

number of switch keys corresponding to the number of substations, each key when actuated being adapted to contact with the telephone line a source of current of suitable character to actuate a corresponding signal receiving instrument of the telephone line, means controlled by the flow of current in the telephone line for holding either of said keys in its depressed or operative position when such key is once actuated, a switch at each substation for controlling the flow of current in the line, whereby by the release of a depressed key is effected by the operation of said switch, and locking mechanism brought into play during the actuation of either of said keys, for preventing the actuation of the other keys, substantially as described.

8th. In a central office apparatus for telephone switchboards, the combination with a plug and a cord conductor  $a^1$ , having a terminal contact  $b^1$ , on the plug, of a master key adapted to change the circuit of the cord conductor and connect the same with a contact  $g$ , a conductor 1, extending from the contact  $g$ , sources of current P. N. and switch keys  $o$ ,  $p$ , each adapted when actuated to operate the master key and to complete the circuit of conductor 1 to ground or other return conductor through one or the other of said sources of current, substantially as and for the purposes set forth.

9th. The combination with a telephone line and a plurality of sub-stations connected on the line, each of said sub-stations having a signal receiving instrument and a switch for controlling the flow of current in the line, of a conductor  $a$ , at the central office adapted to be connected with the telephone line, a master key having a contact  $g$ , associated therewith and being adapted when actuated to break the electrical continuity of the conductor  $a^1$ , and connect the end thereof with said contact  $g$ , a conductor 1, extending from the contact  $g$ , to the earth, a plurality of sources of signalling current of different characters corresponding to the signalling instruments of the sub-stations, a plurality of auxiliary keys adapted each to connect one of said sources of signalling current in circuit with the said conductor 1, and an electro-magnet controlling the said keys when depressed, the said magnet being included in the conductor 1, whereby a key may be maintained depressed until the switch at one of said sub-stations is operated, substantially as set forth.

10th. The combination with a telephone line, having two limbs and having a plurality of sub-stations connected therewith, each of said sub-stations having a switch adapted to control the flow of current across the two limbs, and a signal bell responsive to current of a distinctive character, of a plug, a cord circuit therefor having two strands terminating in corresponding contact surfaces of the plug and adapted thus to form extensions of the two limbs of the line, respectively, a master key adapted to break the continuity of the conductors and connect the severed terminals thereof with conductors 1, 2, means for maintaining the master key depressed, a magnet included in circuit with conductor 1, adapted when energised to release the master key, a plurality of sources of signalling current for operating the signal-bells at the several sub-stations, auxiliary keys each adapted to connect one of said sources of signalling current with one or the other of said conductors 1, 2, and so with one or the other of the limbs of the telephone line, and switch contacts closed in one or more of the idle auxiliary keys, connecting that conductor of the pair 1, 2, over which such current was not sent out, with a return path for the current, whereby the flow of current may be controlled by the switch at the called station, substantially as described.

11th. A party line ringing appliance for telephone switch boards comprising a master key and switch contacts operated thereby for changing the cord circuit connection, auxiliary keys each adapted when actuated to operate the master key, said auxiliary keys having subsidiary switch contacts operated thereby to connect suitable sources of ringing current with the master key, an electro-magnet  $k$ , controlling the keys when depressed, and means for energizing said magnet, substantially as set forth.

12th. The combination with a telephone line having a plurality of sub-stations connected on the line, each of said sub-stations having a signal bell, connected on the line, and a switch for controlling the flow of current in the line, of a signalling appliance at the central office, comprising a master key and auxiliary keys, each of said auxiliary keys having contacts connected with the contacts of the master key and being adapted when actuated to operate the master key, the switch contacts of the master key being adapted to control the circuit of the telephone line, sources of ringing current connected with the contacts of the auxiliary keys, whereby any station on the line may be signalled (by actuating a corresponding auxiliary key, and an electro-magnet controlled by the flow of current in the line for controlling the keys, whereby a key may be maintained depressed until the switch at one of the stations on the telephone line is actuated to control the flow of current in the line, substantially as set forth.

13th. A signalling appliance for telephone switch boards, comprising a master key and auxiliary keys, each of said auxiliary keys having contacts connected with contacts of the master key and being adapted when actuated to operate the master key, the said master key having switch contacts for changing the cord circuit connections, and sources of ringing current connected with the contacts of the auxiliary keys, substantially as and for the purpose set forth.

14th. A signalling appliance for telephone switch boards, comprising a master key and auxiliary keys, each of said auxiliary keys having contacts connected with contacts of the master key, the said master key having switch contacts for changing the cord circuit connections, sources of ringing current connected with the contacts of

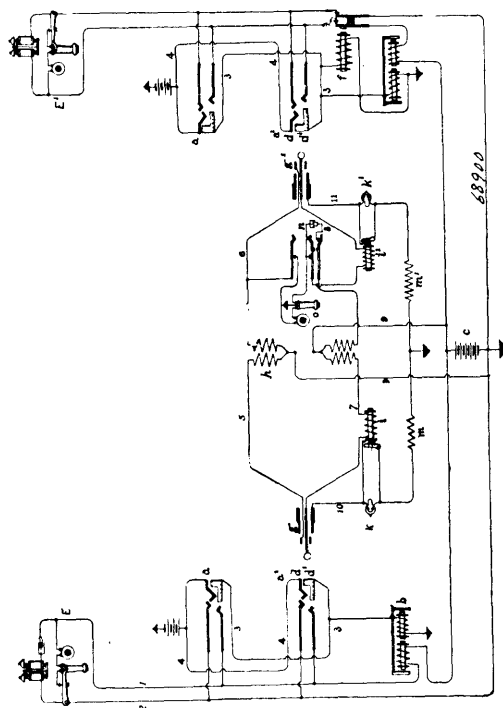
the auxiliary keys, locking mechanism brought into play during actuation of one of said auxiliary keys for preventing the actuation of another key, and an electromagnet for controlling the release of the keys when they are depressed, said electro-magnet being controlled by the flow of ringing current, substantially as set forth.

15th. A ringing appliance for telephone switchboards, comprising a master key and auxiliary keys associated therewith, said master key having a plunger  $e$  adapted to be depressed and having a spring  $e^2$  tending to restore the plunger to its elevated position, a plate  $e^1$  carried by the plunger of the master key and adapted to be engaged by the auxiliary keys, whereby either of said auxiliary keys will, when depressed, depress the plunger of the master key, and whereby the master key when restored by the spring, will restore the auxiliary keys, an electromagnet controlling the release of the keys, and means for energizing the electro-magnet, substantially as and for the purpose set forth.

16th. A ringing appliance for telephone switchboards, comprising a master key and auxiliary keys associated therewith, each of said auxiliary keys being adapted when actuated to operate the master key, switch contacts operated by the master key for altering the cord circuit connections, switch contacts operated by the auxiliary keys and connected with the master key, a source of alternating current  $G$  connected with one of the auxiliary keys, and sources of positive and negative pulsating current P. N. respectively, connected with others of the auxiliary keys, substantially as and for the purpose set forth.

#### No. 68,900. Telephone Switchboard.

(Echange de téléphone.)



The Bell Telephone Company of Canada, Montreal, Quebec, Canada, assignee of Frank Robert McBERTY, Evanston, Illinois, U.S.A., 4th October, 1900; 6 years. (Filed 3rd April, 1900.)

**Claim.**—1st. The combination with a telephone line, a spring jack forming a terminal of the line, and a plug and plug circuit for making connection with the springjack, of a local circuit terminating in normally separated opposed contacts of the springjack adapted to be crossed together through the sleeve of the plug, and a magnet in the local circuit, a branch of the local circuit terminating in said contact sleeve of the plug, a secondary supervisory signal in the last-mentioned branch, and a supervisory relay in the plug circuit controlling said signal, as described.

2nd. The combination with a telephone line, a self-restoring line annunciator thereof, a spring jack forming a terminal of the switchboard, and a plug and plug circuit for making connection with the spring jack, and a local battery circuit terminating in normally separated contact pieces of the spring jack adapted to be crossed together through a local contact piece of the plug, said local circuit including the restoring magnet of the annunciator, of a supervisory relay and a source of current in the plug circuit, a branch of the said local circuit in multiple with the restoring magnet, a secondary supervisory signal and a resistance coil in said branch, and a shunt of the secondary signal controlled by the supervisory relay, whereby the line annunciator is reset and the secondary signal is excited for control by the relay