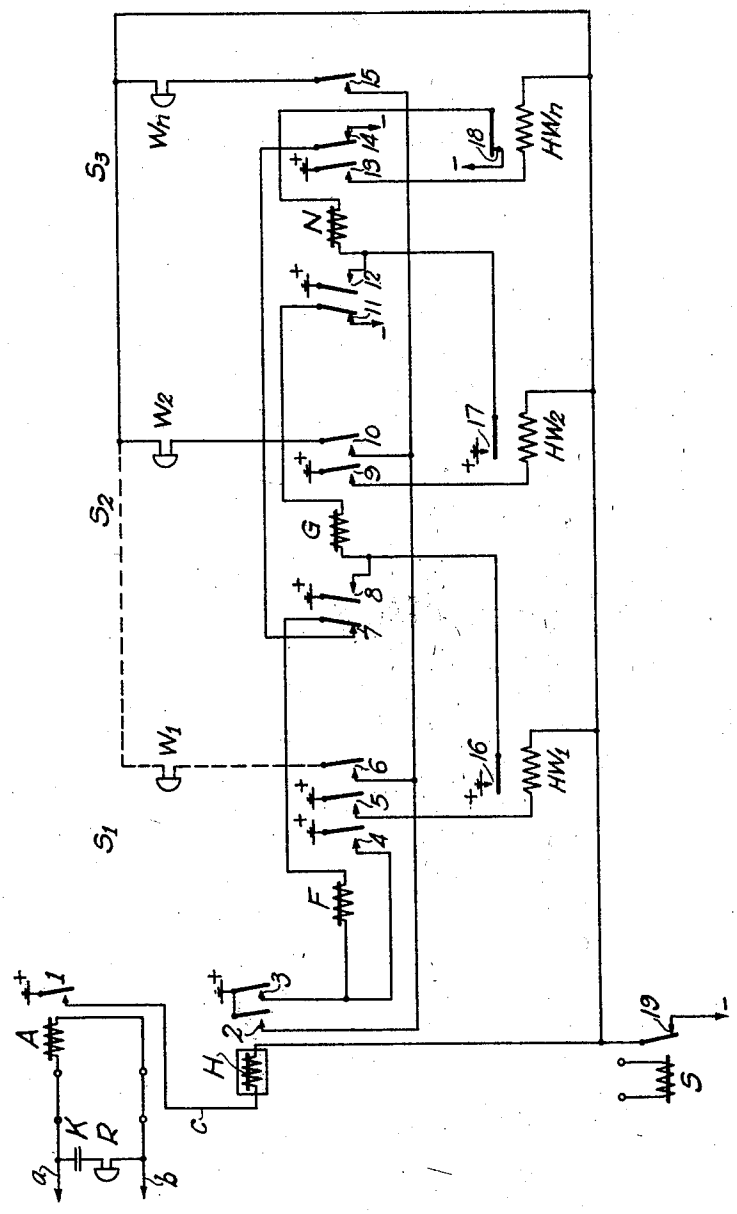
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INTERCOMMUNICATION TELEPHONE SYSTEM

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INTERCOMMUNICATION TELEPHONE SYSTEM

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The usual intercommunication telephone systems for local and main exchange traffic are provided with a main station for answering main exchange calls, this main station being provided with a main exchange bell, so that only at that station can a signal be given to notify an incoming call from the main exchange. Therefore in such systems it is essential that some one must always be ready at the main station to answer calls in order that a satisfactory and reliable service can be provided.

But it is often impossible for the attendant at the main station to remain at her position constantly, therefore according to the invention, every extension station is provided with a main exchange bell, and by means of special switching means provided at every extension station all the main exchange bells are rung in succession until the call has been answered, at one of the stations. That extension station then takes over the work of the main station and itself sets up the connection to the wanted extension station. Preferably the arrangement is such that a relay connected to the main exchange line effects over a relay specially provided for the purpose the successive connecting up of switching relays provided at all the stations and also prepares the circuit of the exchange bell. A time relay associated with every station effects the connecting up of the switching relay of the next extension station, which disconnects the switching relay and thus also the bell of the preceding station.

The invention will be better understood by referring to the following description which taken in conjunction with the accompanying drawing discloses a preferred method of carrying it into effect.

An incoming call over the main exchange line *a*, *b* operates the relay A, which closes its contact 1 in the lead *c* thereby operating the slow acting relay H which is connected in this lead *c*.

The stations S 1, S 2 and S 3 of these the station S 1 being assumed to be the main station, are provided with switching relays F, G and N. Relay F of the main station has contacts 4, 5 and 6; relay G is provided with contacts 7, 8, 9 and 10; while relay N of the last extension station has the contacts 11, 12, 13, 14 and 15. Contacts 7, 11 and 14 are back contacts, one additional contact being required for every additional extension station. Every station also has a timing device which can comprise for example a thermostat with a winding such as HW1. The thermostat at the main station S 1 is provided with a front contact 16, while at the intermediate extension stations such as S 2 it is provided with a front contact 17 except in the last extension station S3, where it is provided with a back contact 18. A relay S controlled by a main exchange key serves to switch off the battery connection to main exchange bells located at the extension stations and for that purpose is provided with a back contact 19.

If the bell at the main station is to ring as long as the call remains unanswered, this being advisable where the attendant at the main station is liable to be absent for only a short time, the main station is provided with an alternating current bell R connected directly across the main exchange line leads *a*, *b* in series with a condenser K. In this case the bell W 1 is omitted.

Relays A and H pull up their contacts 1, 2 and 3 when an impulse of ringing current is received over the main exchange line, contact 3 closes a circuit from (+) over contact 3, winding of relay F, back contacts 7 and 14 to (−). Relay F thereupon operates and closes its contacts 4, 5 and 6, thereby establishing a circuit from (+) over contact 2, contact 6, bell W 1 and contact 19 of relay S to (−). At the same time contact 4 closes a locking circuit for relay F over contacts 7 and 14; while contact 5 closes a circuit from (+) over winding HW 1 and contact 19 to (−). After a short interval, during which the bell W 1 rings, the thermostat with winding HW 1 closes its contact 16 thus causing relay G of the extension station S 2 to be connected up in a circuit from (+) over contact 16, winding of relay G, back contact 11 to (−).

Relay G now operates and opens contact 7, thus disconnecting the right-hand terminal of relay F. The latter therefore opens its contacts, thus interrupting the circuit of the

bell W1 and disconnecting the winding of HW 1 of the thermostat. At contact 8, relay G locks itself in a circuit from (+) over contact 8 and back contact 11 to (−); at contact 9 the thermostat winding HW2 is connected up over: (+) 9, winding HW2, 19, (−); contact 10 closes the circuit of bell W 2 prepared at the contact 2 of the slow acting relay H, hence the main exchange ringing signal is now heard at the second station. If the call is not answered at this station within a short interval, the thermostat operates and by closing contact 17 causes the bell W2 to be disconnected and the bell of the next extension station to be connected up in a manner similar to that already described.

When the call reaches the last station S3 the relay N is connected up in the same manner as at the preceding stations. Relay N opens contact 11, thereby disconnecting the relay of the preceding station; and closes its contact 12, thereby completing a locking circuit for itself. At contact 15 a circuit is completed for the bell W*n*, and at contact 14 the circuit of relay F of the main station is opened, whereupon this relay falls away. Contact 13 is closed at the same time and completes the circuit of the thermostat winding HW *n* which operates after a short interval and at its back contact 18 disconnects the right-hand terminal of relay N. Relay N releases and again connects up relay F which operates and again connects up the bell W 1. This continuous transfer of the main exchange signal through all stations continues until at one of them the receiver is taken down and the main exchange key is operated, whereupon relay S energizes and at contact 19 opens the circuit of the bells so that they cannot ring any more. The answering subscriber then sets the main exchange caller in communication with the wanted subscriber.

As previously mentioned, the bell W 1 can be omitted from the main station S 1 and in place thereof the bell R can be fitted in the main exchange line, where it rings so long as calling takes place. But the relays at the different stations operate in the same manner as that described above.

What is claimed is:—

1. In a telephone system, a local exchange, a main station and a plurality of extension stations in said local exchange, a main exchange having a trunk line extending to the main station for calling the same, a call signal at said main station and each of said extension stations, means responsive to a call from said main exchange for operating the call signal at said main station, means at said main and extension stations for automatically operating the call signals at each of said stations in succession until the call from said main exchange is answered, and means for repeating the successive operation of the call signals in case the call is not answered.

2. In a telephone system, a main exchange and a local exchange, a main station and a plurality of extension stations at said local exchange, means in said main exchange for calling said local exchange, a call signal at each of said stations, a switching relay at each of said stations for operating the associated call signal, means controlled by said switching relays for operating the switching relays of the next stations in succession to operate their associated call signals one after another, and a slow operating relay at said main station responsive to a call from the main exchange for initiating the operation of said switching relays.

3. In a telephone system, a main exchange and a local exchange, a main station and a plurality of extension stations at said local exchange, means in said main exchange for calling said local exchange, a call signal at said main and extension stations, a switching relay at each of said stations for controlling the associated call signal, and a relay at the main station responsive to a call from the main exchange for operating said switching relays in succession to operate their associated call signals.

4. In a telephone system, a main exchange and a local exchange, a main station and a plurality of extension stations at said local exchange, means in said main exchange for calling said local exchange, a call signal at said main station and at each of said extension stations, a switching relay at each of said stations for operating its associated call signal, a timing device at each of said stations controlled by the associated switching relay, and means controlled by said timing devices responsive to a call from said main exchange for operating the switching relays of the next succeeding stations in succession to operate the call signals.

5. In a telephone system, a main exchange and a local exchange, a main station and a plurality of extension stations at said local exchange, means in said main exchange for calling said local exchange, a call signal at said main and each of said extension stations, a switching relay at said main and each of said extension stations for operating the associated call signal, means responsive to a call from said main exchange for operating the switching relay at said main station, means responsive thereto for operating the switching relays of said extension stations in succession, and means responsive to the operation of said relays for releasing the preceding switching relay.

6. In a telephone system, a main exchange and a local exchange, a main station and a plurality of extension stations at said local exchange, means in said main exchange for calling said local exchange, a call signal at

said main and each of said extension stations, a switching relay at each of said stations for operating its associated call signal responsive to a call, a timing device at each of said stations operated by the associated switching relay to close the circuit of the switching relay of the next successive station to operate the call signal thereat, and an answering relay responsive when the call is answered for releasing said timing devices and said call signals.

7. In a telephone system, a main exchange, a local exchange connected to said main exchange, a main station and a plurality of extension stations at said local exchange, call signals at each of said stations, means at said main station responsive to a call from the main exchange for operating the call signal thereat, means for automatically operating the call signals at said extension stations in succession, and means for repeating the successive operation of the call signals until the call is answered.

8. In a call signalling system, a main station and a plurality of extension stations, call signals at each of said stations, means for operating the call signal at said main station, means for operating the call signals at said extension stations in succession, and means for repeatedly operating the call signals in succession.

9. In a call signalling system, a main station and a plurality of extension stations, call signals at each of said stations, means for answering said call signals, means for operating said call signals at each of said stations in succession, means for repeating the successive operation of said call signals and means responsive to the answering of the call signal at said stations for disconnecting said call signals.

10. In a call signalling system, a main station and a plurality of connecting extension stations, call signals at each of said stations, means for operating the call signal at said main station and all of said extension stations in succession, and means at each of said stations for automatically disconnecting the call signal of the preceding station and operating the call signal of the next succeeding station.

In testimony whereof I affix my signature.

WALTER FEIND.