

(No Model.)

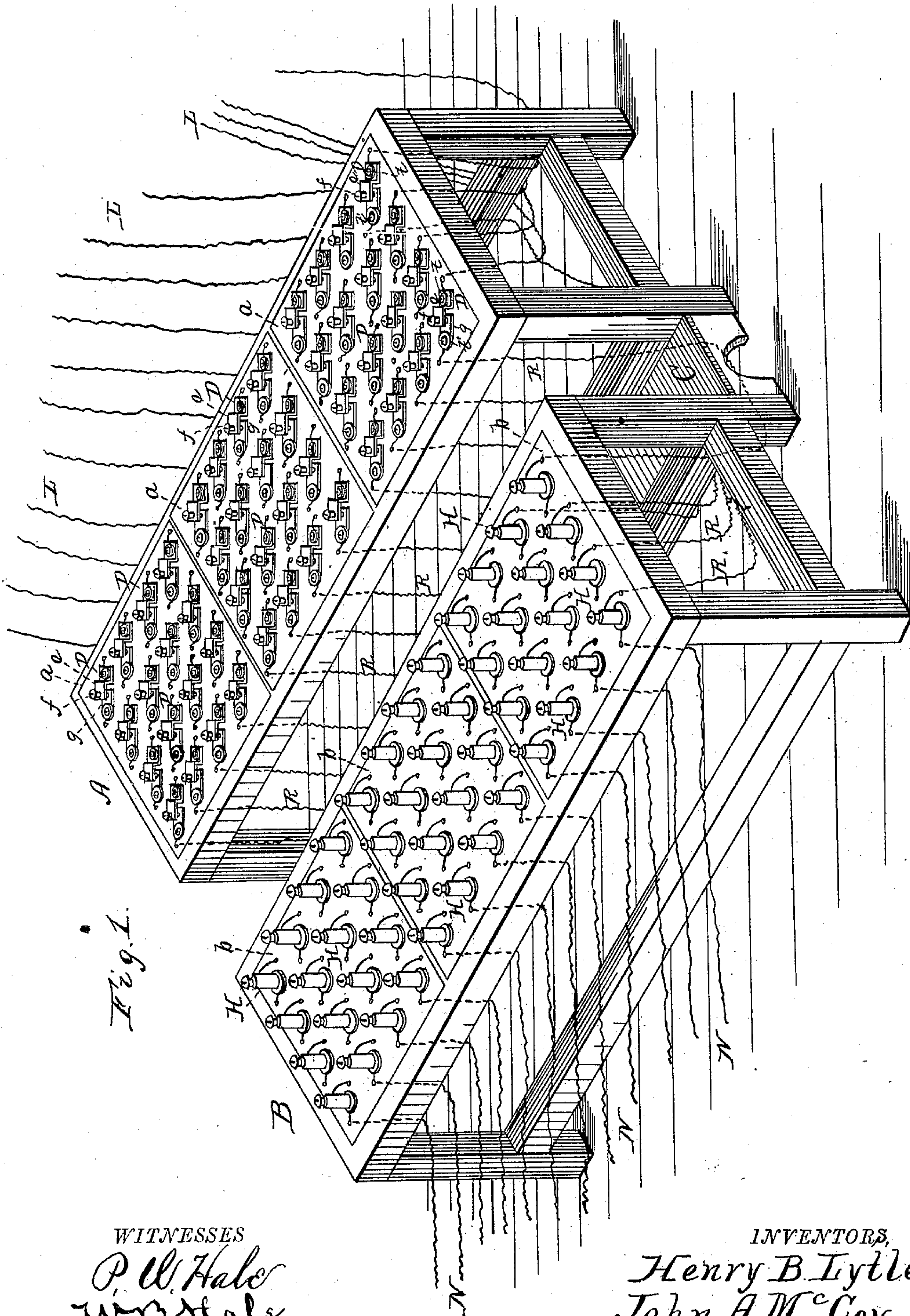
2 Sheets—Sheet 1.

H. B. LYTLE & J. A. MCCOY.

OFFICE CONNECTION FOR TELEPHONE AND TELEGRAPH CENTRAL OFFICES.

No. 313,829.

Patented Mar. 10, 1885.



WITNESSES

P. W. Hale
W. S. Hale

INVENTORS,

Henry B. Lytle,
John A. McCoy,

by Fred W. Royce, Attorney.

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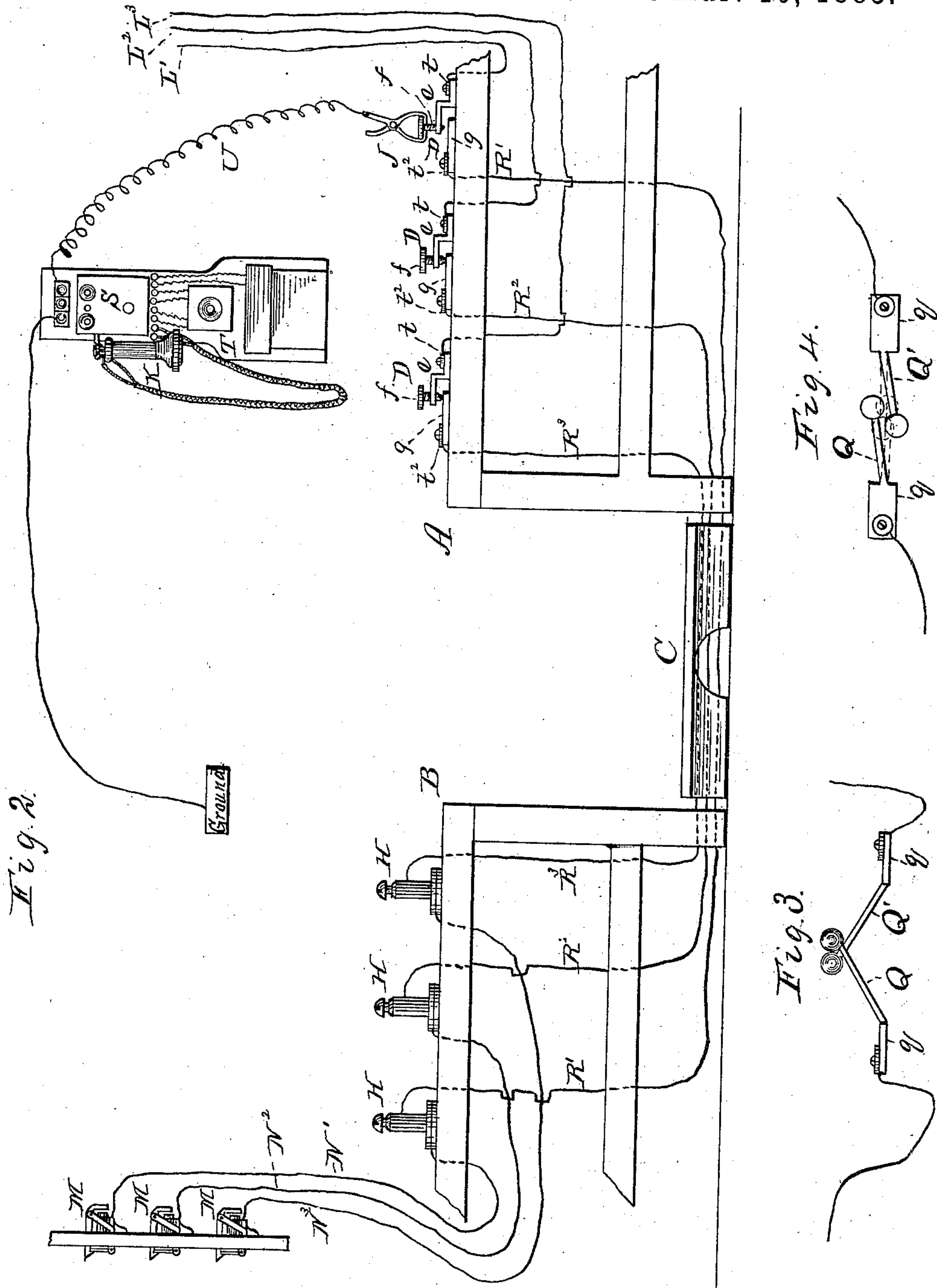
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UNITED STATES PATENT OFFICE,

HENRY B. LYTLE, OF BOSTON, MASSACHUSETTS, AND JOHN A. MCCOY, OF
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OFFICE-CONNECTION FOR TELEPHONE AND TELEGRAPH CENTRAL OFFICES.

SPECIFICATION forming part of Letters Patent No. 313,829, dated March 10, 1885.

Application filed June 10, 1884. (No model.)

To all whom it may concern:

Be it known that we, HENRY B. LYTLE and JOHN A. MCCOY, citizens of the United States, the former residing at Boston, in the county of Suffolk and State of Massachusetts, and the latter at Baltimore, Maryland, have invented certain new and useful Improvements in Office-Connections for Telephone and Telegraph Central Offices, of which the following is a specification.

Our invention relates to intermediate devices to be used in a central telephone or telegraph office for connecting subscribers' or other separate lines with the central-office annunciators or other operative instruments, and for affording facilities for testing the circuits. It is well known that where a large number of lines are brought into a central telephone or telegraph exchange or office by the modes heretofore practiced, there has been great confusion from the labyrinthine crossing of the insulated office-terminals of the wires in order to lead them to their proper instruments—such as annunciators, relays, sounders, or switches.

It is the object of our invention to provide, within a central telephone or telegraph office, a definite series of direct terminals for incoming wires, and another series of direct terminals for wires leading from the office annunciators or other instruments, and to so arrange these two series of terminals that they may be respectively connected by short and easily-handled wires without devious coursing from point to point or twisting of masses of wires, as has been incidental to the old modes of connecting the line-wires to the central-office apparatus.

It is a further object of the improvement to enable the convenient testing of the various separate circuits, and a speedy determination of whether faults or crosses are within or outside of the central office.

The invention consists in certain novel combinations and arrangements of devices, which will be hereinafter fully described with reference to the accompanying drawings, in which—

Figure 1 is a perspective view of two series of wire terminal connections arranged and connected according to my invention. Fig. 2 is

a diagram illustrating the construction, arrangement, and manner of connecting the terminals of the two series. Fig. 3 is a view in elevation of a modification of the two-part terminal, and Fig. 4 is a plan view.

The letters A and B designate two tables separated by a space convenient for the passage to and fro of attendants. Between the tables is a gangway, C, slightly elevated from the floor so that wires may pass under it. The flat tops of the tables are made of insulating material, preferably hard rubber, and are divided into sections.

Upon each of the top sections, *a*, of the table A are secured metallic brackets D, the construction of which is clearly shown in Figs. 1 and 2. Through the upwardly-projecting and overhanging portions *e* of these brackets are arranged metallic screws *f*, the tips of which may be driven into contact with metallic plates *g* on the table-top below. Each bracket D and plate *g* form a two-part terminal, one part of which is connected to the incoming line-wire and the other to an intermediate connecting-wire.

Upon the top sections, *b*, of the table B are arranged binding-posts H.

In the drawings there are sixteen brackets D on each section of the top of table A, and a similar number of binding-posts H on each section of the top of table B. This number of brackets and binding-posts is shown for illustration; but in practice the number of each on a section will usually be one hundred or more, and there may be any number of sections.

The letter L indicates, generally, the subscribers' line-wires which enter the central office, such of the wires as are shown in Fig. 2 being further designated by numbers, as L¹, L², and so on. Each of these wires passes down under the table A and is then led up through a hole alongside of one of the brackets, and is connected to the bracket by having its end bound under a washer, *t*, which is clamped upon it by a screw which secures the bracket in place. The washer is wider than the bracket, projecting over the edges thereof for a purpose which will presently appear.

In Fig. 1 the letter N indicates, generally, the wires leading from the office-annunciators,

and in Fig. 2 such of the wires as are shown are further designated by number, as N', and so on. These wires are connected to the annunciators M, as shown in Fig. 2, in the usual manner, and lead under the table B to the binding-posts thereon, respectively, each wire being connected to its binding-post by being clamped between metal washers *t'* by the screw which holds the post to its section of the table-top.

The letter R in Fig. 1 designates, generally, the intermediate connecting-wires which in Fig. 2 are further designated by numbers, as R' R², and so on. Each of these wires has one end connected to a binding-post, H, above the top of table B, and then passes down under the table through a hole beside the post, and thence passes under the gangway C and up through a hole in one of the sections of the top of the table A, and is secured to one of the metallic plates *g* by a screw and washer, *t''*, arranged as those which bind the line-wires to the brackets D. It will now be seen that each line-wire is connected with an annunciator through a bracket, D, screw *f*, plate *g*, an intermediate connecting-wire, as R', binding-post H, and a wire, such as N', or another of the same series. The wires which lead to the annunciator are to be connected therethrough to ground, and any well known or suitable devices may be used for connecting subscribers' lines together and with the central-office telephones.

The tables A and B afford definitely-fixed connections to which the line-wires and annunciator-wires may be respectively run and connected, and the work of connecting a line to its proper annunciator consists, simply, in running a wire from the proper binding-post on table B to a plate on table B under the bracket to which the line-wire is connected. Thus the running of office-connections is greatly simplified, confusion is avoided, and any particular line and its office-connections are easily found and readily accessible for purposes of repair or testing.

In Fig. 2 the letter T designates a transmitter, K a receiver, and S a signaling apparatus, all arranged in the usual manner. U is a wire having one end connected in circuit with the transmitter and receiver, and its other end provided with a connected metal spring-clamp, J. These instruments and connections are used for testing, as follows: When a subscriber's circuit is to be tested, the screw *f* of the bracket D of that line is run up out of contact with the plate *g* beneath. The screw-clamp J is then engaged under the projecting edges of the washer on said plate, and the instruments connected to wire U are thus placed in circuit with annunciator, and the signal apparatus and other apparatus may be operated in the usual manner to test that portion of the circuit which is within the office. Then by changing the spring-clamp to the washer on the bracket, or engaging it under the head of the screw *f* of the bracket, the line-wire is

placed in connection with the office testing-instruments and may be tested as usual.

In the modification of the two-part terminal shown in Figs. 3 and 4, instead of using the overhanging brackets with their screws and the metal plates under the screws to form the two-part terminals of the incoming line-wires, we construct said two-part terminals each of two metallic spring-arms, as at Q Q', attached to base-plates *g g* and inclining upward toward each other, so that their upper extremities, which are tipped with knobs, will lap past each other; but, while inclining upwardly toward each other, the arms are inclined laterally from each other, so that they will stand normally separated by a slight space. The arms, however, may be flexed past each other in directions opposite to their normal inclinations, and if then left free their knotted ends will become interlocked in a manner similar to the well-known ball-clasp for purses, and as shown by the dotted lines in Fig. 4. It will be seen that the two parts of this two-part terminal may be readily separated, or in electrical contact, as desired, and one may take the place of the metal plate *g* and the other the place of the overhanging bracket with its screw.

Having now described our invention and explained the operation thereof, we claim—

1. In a system of office-connections for telephone-exchanges, a series of fixed terminals connected with incoming line-wires, and adapted for connection with other wires, a series of fixed terminals corresponding with those of the first series, and connected with office-instruments, and intermediate detachable short conductors connecting the terminals of the two fixed series, substantially as described, and for the purpose set forth.

2. In a telephone central-office system of connections, the combination, with a series of separable two-part terminals, a series of incoming line-wires connected each to one part of said terminals, respectively, a series of fixed terminals corresponding to those of said two-part terminals, and connected by intermediate conductors to office-instruments, and intermediate detachable short conductors connecting with the other fixed terminals those parts of the two-part terminals which are not connected directly with the line-wires, substantially as described.

3. In a telephone central-office system of connections, the combination, with a series of separable two-part terminals and a series of conductors connected each to one part of said terminals, respectively, of a series of fixed terminals corresponding to those of said two-part terminals, and intermediate detachable conductors connecting with the other fixed terminals those parts of the two-part terminals which are not directly connected with other conductors, substantially as described.

4. The combination, with the series of insulated separable two-part terminals mounted on a suitable support, and the series of in-

5 insulated connections mounted on a separate support, of the detachable intermediate conductors connecting said insulated connections, respectively, with one part of the respective two-part terminals.

10 5. In a system of telephone central-office connections, the combination, with a series of two-part terminals mounted on a suitable support, and having their parts arranged for electric connection and disconnection, a series of line-wires, each connected to one part of said terminals, respectively, and a series of conductors connected to the other parts, respectively, a series of fixed connections connected
15 with the other end of said conductors, and a series of office-instruments connected to said fixed connections by intermediate conductors, substantially as described.

20 6. The combination, with the table A, having the insulated metal brackets provided with screws *f*, the plates *g*, arranged under said screws, the table B, provided with the insulated binding-posts, and intermediate short wires connecting the plate *g* with said binding-posts, respectively, substantially as described.
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7. In a telephone central-office system, the

combination, with a series of two-part terminals having their parts arranged for electric connection and disconnection, and a series of line-wires each connected with one part of said terminals, respectively, of a series of conductors connected to the other parts, respectively, and to office-instruments, and testing apparatus arranged for connection to either part of any of the two-part terminals, substantially as described, and for the purpose set forth. 30 35

8. The combination, with the table A, having the two-part terminals, the table B, having the insulated binding-posts, and the gangway C, arranged between the two tables, of the conducting-wires leading from said binding-posts under the gangway to one part of each of the two-part terminals, respectively, substantially as described. 40 45

In testimony whereof we affix our signatures in the presence of two witnesses.

HENRY B. LYTLE.
JOHN A. MCCOY.

Witnesses:

HARRY Y. DAVIS,
FRED W. ROYCE.