T. E. MURRAY.

CONNECTION DEVICE FOR CIRCUIT CONDUCTORS.

APPLICATION FILED FEB. 9, 1912.

1,028,259.

Patented June 4, 1912

2 SHEETS—SHEET 1.

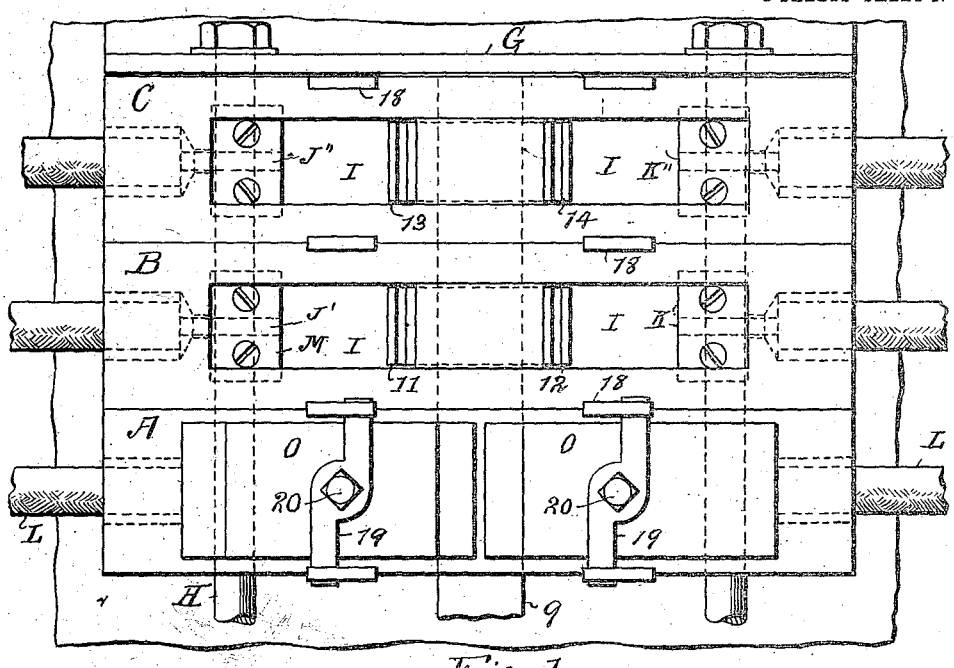

Fig. 1.

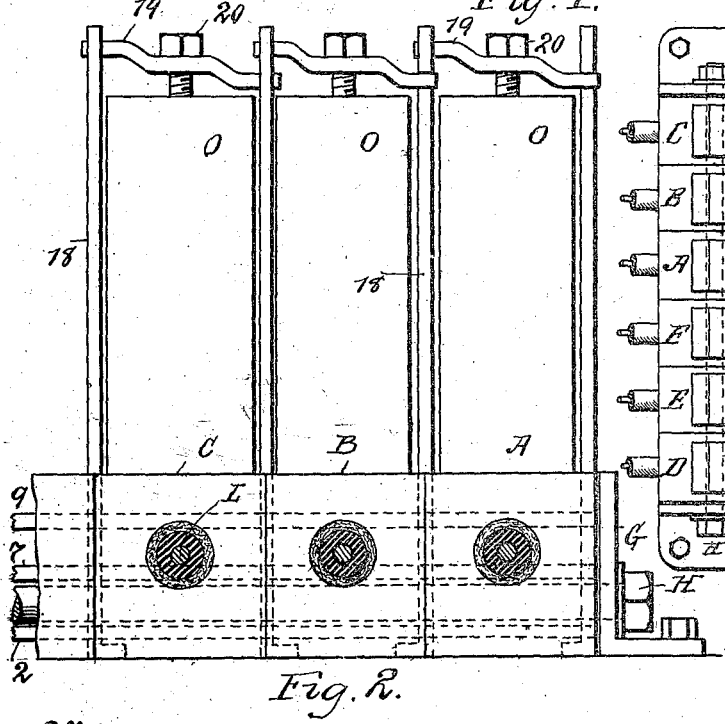

Fig. 2.

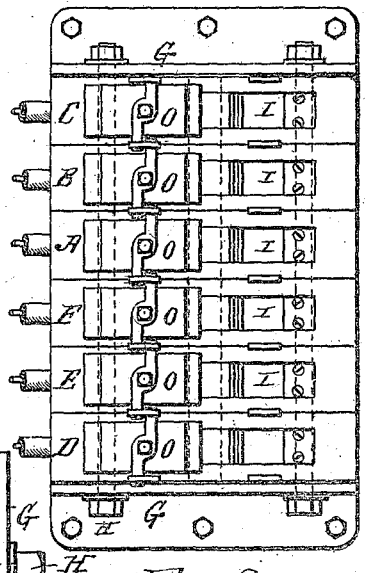

Fig. 3.

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Allan N. Foose.

Inventor
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By his Attorney
Park Benjamin

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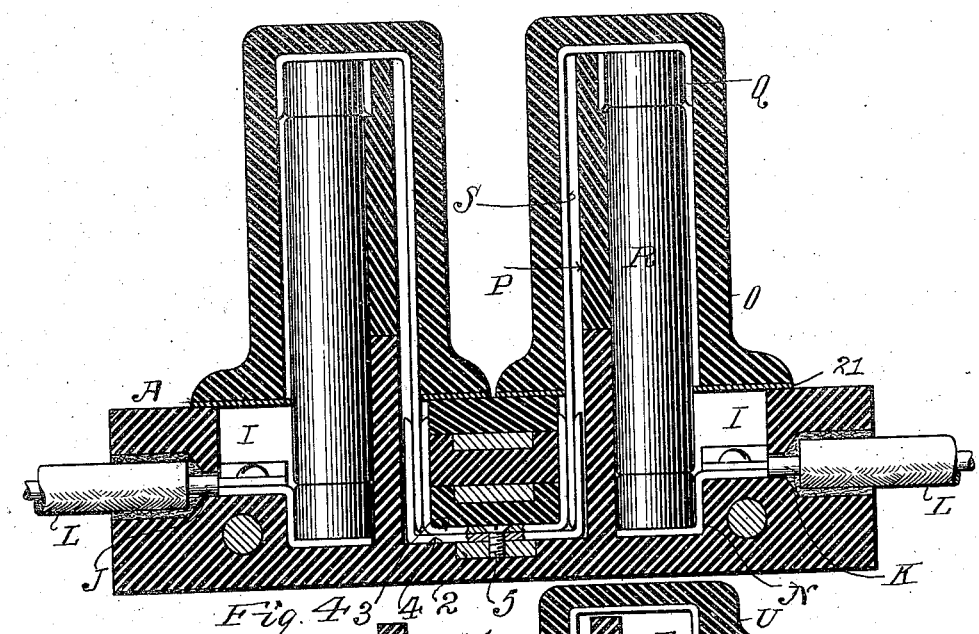

Fig. 4. 3 4 2 5

Fig. 5.

Fig. 6.

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UNITED STATES PATENT OFFICE.

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

CONNECTION DEVICE FOR CIRCUIT-CONDUCTORS.

1,028,259. Specification of Letters Patent. Patented June 4, 1912.

Application filed February 9, 1912. Serial No. 676,572.

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 Connection Devices for Circuit-Conductors, of which the following is a specification.

The invention is a connection device for circuit conductors, and is designed to obviate the need of constructing specially designed connection apparatus to meet particular needs, and to substitute therefor, a system of units, by combining which, in proper relation, any desired arrangement of circuits may be obtained.

I provide a plurality of insulating blocks, precisely alike as individuals except in certain connections hereinafter noted. These blocks are placed in juxtaposition, in groups of three if installed in a three-wire system, or of two, if a two-wire system. The corresponding members of each group are exactly alike and interchangeable. Where it is desired to continue a main feeder line only in its normal direction, or to take off branches, also, only in that direction, there may be but one terminal for the feeder prolongation or for the branch on each block. Where it is desired to continue the feeder only in the opposite direction, or to take off branches, also, only in that opposite direction, again there may be but one terminal for the feeder continuation or for the branch on each block. But where it is desired to carry on the feeder line in either the normal or the opposite direction, or to take off the branches in either direction, or some in one direction and some in the other, then two circuit terminals are arranged respectively at the ends of each block. The several groups of blocks are placed with their members in juxtaposition, and are secured to a common support by a simple holding device. Across all of them, and preferably midway between the end circuit terminals, extend a group of mutually insulated conductors. The corresponding and interchangeable members of each group of blocks are connected to one and the same member of this group of conductors, so that for a three-wire system there will be three conductors in the group, and for a two-wire system, two. Between the circuit terminals of each block and the cross conductor to which it is connected are interposed removable (and preferably fuse) switch plugs, so that simply by varying the arrangement of the plugs, omitting some, inserting others, as hereinafter explained, it becomes easily possible to establish whatever leads may be desired, and in whatever direction. I provide, also, means for securing the plugs in place, in the form of interchangeable standards, which are clamped in place by the same device which holds the blocks in juxtaposition, and which carry screws which bear upon the tops of the plug covers. The net result is that given any special conditions of desired main and branch leads at a certain point, the constructor determines how many groups of blocks he requires, and affixes the proper number to his panel, at the same time establishing the clamping standards in place. Then he puts in the switch plugs, which are all alike, in the proper sockets in the proper blocks, connects the circuit terminals, and his work is done. Provided with an ample supply of blocks and plugs, together with standards, brackets and clamping bars, each one like every other, he can go from point to point of the instalment, and simply put together, in the way hereinafter described, any arrangement of them that may suit the local conditions, and, afterward, in case of injury, he can take out any part and substitute another exactly like it in a few moments, and without any difficulty.

In the accompanying drawings—Figure 1 is a plan view, showing a group of three connection boxes in place, one of the brackets G being removed. Fig. 2 is an end view of the same, with a switch plug O, shown in each block, and the conductors L in section. Fig. 3 is a plan view, showing two groups of three connection boxes, each in place, with switch plugs O in the left hand sockets of said boxes. Fig. 4 is a longitudinal section of block A of Fig. 1. Fig. 5 is a longitudinal section of block B of Fig. 1, showing a bifurcated metal switch plug U in place instead of a fuse plug. Fig. 6 is a longitudinal section of block C of Fig. 1, both switch plugs being removed.

Similar letters and numbers of reference indicate like parts.

A plurality of base blocks, as A, B, C and D, E, F, Fig. 3, are placed in juxtaposition between movable brackets G, secured to a

panel board or other common support, and are held in place by bolts H passing through them and through the brackets. Any number of blocks may be used, in groups of three, as A, B, C or D, E, F, when the service lines are of the three-wire type, or of two each if the lines are two-wire, the brackets G, of course, being adjusted at a suitable distance apart. In each block there are two sockets I, into which enter, through the walls of the block, circuit terminals J, K in block A; J', K' in block B; and J'', K'' in block C. Said terminals are here formed by denuding the ends of the sheathed line conductor L, secured by cap plates M and screws to contact plates N on the bottom of the sockets. A switch plug enters and closes each of said sockets. As shown best in Fig. 4, said plug comprises a cup-shaped cover O, in which is a partition P. In the upper end of said cover is a contact clip Q, which receives one terminal cap of a cartridge fuse case R, the opposite cap resting upon the bottom contact plate N. Contact clip Q has an extension S which, after passing through the space between the partition P and cover O, protrudes beyond said cover. Formed in each block between the sockets I therein is a recess 1. These recesses 1 are in alinement when the blocks are secured in juxtaposition, as described. A bar 2 of conducting material passes through the side walls of said blocks, and is seated in a channel in the bottom of said recesses.

Above the bar 2 in block A, Fig. 4, two stirrup-shaped contact plates 3, 4 are disposed, one within the other, the upper plate 3 being the smaller, so that a space is left between their adjacent arms. Said plates are connected to bar 2 by screws 5.

Extending through the recesses 1 of the several juxtaposed blocks and between the arms of stirrup-shaped plate 3 of block A is a plate 6 of insulating material, which receives a second bar 7 of conducting material in a recess in its upper side. Above the plate 6 and bar 7 is a similar insulating plate 8, which in a recess in its upper side receives a third conducting bar 9. Above the plate 8 and bar 9 is a cover plate 10 of insulating material, which comes flush with the upper surfaces of the blocks.

In the spaces between the side edges of the insulating plates 6 and 8 and the partitions P which separate the sockets I in blocks B, C from the recesses 1 therein, are placed U-shaped contact plates 11, 12 in block B, Fig. 5, and 13, 14 in block C, Fig. 6. The plates 11, 12 in block B are united by a transverse strip 15, which is connected by a screw to bar 7. The plates 13, 14 in block C are similarly united by a transverse strip 16, and connected by a screw to bar 9.

When the fuse plugs are in place on block A, as shown in Fig. 4, the protruding ends of the upper contact plate extensions S enter between the arms of the stirrup-shaped plates 3, 4, so that circuit is then closed from terminal J, through the fuse in one case R, through plates 3, 4, to the fuse in the other case R, and so to terminal K. When the plugs are in place on block B, the protruding ends of the extension pieces S enter between the arms of the U-shaped contacts 11, 12, so that circuit will then be closed from terminal J', through the fuse in one case R, through U-shaped contact 11, and connecting strip 15, to U-shaped contact 12, to the fuse in the other case R, and so to terminal K'. Similarly, when the plugs are in place in block C, the protruding ends of extension pieces S enter between the arms of the U-shaped contacts 13, 14, so that circuit will then be closed from terminal J'', through the fuse in one case R, through U-shaped contact 13, and connecting strip 16, to U-shaped contact 14, to the fuse in the other case R, and so to terminal K''.

Additional groups of blocks, as D, E, F, may be connected to bars 2, 7, 9, which are to be elongated to whatever extent may be necessary, the terminals of blocks A and D then being connected to bar 2, those of blocks B and E to bar 7, and those of blocks C and F to bar 9. Considering the terminals J, J', J'' as those of a main line three-wire feeder, it will be obvious that the switch plugs in the several sockets may be arranged to vary the direction of the lead of the main feeder to establish branch lines and to vary the direction of the lead of such branches. Thus, as shown in Fig. 3, the plugs are in the left hand sockets of both groups of blocks A, B, C and D, E, F, the direction of the lead of the feeder is reversed from that shown in Fig. 1. If all the plugs were left in place as shown in Fig. 1, and the plugs of D, E, F inserted as shown in Fig. 3, then the main line would proceed to terminals K, K', K'' of blocks A, B, C, and a branch line reversed in direction would be established from blocks D, E, F. If, under the same conditions, the plugs were inserted only in the right hand sockets of D, E, F, the branch line would continue in the same direction as the main feeder line. If all the plugs were inserted in the sockets of both groups A, B, C and D, E, F, then two branches in opposite directions would be established from the main feeder line.

In the electrical systems of city subways and in all installations where the wiring is complicated, the flexibility of my construction renders it of great practical utility, since the units of each group of blocks are alike and interchangeable, and groups may be added or removed and the plugs arranged to suit any conditions of branches or directions of lead that may be desirable;

thus entirely obviating the need of specially constructed junction boxes for particular cases. The device also is safe to handle because there is no danger in making changes of blocks or plugs while the circuits are alive.

It is preferable to use plugs containing fuses, as described, but obviously the fuses may be omitted and like connections established by simple inverted U-shaped switch plugs T, disposed and depending from a suitable cup-shaped cover U, as shown in Fig. 5.

In order to secure the plugs in place in the blocks, I provide loose standards 18 flanged over at their lower ends and received between the walls of the blocks, or between blocks and brackets, as the case may be, so that when the blocks are clamped together between the brackets by bolts H, the standards are in this way firmly held in an upright position and extend above the covers O. The standards are notched near their upper extremities to receive the ends of arms 19, through which arms pass headed screws 20 which bear on the tops of said covers. The arms being placed across the cover, as shown in Fig. 1, and inserted in the standard notches, the screws 20 are turned down, thus firmly binding the arms in position and forcing the covers O down upon the gaskets 21, Fig. 4, which are interposed between said covers and the blocks.

I claim:

1. A group of insulating blocks, means for removably securing said blocks in juxtaposition, a circuit terminal on each block, a plurality of superposed mutually insulated conductors extending across said blocks, and movable means for connecting the circuit terminal on each block respectively to one of said conductors.

2. A group of insulating blocks, means for removably securing said blocks in juxtaposition, a circuit terminal on each block, a plurality of superposed mutually insulated conductors extending across said blocks, movable means for connecting the circuit terminal on each block respectively to one of said conductors, and fuses interposed in said connecting means.

3. A group of insulating blocks, means for removably securing said blocks in juxtaposition, two circuit terminals on each block, a plurality of superposed mutually insulated conductors extending across said blocks, and movable means for connecting the circuit terminals on each block respectively to one of said conductors.

4. A group of insulating blocks, means for removably securing said blocks in juxtaposition, two circuit terminals on each block, a plurality of superposed mutually insulated conductors extending across said blocks, movable means for connecting the circuit terminals on each block respectively to one of said conductors, and fuses interposed in said connecting means.

5. A plurality of groups of insulating blocks, each having a recess, means for removably securing said blocks in juxtaposition with said recesses in alinement, a circuit terminal on each block, a group of mutually insulated superposed conducting bars extending through said recesses, and means for connecting the circuit terminals on corresponding members of each of said groups of blocks to one and the same member of said group of bars.

6. A plurality of groups of insulating blocks, each having a recess, means for removably securing said blocks in juxtaposition with said recesses in alinement, two circuit terminals on each block, a group of mutually insulated superposed conducting bars extending through said recesses, and means for connecting the circuit terminals on corresponding members of each of said groups of blocks to one and the same member of said group of bars.

7. A group of insulating blocks, means for removably securing said blocks in juxtaposition, a circuit terminal on each block, contacts connected to said terminals, mutually insulated conductors extending across said blocks, contacts connected to said conductors, insulating partitions on said blocks interposed between said conductor and terminal contacts, and bifurcated plugs extending over said partitions and coöperating with said terminal and conductor contacts to connect the terminal on each block to one of said conductors.

8. A support, a group of insulating blocks, means for removably securing said blocks in juxtaposition on said support, two circuit terminals on each block, contacts connected to said terminals, mutually insulated conductors extending across said blocks between said terminals, contacts connected to said conductors and disposed facing said terminal contacts, partitions of insulating material on said blocks interposed between said contacts, and two-armed plugs extending over said partitions and coöperating with said terminal and conductor contacts to connect the circuit terminals on each of said blocks respectively to one of said conductors.

9. A connection block, a switch plug entering said block, standards on said block, a bar extending over said plug and engaging at each end with said standards, and a clamping screw passing through said bar and bearing on said plug.

10. A plurality of connection blocks, means for removably securing said blocks in juxtaposition, switch plugs entering said blocks, removable standards disposed between said blocks, bars extending respec-

tively over said plugs and engaging at each end with adjacent standards, and clamping screws passing through said bars and bearing on said plugs.

11. A connection block, a support therefor, a switch plug entering said block, means for securing said block to said support, standards having flanges at their lower ends engaged between said block and said support and extending above said block, and means on said standards for securing said plug to said block.

12. A plurality of connection blocks, a support therefor, brackets, means for removably securing said brackets to said support, means for removably securing said connection blocks in juxtaposition between and to said brackets, switch plugs entering said blocks, and means extending over each plug for securing the same independently to its block.

13. A plurality of connection blocks, a support therefor, standards disposed between said blocks, means extending through said blocks for clamping the same in juxtaposition and for clamping said standards between said blocks, switch plugs entering said blocks, and means on said standards for securing said plugs to said blocks.

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

THOMAS E. MURRAY.

Witnesses:
GERTRUDE T. PORTER,
MAY T. MCGARRY.