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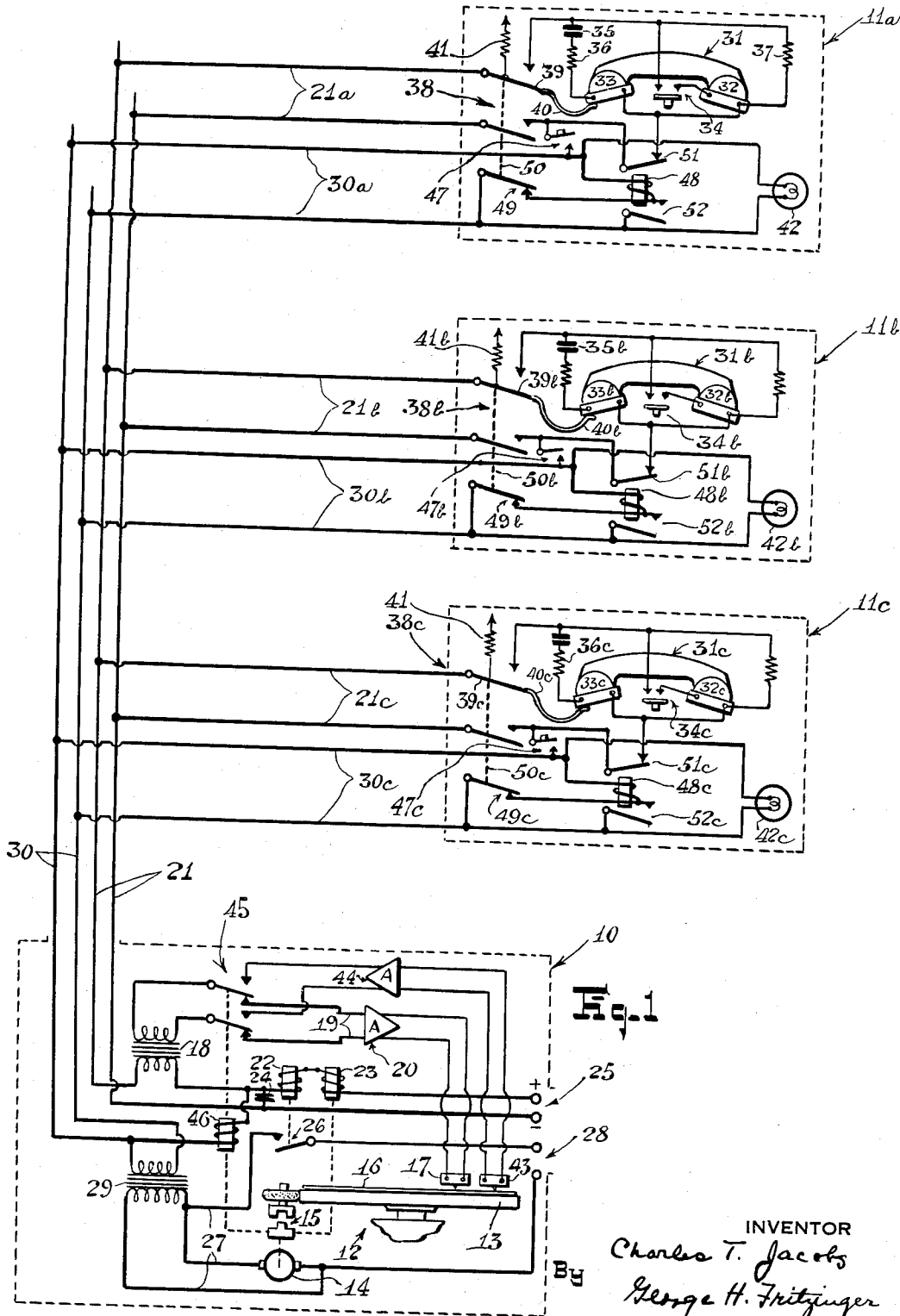
C. T. JACOBS

2,740,846

MULTISTATION REMOTELY-CONTROLLED PHONOGRAPHIC SYSTEM

Original Filed Nov. 28, 1951

2 Sheets-Sheet 1



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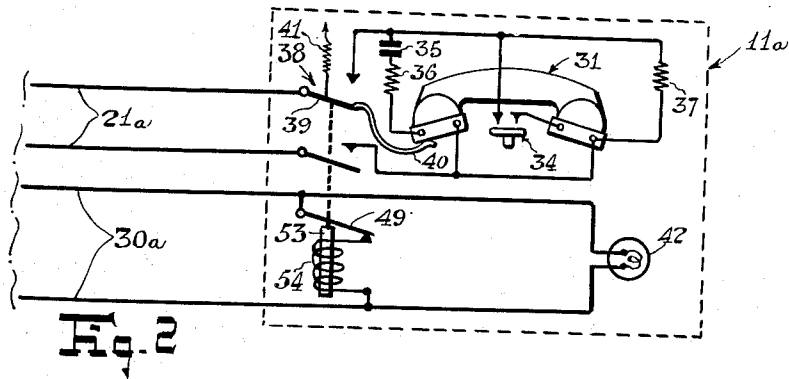
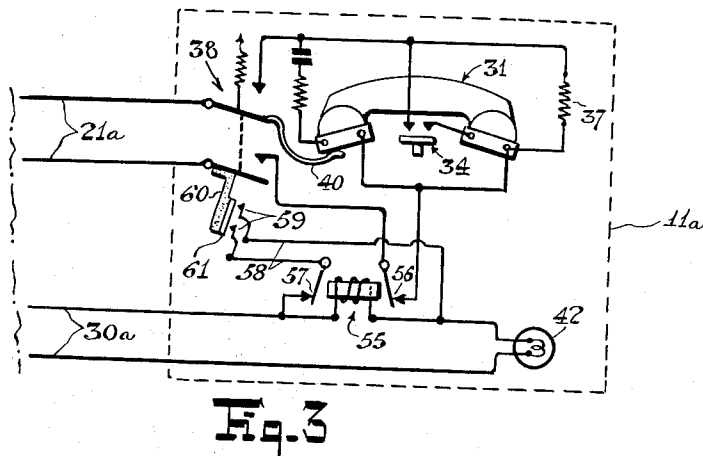
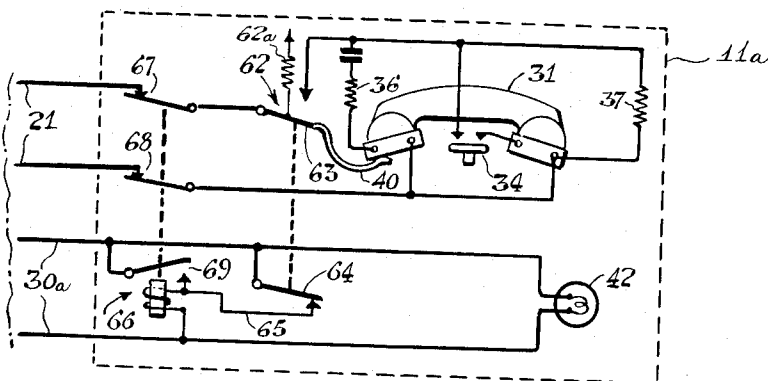
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MULTISTATION REMOTELY-CONTROLLED PHONOGRAPHIC SYSTEM

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Continuation of application Serial No. 258,576, November 28, 1951. This application May 21, 1954, Serial No. 431,536

15 Claims. (Cl. 179—100.1)

This application is a continuation of my application Serial No. 258,576, filed November 28, 1951, and entitled "Multistation Remotely-Controlled Phonographic System."

This invention relates to an improved and to improvements in multistation remotely-controlled phonographic systems for insuring privacy, and non-interference from others, to each user of the system, the term "user" being herein employed to mean the first of the operators at the remote stations to activate the phonographic system for use.

The invention is especially applicable to dictation-recording systems of the character described in the pending Somers et al. application Serial No. 247,244, filed September 19, 1951 and entitled "Remotely-Controlled Dictation-Recording System," but no unnecessary limitation of the invention to such systems is intended.

The dictation-recording system above referred to comprises a plurality of remote operators' or dictators' stations connected in parallel to a single recording and reproducing machine, the connections to each remote station comprising four leads two of which constitute a combined communication and control circuit and the other two a signal circuit. In such systems, warning is given to all idle remote stations by way of the signal circuits when the system is in use, but such warning does not preclude others at idle stations from listening in to dictation being recorded or reproduced, or from talking into their microphones or from manipulating their controls to interfere with the use of the system.

An object of my invention is to provide improvements in multistation phonographic systems of the character described which assure privacy, and non-interference from others, to each user of the system.

Another object of my invention is to accomplish these functions by electrical apparatus at each remote station controlled according to whether or not activation of the phonographic system is initiated at that station.

Another object is to accomplish these functions by means of apparatus at each remote station operable by the current in one of the stated (communication and signal) circuits and controlled according to whether or not energization of the other of said circuits is initiated at that station.

Another object is to accomplish these functions by means of apparatus operable by the signal current.

A still further object is to provide means at each remote station for disabling the communication apparatus at that station whenever the respective signal circuit is energized in response to an activation of the phonographic system at another remote station.

These and other objects and features of my invention will be apparent from the following description and the appended claims.

In the description of my invention reference is had to the accompanying drawings, of which:

Figure 1 is a fractional diagrammatic showing of a remotely-controlled phonographic system of the character

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mentioned, wherein there is embodied a preferred form of my invention for achieving privacy for each user of the system; and

Figures 2, 3 and 4 are diagrammatic showings of different forms of remote stations for a multistation phonographic system of the character described, illustrating second, third and fourth embodiments of my invention.

The present invention may be utilized in either recording and/or reproducing systems of the multistation type to achieve privacy for each user of the system. By way of illustration, the invention is particularly described in connection with a dictating system of the character described in the abovementioned Somers et al. application. However, only those portions of this dictating system are shown which need be considered for the purposes of the present invention. This dictating system comprises a home or attendant's station 10 and a plurality of remote dictators' stations of which three (referred to as 11a, 11b, and 11c) are shown by way of example. At the attendant's station 10 there is a dictating machine 12 fractionally shown as comprising a turntable 13 driven by a motor 14 through a clutch 15 (diagrammatically shown). The turntable carries a record disc 16 engaged by a recording unit 17. Audio speech-representing currents are fed to the recording unit via an audio transformer 18 and circuit 19 including an amplifier 20.

The attendant's station has a communication circuit 21 leading therefrom which serially includes the primary of the audio transformer 18. This communication circuit is preferably also a control circuit, and for the latter purposes it includes two serially-connected control relays 22 and 23. Audio currents in the communication circuit are by-passed around these relays by a condenser 24. The communication circuit is energized from a low-voltage D.-C. power source (not shown) which is connected to the terminals 25 marked + and - respectively. The relays are adapted to operate at different levels of direct current established selectively at the dictators' stations, as will appear. Relay 22 has contacts 26 operated at the lower current level to close a power circuit 27 serially including the motor 14. This power circuit is energized from an A.-C. source (not shown) which is connected to the terminals 28. The second relay 23 is adapted to operate at the higher level of current and controls the clutch 15. These relays may of course perform still other control functions which need not, however, be herein described. For the present purposes, it will be understood that the motor 14 is started when the relay 22 is operated and the clutch 15 is engaged to start rotation of the turntable 13 when the relay 23 is operated. An energization of the communication circuit 21 at the lower current level, with the resultant starting of the motor 14 or other conditioning of the machine for immediate start-stop operation, is herein considered as an activation of the dictating system.

In the power circuit 27 and in shunt with the motor 14 is a voltage stepdown transformer 29 the secondary of which is connected to two outgoing leads constituting a signal circuit 30 for the recording system. This signal system is accordingly energized whenever the dictating system is activated.

The dictators' stations 11a, 11b and 11c, which are herein also referred to as the remote stations, are identical and a description of the station 11a will suffice for all three. Elements of the other stations 11b and 11c corresponding to those of station 11a are given the same reference characters with the suffix letters b and c respectively.

The station 11a has a handpiece 31, for example, of the usual telephone variety including, as transducer elements, a carbon button microphone 32 and a receiver 33. The microphone 32 is connected in a branch 21a of the com-

munication circuit 21 through a normally-open manual switch 34 positioned typically on the handpiece, and the receiver unit is connected in this branch in parallel with the microphone through a condenser 35 and resistor 36. Also in this branch in parallel with the microphone is a resistor 37. The station 11a is provided further with an on-off double-pole station switch 38 connected in series in the respective lines of the branch circuit 21a leading to the dictator's station. The station switch contacts are closed and opened respectively as the station switch is moved to "On" and "Off" positions. At least one of the movable pole elements of this station switch, herein referred to as 39, is associated with a support for the handpiece 31; for example, this pole element may have a hook-shaped end portion 40 adapted to receive the handpiece and to support it in idle position while the station is not in use. The pole element 39 is urged upwardly by a spring 41 to cause the station switch to seek normally a closed position, but when the handpiece is placed on the support 40 the weight thereof is sufficient to overcome the spring and to hold the station switch open. In Figure 1, the station switch 38 is shown in open position as though the handpiece were resting on its support.

The signal circuit 30, like the communication circuit 21, has a branch 30a leading to the remote station 11a and serially including at that station a signal lamp 42 for producing a busy signal whenever the recording system is in an activated condition.

The communication circuit 21 has other branches 21b and 21c leading to the stations 11b and 11c respectively; likewise, the signal circuit 30 has branches 30b and 30c leading to the stations 11b and 11c. Thus, stations 11b and 11c are parallel with station 11a and are permanently connected to the attendant's station 10. A dictator at any station may therefore activate the dictating system as will be apparent by the following description with reference to station 11a.

Upon picking up the handpiece 31, the station switch 38 is closed to cause energization of the communication circuit from the D.-C. power source through the resistor 37. The direct current which is so established in the communication circuit causes the relay 22 to operate to start the motor 14 and to close the signal circuit 30 to cause busy signals to be given at all dictators' stations. Upon pressing the manual switch 34, the carbon button microphone 32 is connected also across the communication circuit in shunt with the resistor 37 to increase the level of direct current wherefore to cause the relay 23 also to operate. Operation of this relay causes the clutch 15 to be engaged to start record rotation and to enable recodation of dictation spoken into the microphone.

The receiver 33 is provided, along with other apparatus principally in the dictating machine, to enable the dictator to listen to a reproduction of his recorded dictation. The other apparatus for this purpose may comprise a reproducer unit 43 engaging the recording disc at a trailing distance back of the recording unit 17, an amplifier 44 connected to the reproducer unit, and a switch 45 for selectively connecting the audio transformer 18 either to the recording amplifier 20 or to the reproducing amplifier 44. (Alternatively, one amplifier may be used for both recording and reproducing purposes with suitable switching means, as is well known in the art.) The switch 45 is controlled by a relay 46 connected in a circuit leading from the positive side of the communication circuit 21 through one side of the signal circuit to the remote station, then through a normally-open manual switch 47 and the station switch 38, and next back through the negative side of the communication circuit to the aforementioned D.-C. power source. The relay 46 also controls the clutch 15 to start the turntable whenever the manual switch 47 is closed. Thus, upon closing the manual switch 47 while the handpiece is removed from its support, the relays 22 and 46 are both operated to cause the motor 14 to run, the reproducer 43 to be connected

through the amplifier 44 and audio transformer 18 to the communication circuit 21, and the clutch 15 to be engaged, wherefore to enable recorded dictation to be reproduced through the receiver 33.

From the foregoing description, it is apparent that at the station where activation of the dictating system is initiated, energization of the communication circuit precedes that of the respective signal circuit, and that at all other dictators' stations the signal circuits are energized while the branch communication circuits to those stations are still open. In the present type of dictating system without my invention, each branch communication circuit is energized as soon as the respective handpiece is removed from its support while the system is in use. Thus, a person at any station may listen to the dictation or reproduction of the one using the dictating system. In accordance with my invention, I provide a disabling means at each dictator's station for maintaining open the respective branch of the communication circuit leading to that station whenever the signal circuit at that station is energized in response to an activation of the dictating system at another dictator's station. However, this disabling means at each dictator's station is so controlled in timed relation with the on-off station switch at that station that the disabling means itself is rendered inoperative whenever activation of the system is effected by the station switch at that station or, in other words, whenever energization of the communication circuit at that station precedes energization of the respective signal circuit.

The disabling means at the station 11a comprises a relay 48 connected across the signal circuit branch 30a through a switch 49 operable by the on-off station switch 38 through an insulating connection 50 thereto. The switch 49 is so arranged that it is closed while the station switch 38 is open, and vice versa. However, the switch 49 is timed to open before the station switch 38 closes as the handpiece is removed from its support 40. The relay 48 has a pair of contacts 51 connected serially in the branch communication circuit 21a, which contacts are normally closed and are opened as the relay 48 is energized. Also this relay has a pair of normally open contacts 52 which parallel the switch 49 and which serve as holding contacts for the relay.

As the dictator at station 11a removes the handpiece from its support to cause station switch 38 to close, the contacts 49 break before the switch 38 closes and, consequently, the relay 48 remains non-energized notwithstanding that the signal circuit now becomes energized. The switch contacts 51 therefore remain closed to cause the branch 21a of the communication circuit at that station to be energized and the system to be activated for use from that station. At each of the remaining idle stations, for example at station 11b, the switch 49b in the circuit of the relay 48b remains closed in view of the handpiece there resting on its support 40b. Consequently, the relay 48b is energized concurrently as the system is activated by the dictator at station 11a. Operation of the relay 48b opens the switch contacts 51b to disable the station. As relay 48b is energized, holding contacts 52b are closed to cause this relay to remain energized, even if the contacts 49b are next opened, so long as the signal circuit 30b is energized. Thus, if a dictator at station 11b picks up the handpiece 31b while his busy signal is on, either through inadvertence or for the purpose of listening secretly to the private dictation of a user of the system at some other station, the relay 48b remains energized to hold open the branch 21b of the communication circuit and to prevent any such eavesdropping. Also, such dictator at station 11b cannot speak into the communication circuit to record the same and mutilate dictation being recorded at the station 11a, nor can he interfere with the control of the system, all because his branch communication circuit is open. As soon as the one using the system—i. e., the one who initiated activation of the system—hangs up his hand-

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piece, all circuits will be deenergized to restore the system to its initial unactivated condition. This restoration will occur whether or not the handpiece is removed from its support at another station at the time the user hangs up. For instance, the branch of the communication circuit leading to the user's station is the only complete one while the system is in use notwithstanding that the station switch may be closed at another station since the disabling relay at such other station will maintain the respective branch open. When the user hangs up, the communication circuit will be momentarily opened even though the handpiece is removed at another station, and in response to that opening of the circuit the disabling relay at the other station will be restored to unoperated position. As soon as this disabling relay is so restored, however, the branch circuit at that other station is closed to reactivate the system. The disabling relay at that other station remains unoperated because the respective handpiece is now removed from its support. Thus, when a user hangs up while another has his handpiece off its support, the other will take over control after a moment's interruption equal to the time required for the respective disabling relay to return to unoperated position after the current thereto is cut off. If the handpiece is removed at each of several stations when a user hangs up, that station will take over control whose disabling relay is the faster in restoring itself to unoperated position.

In the second embodiment of my invention illustrated in Figure 2, the station switch 38 and associated switch 49 are provided with an armature 53 extending as from the pole element of the switch 49. Surrounding this armature is an actuating solenoid coil 54. The solenoid coil is connected across the respective branch of the signal circuit through the switch 49. If the signal circuit is energized while the switch 49 is closed, the solenoid coil holds the switch 49 closed and the station switch 38 open after the handpiece is removed from its support. If the solenoid is not energized as the handpiece is removed, the switch 49 is opened and the station switch 38 is closed in the sequence named by the spring 41. Thus, if the dictating system is in unactivated condition and the handpiece is removed from its support, the station switch is closed by the respective spring 41 and the system is activated, but since the switch 49 breaks before the station switch 38 closes, the respective disabling solenoid remains not energized and has no influence on the system at the user's station. However, at all other stations the disabling solenoids are energized as soon as the system is activated. When a person removes the handpiece at one of these other stations, the solenoid remains energized and holds the station switch in off position to maintain that branch of the communication circuit open and to prevent therefore that person from listening to the dictation of the one using the system. When the user hangs up, the signal circuit is deenergized, at least momentarily as described above in connection with my first embodiment, and the station switch at the other station will be immediately closed if the handpiece is there already removed or will close as the handpiece is subsequently removed. The person at the other station will thus activate the system to enable recordation or reproduction at his station. Thus, privacy is achieved for each user of the system in the same general way as in my first embodiment hereinbefore described.

The embodiment of my invention shown in Figure 3 is similar to that shown in Figure 1 except that the disabling relay, here referred to as 55, is in the respective branch of the signal circuit in series with the signal lamp 42. This disabling relay has normally-closed contacts 56 in the respective branch communication circuit and has a second pair of normally-closed contacts 57 connected in a shunt circuit 58 across the relay coil. This shunt circuit also includes a pair of contacts 59 controlled by the double-pole station switch 38. For example, one pole of

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this station switch may have an insulating extension 60 carrying a bridging member 61 which is spaced slightly from the contacts 59 to open the shunt circuit when the station switch is in "Off" or open position, the position it occupies when the handpiece 31 is resting thereon. As the handpiece is removed, these contacts 59 are engaged by the bridging member to close the shunt circuit prior to the closure of the station switch contacts.

The operation of this third embodiment is as follows: 10 When the user removes the handpiece, the contacts 59 are closed prior to the closure of the station switch contacts to assure that the disabling relay is shorted prior to energization of the respective branch signal circuit. The disabling relay therefore remains idle and has no influence on 15 the communication circuit. On the other hand, if the branch signal circuit is energized in response to the removal of the handpiece at another of the remote stations, the resultant energization of the signal circuit will cause operation of the disabling relay in view of the shunt circuit 58 being now held open by the station switch. The operation of the disabling relay causes the contacts 56 to 20 open to disable the respective branch communication circuit. Also, energization of the disabling relay causes contacts 57 to open. Thus, if the handpiece is removed while 25 the respective branch signal circuit is already energized, the resulting closure of the contacts 59 has no influence because the shunt circuit is maintained open by the contacts 57 until the signal circuit is subsequently deenergized. Thus, the first station operator picking up his handpiece 30 and initiating activation of the phonograph system is assured privacy as with respect to the operators at all other remote stations.

In the embodiment shown in Figure 4, a double-pole station switch 62 is provided which has one switch 63 in 35 one line of the respective branch communication circuit and another switch 64 in a circuit 65 connecting a disabling relay 66 across the respective branch signal circuit. The switch 63 is biased closed by spring 62a but is held open when the handpiece 31 is on its support, the same as 40 in the previous embodiments. The associated switch 64 is held closed while switch 63 is open, and is arranged to open before the switch 63 closes as the handpiece is removed from its support.

The disabling relay 66a controls two normally-closed 45 switches 67 and 68 in the two lines of the respective branch communication circuit and a normally-open switch 69 for the relay itself connected in parallel with the aforementioned switch 64.

When the user picks up the handpiece to initiate activation of the phonograph system, the switch 64 opens prior 50 to closure of the switch 63 to assure that the circuit of the disabling relay 66 is open prior to the resulting energization of the signal circuit. If, however, the phonograph system is activated from another of the remote stations, the resultant energization of the signal circuit while the 55 handpiece is on its support will cause energization of the disabling relay via the switch 64 and circuit 65. The resultant energization of the relay 66 will close the holding switch 69 and will open switches 67 and 68. The branch of the communication circuit at that station will therefore remain open to disable the station. If the handpiece is removed at this station while the station is so disabled, the resultant closure of the switch 63 and opening of the 60 switch 64 has no effect because the disabling relay 66 remains energized through its holding contacts 69. Thus, the respective branch of the communication circuit is maintained open by the disabling relay. Privacy is therefore assured to the user who first picks up a handpiece to initiate activation of the phonograph system.

The foregoing embodiments of my invention herein particularly shown and described are intended to be illustrative and not necessarily limitative of my invention since the same is subject to changes and modifications without departure from the scope of my invention, which I endeavor to express according to the following claims.

I claim:

1. In a multistation remotely-controlled phonographic system including a phonographic machine having an audio system: the combination of a plurality of remote operators' stations each including a transducer, an on-off station switch normally held in "Off" position and a signal device; a communication circuit including branches to said remote stations respectively for connecting the transducers of the remote stations to said audio system of said phonographic machine, said communication circuit including a source of power and each of said branches serially including the respective station switch for causing energization of said communication circuit when one of said station switches is closed; a signal circuit connecting the signal device of each remote station to said machine and including a source of power and means for connecting said latter power source to all of said signal devices when said communication circuit is energized; means at each remote station operable by the current from said signal circuit for disabling the respective station; and a control switch at each remote station controlled by the respective station switch for connecting the respective disabling means to said signal circuit only when the respective station switch is in "Off" position whereby each remote station is disabled only when energization of said communication circuit is initiated at another remote station.

2. In a multistation remotely-controlled phonographic system including a source of direct current power and a phonographic machine having an audio system: the combination of a plurality of remote operators' stations each including a transducer, an on-off station switch normally held in "Off" position and a signal device; a communication circuit connected to said power source and to said audio system of said machine, said communication circuit having parallel branches leading to said remote stations respectively; means at each of said remote stations controlled by the respective station switch for connecting the transducer of the station to the respective parallel branch when the station switch is in "On" position; a signal circuit including branches from said machine to said remote stations respectively and including a source of power and means for connecting said power source to each of said signal devices when any one of said station switches is in "On" position; electrically energizable means at each remote station operable by current from the respective branch signal circuit for disabling the station; a control switch at each remote station for the respective disabling means; and means intercoupling the control switch and station switch of each station to cause the respective disabling means to be effectively connected to the respective branch signal circuit when said station switch is in "Off" position and to cause the disabling means to be effectively disconnected from the respective branch signal circuit prior to the energization of the signal circuit as the station switch is moved to "On" position.

3. The combination set forth in claim 2 wherein each of said disabling means comprises a relay having normally-closed contacts in the respective branch communication circuit openable to disable said branch communication circuit when the relay is energized.

4. The combination set forth in claim 3 including a power circuit for connecting each disabling relay across the respective branch signal circuit in parallel with the respective signal device, wherein each of said power circuits serially includes the respective control switch.

5. The combination set forth in claim 4 wherein said disabling relay includes normally-open holding contacts connected in parallel with said control switch to cause the relay after the same has been energized to remain energized after the respective control switch is opened by movement of the respective station switch to "On" position.

6. The combination set forth in claim 2 wherein said disabling means comprises a relay serially connected in

the respective branch signal circuit and having a pair of normally-closed contacts connected in the respective branch communication circuit and openable to disable that branch communication circuit upon energization of the relay, a shunt circuit paralleling said relay and serially including said control switch, said control switch being open when the respective station switch is in "Off" position and being closed prior to closure of the station switch contacts as the station switch is moved to "On" position, and said relay having a second pair of normally-closed contacts connected in said shunt circuit and openable to disable the shunt circuit upon energization of the relay.

7. The combination set forth in claim 2 wherein each of said disabling means comprises a solenoid having an armature connected to the respective station switch to retain the station switch in "Off" position while the solenoid is energized, including means electrically connecting said control switch to said solenoid to cause energization of the latter from current in the signal circuit upon said station switch being in "Off" position, and means effective on movement of said station switch to "On" position to cause said control switch to be operated to disable the solenoid prior to closure of the station switch contacts.

8. In a multistation remotely-controlled phonographic system including a phonographic machine and a source of power: the combination of a plurality of remote operators' stations each including a transducer, an on-off station switch normally held in "Off" position and a signal device; circuit means controlled by said station switches for connecting one of said transducers to said phonographic machine when the respective station switch is in "On" position; activating means for said phonographic system; means connecting said activating means to said circuit means and to said power source for operation of said activating means when any one of said station switches is moved to "On" position; an activatable energizing circuit for said signal devices and connected thereto; means for causing activation of said signal-energizing circuit when said phonographic activating means is operated; electrically-operable disabling means for each of said remote stations; and a control switch at each remote station for the respective disabling means coupled to the respective station switch for connecting the respective disabling means to said signal-energizing circuit when the respective station switch is in "Off" position.

9. The combination set forth in claim 8 including a holding circuit for each of said disabling means, said holding circuit including switch means operated closed by the disabling means as the disabling means is operated for retaining the disabling means in operated position so long as said energizing circuit is activated.

10. In a multistation remotely-controlled phonographic system including a phonographic machine and a source of power; the combination of a plurality of remote operators' stations and station wiring for connecting each operator's station to said machine; apparatus at each operator's station for operating said machine, said apparatus at each operator's station including an on-off station switch for completing an operative connection between certain elements of said apparatus and said machine via said station wiring while the station switch is in "On" position; electrically-operable disabling means at each of said operators' stations for rendering the apparatus at the respective station ineffective for operating said machine while said disabling means is energized; a common energizing circuit for all of said disabling means leading to each of said operators' stations and normally in a deenergized state; means for supplying energizing current to said common circuit when any one of said operative connections to said stations is completed; and control means at each operator's station for the respective disabling means, operatively coupled to the respective station switch, for connecting the disabling means to said

common circuit when the station switch is in "Off" position, said control means being timed relative to said station switch for disconnecting the respective disabling means from said common circuit prior to the completing of said operative connection to the station as the station switch is moved to "On" position.

11. In a multistation remotely-controlled phonographic system including a phonographic machine: the combination of a plurality of remote operators' stations each including an on-off station control normally held in "Off" position and a signal device; circuit means for each of said remote stations rendered effective by the respective station control as said control is moved to "On" position for causing an operating circuit to be completed between the respective remote station and said phonographic machine; a signal-energizing circuit including said signal devices in parallel and a power switch for controlling power thereto; means connected in said circuit means and operated upon movement of any one of said station controls to "On" position for closing said power switch; station disabling means at each of said remote stations operable by the signal current; and means at each of said stations controlled by the respective station control to connect the respective disabling means in said signal-energizing circuit when the respective station control is in "Off" position.

12. In a multistation remotely-controlled phonographic system including a phonographic machine and a source of direct current power: the combination of a plurality of remote operators' stations each including a transducer, an on-off station switch normally held in "Off" position and a signal device; a communication circuit leading from each remote station and controlled by the respective station switch for connecting the transducer of that station to said phonographic machine and to said source of power when the station switch is in "On" position; a signal circuit for connecting the signal devices at each of said stations to said phonographic machine; means connected in common with said communication circuits and controlled by said station switches for causing said signal devices to be energized and said phonographic system to be activated when one of the station switches is moved to "On" position; station-disabling means at each of said remote stations operable by current from said signal circuit; and control means at each of said stations for the respective disabling means including means controlled in predetermined relation with the respective station switch for connecting the respective disabling means to said signal circuit only when the respective station switch is in "Off" position.

13. In a remotely-controlled phonographic system including a phonographic machine and a source of direct current power: the combination of a plurality of remote operators' stations each including a transducer and an

on-off multiple-type station switch normally held in "Off" position; a communication circuit connected to said power source and having parallel branches leading to said transducers via elements of the respective station switches when said station switches are in "On" positions; machine-activating means connected in said communication circuit for operation by said power source when any one of said station switches is moved to "On" position; electrically-operable disabling devices for each of said remote stations; an activatable energizing circuit; means at each station for connecting the respective disabling device in said energizing circuit via elements of the respective station switch when the station switch is in "Off" position; and means to cause activation of said energizing circuit as said machine-activating means is operated.

14. In a remotely-controlled phonographic system including a phonographic machine and a source of direct current power: the combination of a plurality of remote operators' stations each including a transducer and an on-off station switch normally held in "Off" position; a communication circuit connected to said power source and having parallel branches leading to said remote stations respectively; circuit means at each remote station controlled by the respective station switch for connecting the transducer of the station to the respective parallel branch when the station switch is in "On" position; means controlled by said station switches for activating said machine for operation when any one of said station switches is in "On" position; an electrically-operable disabling device for each of said remote stations normally conditioned to place the station in operable condition; an energizing circuit for said disabling devices; and means at each remote station controlled by the respective station switch as the station switch is moved to "On" position for rendering the respective disabling device inoperable and thereupon activating said energizing circuit to render operative the disabling devices of all other of said remote stations.

15. The combination set forth in claim 10 wherein said disabling means for each station comprises a relay having a switch connected in circuit with said certain elements for disabling the station while the relay is operated, and a holding circuit for said relay connected to said common circuit and serially including switch means controlled by the relay for causing the relay when once operated to remain in operated condition until the supply of energizing current to said common circuit is next cut off.

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