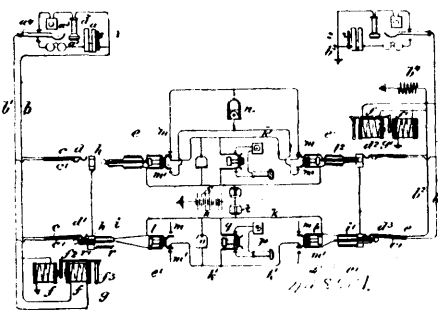
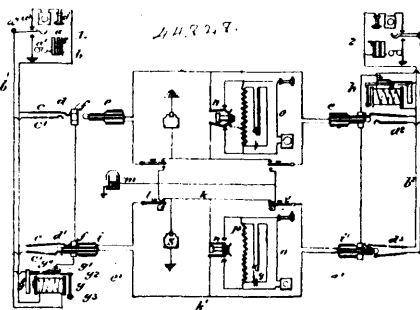


No. 44,827. Multiple Telephone Switchboard System.*(Système de planches multiples pour commutateurs.)*

The Bell Telephone Company of Canada, Montreal, Quebec, Canada, assignees of Charles E. Scribner, Chicago, Illinois, U.S.A., 5th December, 1893; 6 years.

Claim.—1st. The combination, with a line circuit extending from a substation to a central station, of an individual annunciator at the central station having two coils adapted to act differentially or oppositely through suitable mechanism upon an indicator, one of said coils being included in the said telephone line circuit and the other being included in a branch from one side thereof to earth, substantially as described. 2nd. The combination, with a telephone line extending from a substation to a central station, of an individual annunciator at the central station provided with two coils adapted to act differentially or oppositely upon an indicator, one of said coils being included in the said line-circuit, and the other being included in a branch, therefrom, to earth, and means for connecting a grounded source of electricity to that side of the line to which the grounded coils is attached, substantially as described. 3rd. In combination, with a telephone line circuit, spring-jacks, each having two contact-pieces connected to the different sides of the line, respectively, an individual annunciator having two electro-magnets adapted to act oppositely or differentially upon indicating mechanism, one of said electro-magnets being included in said line-circuit, and the other being included in a branch from one side of said line to earth, and a connecting-plug adapted for insertion into a spring-jack of the line and having a contact-piece connected to one terminal of a source of electricity whose other terminal is connected to earth adapted to make contact with that line-contact which is connected through a coil of the annunciator to earth, substantially as described. 4th. The combination, with a telephone line circuit extending from a substation to an exchange, of spring-jack at the exchange, each having two contact-pieces connected to the different sides of the line-circuit, respectively, an individual annunciator having two electro-magnets, one being included in the line-circuit and arranged to actuate a suitable indicator when energized, and the other being included in a branch from one side of the line-circuit and arranged to prevent the operation of said indicator when energized, a connecting-plug having two contact-pieces adapted to make contact with the line-contacts of a spring-jack, respectively, and a source of electricity having one of its terminals grounded and the other connected to that contact-piece of the plug which connects with the said grounded coil, substantially as described. 5th. The combination, with a telephone line-circuit extending from a substation to a central station, of spring-jacks at the central station, each having two contact-pieces connected to the two sides of line, respectively, an individual annunciator having two electro-magnets, one included in the line-circuit, adapted to actuate a suitable indicator when energized, and the other included in a branch from one side of the line to earth, and arranged to prevent the actuation of said indicator when energized, a connecting-plug having two contact-pieces making connection with the two line-contacts of a spring-jack, respectively, a source of electricity having one of its terminals connected to that contact-piece of the connecting-plug which connects with the grounded coil of the annunciator, and its other terminal connected to earth, and a clearing-out annunciator included in a conductor joining the different contact-pieces of the plug, substantially as described. 6th. In combination, with a telephone line extending from a substation, to a central station, spring-jacks at the central station, each having three insulated contact-pieces, two of said contact-pieces being connected to the two sides of the line-circuit, respectively, and the remaining contact-pieces of all the line-jacks being connected together, an individual annunciator having two electro-magnets arranged to act differentially upon a suitable indicating mechanism, one of said electro-magnets being included in the line-circuit and the other in a branch from one side of the line-circuit to earth, a connecting-plug having two contact-pieces, one adapted to make contact with one of the line-contacts of the jack, and with the extra contact or test-ring, and the other adapted to make contact with the remaining line-spring of the spring-jack, and a source of electricity having one of its terminals connected to that contact-piece of the connecting-plug which touches

the test-ring of the jack, and its other terminal connected to ground, substantially as described. 7th. In combination, two telephone lines extending from a substation to a central station, two groups of spring-jacks each spring-jack having two contact-pieces connected to the different sides of one of the lines, two individual annunciators, each having two coils arranged to act oppositely upon a common armature, one of said magnets of each annunciator being included in its particular line-circuit, and the other being included in a branch from one side of its particular line to earth, a connecting-plug in a spring-jack of each line, each plug having two contact-pieces making contact with the two line-contacts of the spring-jack, respectively, conductors joining like contact-pieces of the two plugs, a clearing-out annunciator in circuit between the different contact-pieces of the plugs, and a source of electricity having one of its terminals connected to the ground, and the other connected to the conductor joining those contact-pieces of the two plugs which make connection to the grounded coils of the individual annunciators, whereby the individual annunciators of two connected lines are rendered unresponsive to subsequent signalling-currents and the clearing-out annunciator is connected with the lines to respond to such subsequent signals, substantially as described.

No. 44,828. Multiple Switchboard System for Telephone Exchanges. *(Système de planches multiples pour commutateurs d'échanges de téléphone.)*

The Bell Telephone Company of Canada, Montreal, Quebec, Canada, assignee of Charles E. Scriber, Chicago, Illinois, U.S.A., 5th December, 1893; 6 years.

Claim.—1st. The combination, with an individual annunciator, of an electro-magnetic switch adapted to close the circuit when energized, a shunt or short circuit about the said annunciator normally open at two points, adapted to be closed at one point by the said electro-magnetic switch, and means for closing the short circuit at another point when connection is made with the line, substantially as described. 2nd. The combination, substantially as hereinbefore described, in a telephone switch board, of a series of main telephone circuits, a call receiving annunciator for each circuit, a shunt circuit round such annunciator, having gaps in its continuity at two points, a circuit closer for the said two gaps respectively, one operative by the act of making a connection, and the other responsive to the action of call currents traversing the line, whereby the call annunciator is prevented from responding to outgoing calls, or disconnection signals. 3rd. The combination, with a telephone line circuit, of an annunciator, included in circuit therewith, an electro-magnetic switch also in circuit between the different sides of line, adapted to close the circuit when energized, a shunt or short circuit about the said annunciator normally open at two points, but connected with the said electro-magnetic switch to be closed at one point when said switch is actuated, and means for closing the short circuit at the remaining break when connection is made with the line, substantially as described. 4th. The combination, with a telephone line circuit, of an individual annunciator included therein, contact points upon said annunciator adapted to be closed together when the magnet of the annunciator is energized, a shunt or short circuit about the annunciator normally open at two points, connected with the contact points of said annunciator so as to be closed at one point when said annunciator is energized, and means for closing the remaining break when connection is established with the line, substantially as described. 5th. The combination, with a telephone line extending from a substation to an exchange, of spring-jacks at the exchange, each having two contact-pieces connected with the different sides of the line-circuit, respectively, and a third contact piece insulated from the said line-contacts, a connecting plug inserted in the said spring-jack having two contact-pieces, one making contact with one of the line-contacts and the other with the remaining line-contact and the extra contact-piece of the spring jack, an individual annunciator having its electro-magnet coil included in circuit between the different sides of the line-circuit and provided with contact points adapted to be closed by the first movement of the annunciator and circuit connections joining one of the said contact points with the extra contact-piece upon all the spring-jacks of the line and the other point with that side of the