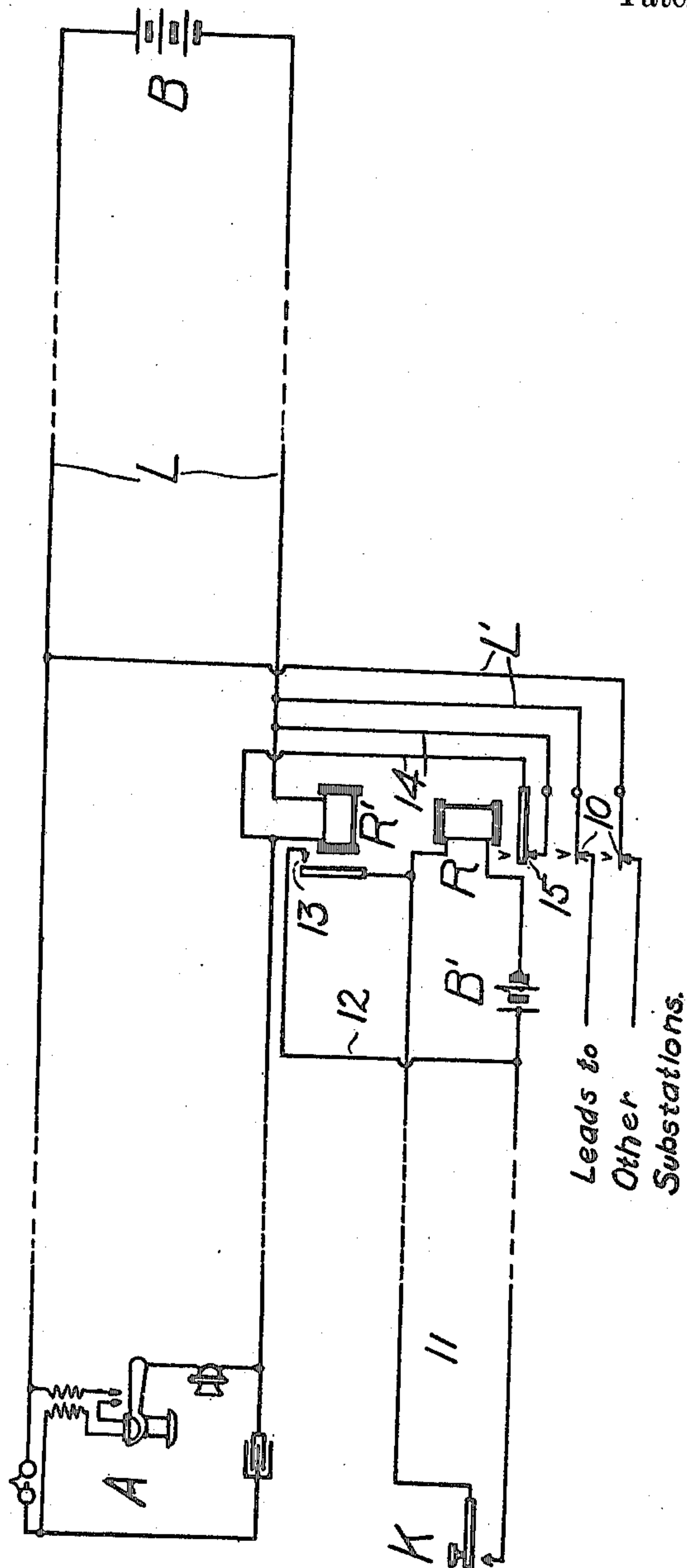


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 CONNECTING SYSTEM FOR TELEPHONE STATIONS.  
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1,207,836.

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Inventor:  
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 by *Thomas D. Lockwood*  
 Atty.



# UNITED STATES PATENT OFFICE.

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## CONNECTING SYSTEM FOR TELEPHONE-STATIONS.

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Specification of Letters Patent.

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*To all whom it may concern:*

Be it known that I, LEON D. BARROWS, residing at New York, in the county of New York and State of New York, have invented certain Improvements in Connecting Systems for Telephone-Stations, of which the following is a specification.

When telephone substations are connected to another station by a common line, as in an intercommunicating system having a trunk joining all the substations to a central station, it may be desired to provide for the connection of a particular substation to the trunk to the exclusion of the others, to insure secrecy of communication over the trunk with respect to this preferred substation. My invention furnishes means for accomplishing this end, which enables the subscriber at the preferred substation to ascertain whether others are using the trunk before disconnecting the associated substations therefrom, and also automatically restores the connection after the conversation is closed.

In the accompanying drawing the invention is illustrated diagrammatically in its application to an intercommunicating system, only such portions being shown as are necessary to its understanding.

A plurality of intercommunicating substations, of which only one is illustrated in detail at A, are joined by a trunk line L to battery B at a central station. The other substations of the system, of which there may be any suitable number, have communication with the trunk by way of leads L' through back contacts 10 of a disconnecting relay R. The winding of relay R receives current through a local circuit 11, including battery B' of the intercommunicating system and a nonlocking key or manually operable switch K at the preferred substation, this key being specially for initiating the exclusive connection of the preferred substation. A locking circuit 12 for the disconnecting relay R is closed at the front contact 13 of relay R', the winding of which is included in one side of the trunk. The completion of the locking circuit maintains the disconnecting relay energized independently of the key K. The winding of the trunk relay R' is normally short circuited through conductors 14 and the back contact 15 of the disconnecting relay.

When a subscriber at A wishes to use the trunk, he takes down the receiver and finding that the line is not busy may depress the key K. Relay R is thereupon energized from battery B' by way of circuit 11, breaking the trunk leads L' at contacts 10 and thereby cutting off the other intercommunicating substations from the trunk. By the opening of contact 15 the short circuit 14 of relay R' is severed, permitting the operation of said relay by current from central station battery B over the trunk and through the contacts of the hook switch at substation A. The locking circuit 12 of the disconnecting relay is completed at contact 13 of the trunk relay, so that when the subscriber at A releases the key K, relay R continues to hold its back contacts open and therefore maintains the disconnection of the other substations. The contacts 13 and 15, it will be seen, enable the relays R and R' to mutually control each other's action. At the termination of the conversation, the return of the receiver to its hook at substation A breaks the circuit of trunk relay R', which, releasing its armature, severs the locking circuit of the disconnecting relay R. The latter at contacts 10 restores the associated substations to their normal connection with the trunk, and at contact 15 applies the short circuit to the trunk relay. The system is now in condition for a call from any of the substations.

I claim:

1. A plurality of associated telephone stations, a line for connecting said stations to another station, and a plurality of electro-mechanisms belonging to one of the associated stations and being adapted to vary the connection of such stations to the line, one of the electro-mechanisms being energized over the line and the other locally.
2. A plurality of associated telephone stations, a line for connecting said stations to another station, and a plurality of electro-mechanisms belonging to one of the associated stations and being adapted to vary the connection of such stations to the line, one of the electro-mechanisms being energized over the line and the other locally, the first energized electro-mechanism controlling the operation of the other.
3. A plurality of associated telephone stations, a line for connecting said stations to



- another station, and a plurality of electro-mechanisms exclusively belonging to one of the associated stations and being adapted to vary the connection of such stations to the line, and manually operable means at the station for controlling one of the electro-mechanisms, said electro-mechanism when thus energized controlling the operation of another.
4. In a telephone system, a plurality of substations, a trunk line connecting the substations with another station, a relay belonging to one of the substations and having its winding connected to the trunk, another relay, and a local circuit for the last named relay including contacts of the trunk relay, said relays being provided with contacts for varying the connection of the substations with the trunk.
5. In a telephone system, a plurality of substations, a trunk line connecting the substations with another station, a relay belonging to one of the substations and having its winding connected to the trunk, another relay, a local circuit for the last named relay including contacts of the trunk relay, said relays being provided with contacts for varying the connection of the substations with the trunk, and a manually operable contact device included in the circuit with one of the relays.
6. In a telephone system, the combination with a plurality of substations, of a line for connecting said substations to another station, and a plurality of electro-mechanisms at one substation for varying the connection of the other substations to the line, said electro-mechanisms exercising mutual control.
7. In a telephone system, the combination with a plurality of substations, of a line for connecting said substations to another station, a plurality of electro-mechanisms for disconnecting from the line all but a particular substation, and means at said particular substation for controlling the electro-mechanisms, said electro-mechanisms also controlling one another.
8. In a telephone system, the combination with a plurality of substations, of a line for connecting said substations to another station, a plurality of electro-mechanisms for disconnecting from the line all but a particular substation, and manual means at said particular substation for controlling the energization of one of the electro-mechanisms, another of the electro-mechanisms continuing such energization and being energized as the result of the operation of the first mentioned electro-mechanism.
9. In a telephone system, the combination with a plurality of substations, of a line for connecting said substations to another station, and a plurality of electro-mechanisms energized by current locally and over the line for varying the connection of the substations to the line, said electro-mechanisms exercising mutual control.
10. In a telephone system, the combination with a plurality of substations, of a line for connecting said substations to another station, a plurality of electro-mechanisms for disconnecting from the line all but a particular substation, and manual means at said particular substation for controlling the energization of one of the electro-mechanisms by current locally, another of the electro-mechanisms continuing such energization and being energized over the line as the result of the operation of the first mentioned electro-mechanism.
11. In a telephone system, the combination with a plurality of substations, of a line for connecting said substations to another station, a plurality of electro-mechanisms for varying the connection of the substations to the line, special means at a substation to be connected for controlling the action of said electro-mechanisms, and means operable in the ordinary use of the substation apparatus for controlling the restoration of said electro-mechanisms to normal.
12. In a telephone system, the combination with a plurality of substations, of a line for connecting said substations to another station, a plurality of electro-mechanisms for varying the connection of the substations to the line, and a manually operable switch at a substation to be connected for controlling the action of said electro-mechanisms, the restoration of said electro-mechanisms being controlled by the substation switch hook.
13. The combination with a plurality of telephone substations and a line therefor, of two relays at one of said stations governing the connection of the other substations to the line, each of said relays controlling in its contacts the passage of current to the other relay.
14. The combination with a plurality of telephone substations and a line therefor, of two relays governing the connection of the substations to the line, a short circuit for one of said relays controlled by the other, and a locking circuit for the last named relay controlled by that first mentioned.
15. The combination with a plurality of telephone substations and a line therefor, of a relay for governing the connection of certain of the substations to the line, means situated at a substation for controlling said relay, and a relay included in the line and also controlling said relay.
16. The combination with a plurality of telephone substations and a line therefor, of a relay for governing the connection of certain of the substations to the line, means



situated at a substation for controlling said relay, and a relay included in the line, also controlling said relay, and energized upon the operation of the last named relay.

5 17. A trunk line, a preferred substation directly connected thereto, other substations, a disconnecting relay through the back con-  
10 tacts of which said other substations are joined to the trunk, a relay having its wind- ing included in the trunk, an initiating cir-  
15 cuit including a key at the preferred sub- station for energizing the disconnecting re- lay, a short circuit for the trunk relay ex- tending through a back contact of the dis-  
connecting relay, and a locking circuit for the disconnecting relay including a front contact of the trunk relay.

18. A plurality of associated telephone stations, a line for connecting said stations

to another station, and a plurality of elec- 20 tro-mechanisms belonging to one of the associated stations and being adapted to vary the connection of such stations to the line, and a plurality of manually operable means at the station, one of which controls 25 one of the electro-mechanisms, said electro-mechanism when thus energized preparing another of said mechanisms for control by another of said manually operable means.

In testimony whereof I have signed my 30 name to this specification in the presence of two subscribing witnesses, this fourteenth day of December, 1915.

LEON D. BARROWS.

Witnesses:

WILLIAM H. HORNER,  
CHAS. C. FRITZ.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."