REMOTE CONTROL SYSTEM FOR AUTOMATIC PHONOGRAPH

Filed Jan. 13, 1947

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The present invention relates to phonographs, and more particularly to a remote control system for automatic phonographs.

Heretofore automatic phonographs have been of the type having a plurality of remote control stations each of which is provided with its own individual reproducing unit or loud speaker. Each remote control station is further provided with a selector by which the patron may choose a record or records to be reproduced. In such installations in the past the reproduction has been simultaneous in all of the reproducing units of the individual remote control stations. In some instances the patrons are not devious of listening to selections being reproduced by the phonograph which have been selected by other patrons. It therefore would be desirable to provide an arrangement whereby the reproducing unit in each individual remote control station would be effective to reproduce phonograph selections only until the conclusion of the record or records selected by the patron located at that station.

It therefore is an object of the present invention to provide an improved remote control system for automatic phonographs whereby the local reproducer located at the station is energized only in response to the action of a coin controlled switch.

It is a further object of the present invention to provide an improved remote control system for automatic phonographs whereby a local reproducer located at the station is energized from the time that a coin is utilized to actuate a coin controlled switch until the record selected by the patron has been reproduced.

Other and further objects of the present invention subsequently will become apparent by reference to the following description taken in conjunction with the accompanying drawing wherein there is shown an electrical circuit diagram embodying the present invention.

The present invention is applied to an automatic phonograph of the type having a plurality of remote control stations each provided with a selector which is moved to a position corresponding to the selection or phonograph record which is to be reproduced. After the selection has been made, a coin is deposited in a coin chute to actuate a coin controlled switch. The coin controlled switch thereupon completes an electric circuit between the selector and the automatic phonograph. The automatic phonograph is provided with a selector mechanism having a plurality of solenoids each of which corresponds to a particular phonograph record. When the phonograph is energized the selector mechanism moves until it is stopped by a pole or rod actuated by the solenoid. Upon completion of the reproduction of the phonograph record the phonograph mechanism restores the solenoid to its original position.

In the drawing there is shown a pair of conductors 11 and 12 which extend from a suitable source of power through the phonograph and to each of a plurality of remote control stations or wall boxes. Each wall box is provided with a record selecting switch, a coin controlled switch, and an individual reproducing unit or loud speaker. Only so much of the electrical circuit diagram is illustrated in the drawing as is deemed necessary for an understanding of the operation of the system. In the upper portion of the circuit diagram there is shown a portion of the electrical circuit which is located at the phonograph. The phonograph is provided with an amplifier 13 which is energized from the phonograph pickup. The output of the amplifier is connected to a pair of conductors 14 and 15 which extend to each of the wall boxes. Any number of wall boxes may be employed, but for simplicity two such wall boxes have been shown in the drawing.

Where the phonograph is of the type located in a room to which the patrons have access, the phonograph is provided with a plurality of record selecting switches or buttons such as 16, 17 and 18 in a number corresponding to the total number of phonograph records available for reproduction. Each of the switches 16 to 18 is connected to control one of a plurality of relays or solenoids 19, 20, 21 respectively. Since each of the solenoids are similar only the solenoid or relay 19 will be described in detail. The relay 19 has a pair of normally open contacts 22 which are connected to the conductor 23 which in turn is connected to the conductor 11. Each relay furthermore has a pair of normally closed contacts 24 which are interposed between actuating winding of the relay 19 and the record selecting switch 16. One terminal of each of the relay winding 19 is connected to the conductor 27. Each relay further more has a pair of normally open contacts 25 which are connected between conductors 26 and 27. The conductor 26 is connected to one side of a suitable source of power whereas the other conductor 27 is connected to the phonograph motor 28 which in turn is connected to the other side of the source of power by the conductor 28. The electric motor 28 controls the sequence operation mechanism of the phonograph which makes the selection as predetermined, moves the phonograph record into play position, and restores the
phonograph record to the phonograph magazine. A switch 31 is connected between the conductors 26 and 27. This switch 31 is opened at the end of each operating cycle of the sequence operation motor 25. Before any of the record selecting switches 16 to 21 are effective to control the operation of the phonograph a coin controlled switch 32 must be actuated. It may now be assumed that a patron has gone to the phonograph and closed one of the switches 16 to 18. A coin thereupon is deposited to close the coin controlled switch 32 whereupon the corresponding relay 19 is energized. The relay 19 moves its switch contact to open the normally closed contact 24 and to close the normally open contacts 22 and 25. The switch is then left in position to be restored when the phonograph record has been reproduced. The selection made will be reproduced only at the phonograph and not at any of the wall boxes. A phonograph is further provided with a normally closed switch 33 which is opened by the sequence operation mechanism after the reproduction of each phonograph record. The switch 33 is connected between the line conductor 11 and a conductor 34 which extends to each of the wall boxes or remote control stations. Each remote control station is provided with a record selecting switch 35 having a plurality of contact points each connected by suitable conductors to the various relays 10, 20 and 21 of the phonograph. Each wall box further is provided with a loud speaker 36 which is connected through switch contact 31 to the audio frequency conductors 14 and 15. Each wall box is further provided with a plurality of relays. One relay 38 has one terminal of its energizing winding connected to the conductor 12. The other terminal of the winding of the relay 38 is connected to the coin controlled switch 39 which in turn is connected to the outer conductor 11. The relay 38 is provided with normally open make-before-break contacts 41, normally closed make-before-break contacts 42 and normally open contacts 43. The normally open contacts 43 are interposed between the coin controlled switch 39 and the selector arm 35 of the record selecting switch. The normally open make-before-break contacts 41 of the relay 38 are connected between the conductor 11 and a locking solenoid 44 which has its other terminal connected to the conductor 12. The locking solenoid moves a rod or pole into position so as to prevent further actuation of the record selecting switch until the record selected has been reproduced by the phonograph. The normally closed make-before-break contacts 42 are connected in series with normally open contacts 45 of another relay 46 which contacts are connected to the conductor 34. The relay 46 controls the normally open contacts 45 and 37. The operation it may be assumed that the patron at wallbox A desires to play selection 1 whereupon the record selecting switch 31 is moved so that its contact arm 35 rests upon the first contact. Thereafter the patron inserts a coin into the coin chute so as to close the coin switch 32. The closing of the coin switch 32 completes a circuit between the conductors 11 and 12 which includes the energizing coil of the relay 38. The relay 38 attracts its armature to complete a circuit through the coin switch 32 and its contacts 43 to the switch arm of the record selecting switch 35. The first contact of the record selecting switch 35 is connected to the armature of the relay 21 which normally is in contact with the upper contact of the relay so as to complete a circuit through the relay 21 thus causing it to attract its armature and close its lower contact thus completing a circuit back to the conductor 11. The relay 21 is locked into position until it is restored by operation of the phonograph. At the same time that the upper contacts 43 of the relay 38 were closed, normally open contacts 41 of the relay are closed so as to interupt the normally closed contacts 42. The completion of the circuit through the contacts 41 of the relay energizes a lock solenoidcoil 44 which moves a latch into position so that the record selecting switch 35 cannot be rotated until the selected record has been reproduced. At the same time that the solenoid 44 is energized, the relay 46 is energized. The relay 38 is locked into circuit by the action of the phonograph relay 21, since a circuit may be traced from the conductor 12 through the energizing coil of the relay 38, the switch contacts 43 of the relay, the switch arm of the record selecting switch 35, the lower contacts of the relay 21 and the conductor 23 which returns to the other conductor 11. The energization of the relay 46 causes it to close its contacts 37 and 45. The closing of the contacts 37 completes the circuit to the loud speaker 36 so that if the phonograph is already in operation, reproduction of the record previously selected will be heard until the record selected by wallbox A is played in its entirety. Upon completion of the record selected by wallbox A the wallbox will be restored to its original condition. If it is assumed that at the time that the selection was made by wallbox A, the phonograph was not operating, the energization of the relay 21 will initiate operation of the sequence operation motor 25 by energizing its upper contacts which completes the circuit between the conductors 26 and 27. After the phonograph record has been moved from the magazine to the turntable the relay 21 is reset to its original condition. When the phonograph sequence operation motor begins to move the switch 31 is closed by the sequence operation cam. At the same time the switch 32 is also closed. The restoration of the relay 21 to its original position brings about the energization of the relay 38 of the wallbox A. Since the contacts 41 and 42 of the relay 38 are arranged so as to make before break the circuit of the record selecting switch 35 is interrupted before a new circuit is established from the conductor 12 through the relay 46 through the upper contacts 42 of the relay 38, the closed contacts 45 of the relay 46 and the closed switch 33 of the phonograph. The relay 46 therefore remains in energized condition so as to maintain closed the switch 37 until the record selected has been completely reproduced. At the end of the reproducing cycle of a record the switch 33 is opened thereby deenergizing the relay 46 and restoring the wallbox to its original condition. It may be now assumed that prior to the completion of the reproduction of the record selected by wallbox A, that wallbox B has selected selection No. 3. The movement of the record selecting switch 35a to this position prepares a circuit for the energization of relay 19. The insertion of a coin into the coin chute closes the coin switch 32a which energizes relay 38a so as to close its upper contacts 43a. The closing of the contacts 43a completes a circuit from the conductor 11 through the record selecting switch 35a to the relay 19. The relay 19 attracts its armature to
close its lower contacts 22 to lock the relay 38a into circuit. The upper contacts 25 are completed so as to continue operation of the sequence operation motor 28 in the event that the motor is not already reproducing a record. The energization of the relay 38a produces energization of the relay 48a in a manner similar to that described in conjunction with wallbox A. The closing of the contacts of the relay 48a causes the loud speaker 38a to be connected into circuit so that the speaker will reproduce any phonograph record which is being reproduced by the phonograph. If it is assumed that prior to the energization of either of the wallboxes A or B a record was being reproduced, both of the loud speakers 36 and 38a will reproduce that portion of the record. Thereafter the record selected by wallbox A will be reproduced. Upon completion of the reproduction of each phonograph record the cam operated switch 33 is interrupted. As sections 34a, 42a, and 47a corresponding to the record selected has not been restored to its original position the interruption of the circuit through the switch 33 does not disturb the connections in the wallboxes. Upon completion of selection No. 1 which was selected by wallbox A, the interruption of the switch 33 will bring about restoration of the wallbox A to its original condition but wallbox B will remain in its locked condition until the record selected by it has been reproduced. Thereafter the opening of the switch 33 will bring about deenergization of the relay 48a thus restoring wallbox B to its original condition.

From the foregoing description it will become apparent that each wallbox is so arranged that a loud speaker will reproduce phonograph records until the record selected by the wallbox has been reproduced. Thereupon the louder speaker is deenergized and no more reproduction is heard until another selection is made. The circuit arrangement provided insures holding the louder speaker in the circuit until the record selected has been reproduced.

While for the purpose of illustrating and describing the present invention, a preferred embodiment has been illustrated by the circuit diagram in the drawings, it is to be understood that the invention is not to be limited thereby since obviously such variations in the instrumentality employed and in the circuit arrangement may be made without departing from the spirit and scope of the invention as set forth in the following claims.

What is new and is desired to secure by Letters Patent of the United States is claimed:

1. The combination with an automatic phonograph comprising a plurality of remote control stations having a coin controlled switch, a record selecting switch, means whereby said switch is connected to said phonograph, a loud speaker, and relay means, means whereby said relay means is responsive to actuation of said coin controlled switch for operating electrical circuit to said loud speaker and said record selecting switch, and means for deenergizing said relays, means whereby said phonograph controls said deenergizing means when a record corresponding to the one selected by said record selecting switch has been reproduced.

2. The combination with an automatic phonograph having a record selecting mechanism comprising a remote control station having a record selecting switch, means whereby said switch is connected to said selector mechanism, a loud speaker, a coin actuated switch, means for energizing said record selecting switch and said loud speaker, means whereby said energizing means is responsive to actuation of said coin controlled switch, and means for deenergizing means thereby until the record selected thereby has been reproduced.

3. The combination with an automatic phonograph having an electrically controlled selector mechanism comprising a remote control station provided with a loud speaker and a record selecting switch, means whereby said switch is connected to said selector mechanism, a coin controlled switch, a relay with contacts, means including said latter switch for controlling said relay, means including said contacts for controlling said first switch, a second relay means including said first relay for energizing said second relay, a second relay having contacts for controlling said loud speaker, and means at said phonograph for deenergizing said latter relay.

4. The combination with an automatic phonograph having a plurality of selector solenoids for controlling a selector mechanism to a remote control station provided with a loud speaker, a record selecting switch, means whereby said switch is connected to said solenoids, a coin controlled switch, a relay with means including said coin controlled switch whereby relay is connected so as to control said record selecting switch, a second relay means including said first relay for controlling said second relay whereby said loud speaker is controlled, means at said phonograph for deenergizing said second relay upon completion of the reproduction of said selected record.

5. The combination with an automatic phonograph having a plurality of selector solenoids for controlling a selector mechanism operated by a sequence operation mechanism, and a switch operated by said sequence operation mechanism comprising a remote control station provided with a loud speaker, means whereby said loud speaker is connected to said phonograph through said last mentioned switch, a record selecting switch connected to said solenoids, a coin controlled switch, a relay, means whereby said coin controlled switch operates said relay for completing a circuit through said remote control switch and said solenoids, a second relay, means including said first relay for controlling said second relay whereby a circuit is completed through said loud speaker, switch means at said phonograph for interrupting the circuit through said solenoids, said record selecting switch and said first relay when a selected record is to be played, and means including a circuit for inter-connecting said switch at said phonograph with said second relay at some remote control station comprising a circuit for energizing said second relay upon completion of the reproduction of said selected phonograph record.

6. The combination with an automatic phonograph having an electrically controlled selector mechanism comprising a remote control station having a coin controlled switch, a record selecting switch, means whereby said switch is connected to said phonograph selector mechanism, a loud speaker, two relays, means whereby said two relays are concurrently responsive to actuation of said coin controlled switch whereby an electrical circuit is completed to said loud speaker and said record selecting switch, means at said phonograph for deenergizing one of said relays when a selected record is to be played, and means...
at said phonograph for deenergizing the other of said relays upon completion of the reproduction of said selected record.

7. The combination with an automatic phonograph having a solenoid controlled selector mechanism comprising a remote control station having a coin controlled switch, a record selecting switch, means whereby said switch is connected to said solenoid controlled selector mechanism, a loud speaker, a relay, means including said coin controlled switch for controlling said relay whereby an electrical circuit is completed between said record selecting switch and said solenoid controlled selector mechanism and a second relay, means including said first relay for energizing said second relay whereby an electrical circuit is completed between said loud speaker and said phonograph and whereby said loud speaker circuit is maintained until the reproduction of a selected phonograph record has been completed and a third relay energized by said second relay for locking said record selecting switch against movement.

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