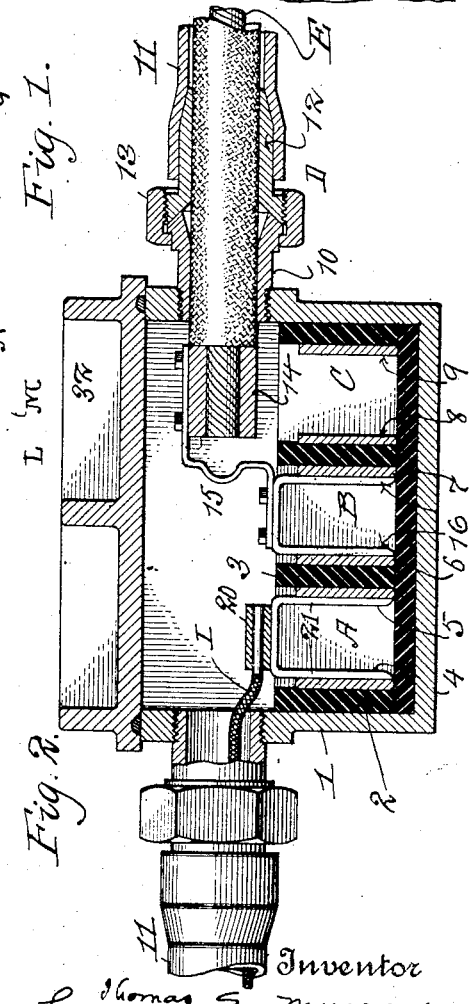

Fig. 3.

Witnesses:
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# UNITED STATES PATENT OFFICE.

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

## JUNCTION-BOX.

1,132,672. Specification of Letters Patent. Patented Mar. 23, 1915.

Application filed October 16, 1913. Serial No. 795,407.

*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 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, more especially designed for the feeder mains and service leads of a three-wire system, and for employment in subways or other localities where the necessarily restricted conditions require that such boxes, while affording the maximum facilities for making the connections, shall, nevertheless, occupy the minimum space. By my invention two or more groups of line conductors can be connected interchangeably to pairs of contact plates longitudinally disposed in the box by simple contacts carried by said conductors and cooperating with said plates. The two groups —as feeder mains and service leads—may enter the box from opposite directions or from the same direction. The conduits which are interchangeably connected to the box may each contain one conductor (as a feeder main) or one conduit may contain a group of conductors, as service leads.

In the accompanying drawings—Figure 1 is a plan view of my junction-box, with the cover removed. Fig. 2 is a transverse section on the line $x$, $x$ of Fig. 1. Fig. 3 is an elevation of a portion of one side of the box, showing the mode of securing the box to its support, and the cover to the box.

Similar numbers and letters of reference indicate like parts.

The case 1 is of metal, and is provided with a trough-shaped lining 2 of insulating material divided longitudinally into three channels A, B, C by partitions 3. On the sides of each channel and extending the length thereof are contact plates 4, 5 in channel A, 6, 7 in channel B, and 8, 9 in channel C. The lining 2 and partitions 3 do not extend to the top of the case. In the longitudinal walls of said case above said lining are threaded openings. Each opening receives the threaded member 10 of a coupling D, by which the tubular conduit 11 of a feeder main, as E, Fig. 2, is connected to the wall. The other member of the coupling is shown at 12, and the two coupling members 10, 12 are connected by the nut 13. The feeder main is covered with the usual insulation. The end of the main which is within the case is denuded of insulation and receives a metal ferrule or sleeve 14, to the upper side of which is secured a downwardly bent metal arm 15 which carries a pair of contacts 16.

Three feeder mains E, F, G of a three-wire system are shown connected to the casing wall in the manner described. The arm 15 of main E extends over channel B, so that the contacts 16 coöperate with the plates 6, 7 in said channel. The main F has an arm 18 which extends over channel C, and the contacts (similar to 16) on said arm coöperate with plates 8, 9 in said channel. The main G has an arm 19 which extends over channel A, and the contacts (similar to 16) on said arm coöperate with plates 4, 5 in said channel. There may be any desired number of threaded openings in the longitudinal walls of casing 1 receiving conduits 11, in any three of which the mains E, F, G may be disposed, as described.

I, J, K are service leads, here inclosed in one of the conduits 11. The end portion of lead I within the casing receives a metal sleeve or ferrule 20 which carries a pair of contacts 21, Fig. 2, which contacts coöperate with the plates 4, 5 in channel A. In like manner, the contacts on ferrule 22 on lead J, and the contacts on ferrule 23 on lead K, coöperate respectively with the plates 6, 7 in channel B and the plates 8, 9 in channel C. Similarly inclosed in one of the conduits 11 on the opposite side of case 1 are three service leads L, M, N, carried in the opposite direction to leads I, J, K. The leads have ferrules 25, 26, 27 carrying contacts which respectively coöperate with plates 8, 9 in channel C, plates 6, 7 in channel B, and plates 4, 5 in channel A. Instead of disposing the leads L, M, N or I, J, K in the particular two conduits 11 indicated in the drawings, they may be placed in any other of the conduits 11, whether on opposite sides or on the same side of the case. It is, therefore, to be observed that the mains and leads are interchangeably connected to the case, and that any three conduits 11 are adapted to receive the mains E, F, G and any of the remaining conduits are adapted to receive the leads I, J, K or L, M, N. Circuit is completed in all cases from the feeder mains E, F, G, through the contacts thereon and

plates in the channels A, B, C to the contacts on either or both sets of service leads I, J, K or L, M, N.

The advantages of this construction are, that it is simple and cheap, that it permits connection of mains or service leads on either side or on both sides with equal facility, that its conduit connections are all alike and interchangeable, and that it occupies a minimum of space—an important consideration when space is limited, as in subways. The case has three lugs 29 at each end, by means of which it may be bolted to its support, and three lugs 30 above said lugs 29, by means of which it may be bolted to the lugs 31 on the cover 32.

The arms 15, 18, 19 may include fuse strips, as indicated at *a*, Fig. 1.

In practice, I have constructed this box for subway use to receive three feeder mains and branch leads in plan dimensions 23 inches long by 8 inches wide, and have found that this area is about one sixth that required by the smallest means known to me, for accommodating the same connections.

I claim:

1. A case, a plurality of pairs of fixed contact plates therein, a group of line conductors entering said case, a contact terminal on each member of said group adapted to enter between the members of said pairs of fixed contact plates, a second group of line conductors entering said case, and a contact terminal on each member of said second group, the said terminals of said second group also being adapted to enter between the members of said pairs of fixed contact plates.

2. A case, having a plurality of openings in its opposite walls, a plurality of pairs of fixed contact plates within and extending across said case, conduits secured in said openings, feeder mains in certain of said conduits and entering said case, a contact terminal on each of said mains within said case adapted to enter between the members of said pairs of fixed contact plates, service leads in one of said conduits and entering said case, and a contact terminal on each of said service leads, said lead terminals also being adapted to enter between the members of said pairs of fixed contact plates.

3. A case, having a plurality of openings in its walls, conduits, means for securing said conduits interchangeably in said openings, a plurality of pairs of fixed contact plates in said case, line conductors in said conduits, a flexible arm secured to the end of each of said conductors within said case, and a pair of contact terminals carried by each of said arms: the said terminals being adapted to enter between the members of said pairs of fixed contact plates.

4. A case, a plurality of pairs of fixed contact plates therein, two groups of line conductors, the members of each group being equal in number to said pairs of contact plates and entering said case, and a contact terminal on each of said members adapted to enter between the members of each pair of fixed contacts.

5. A case, having a plurality of openings in its walls, a lining of insulating material within said case below said wall openings, longitudinal partitions of insulating material dividing the space in said lining into a plurality of channels, contact plates on opposite sides of said channels, conduits secured in said openings, feeder mains in certain of said conduits and entering said case, contacts on said mains within said case cooperating respectively with the contact plates in the different channels, service leads in one of said conduits and entering said case, and contacts on said service leads cooperating respectively with said contact plates.

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

THOMAS E. MURRAY.

Witnesses:
GERTRUDE T. PORTER,
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