March 19, 1946. J. H. SNODGRASS 2,396,756

MUSIC REPRODUCTION SYSTEM

Filed Feb. 20, 1945 2 Sheets-Sheet 1

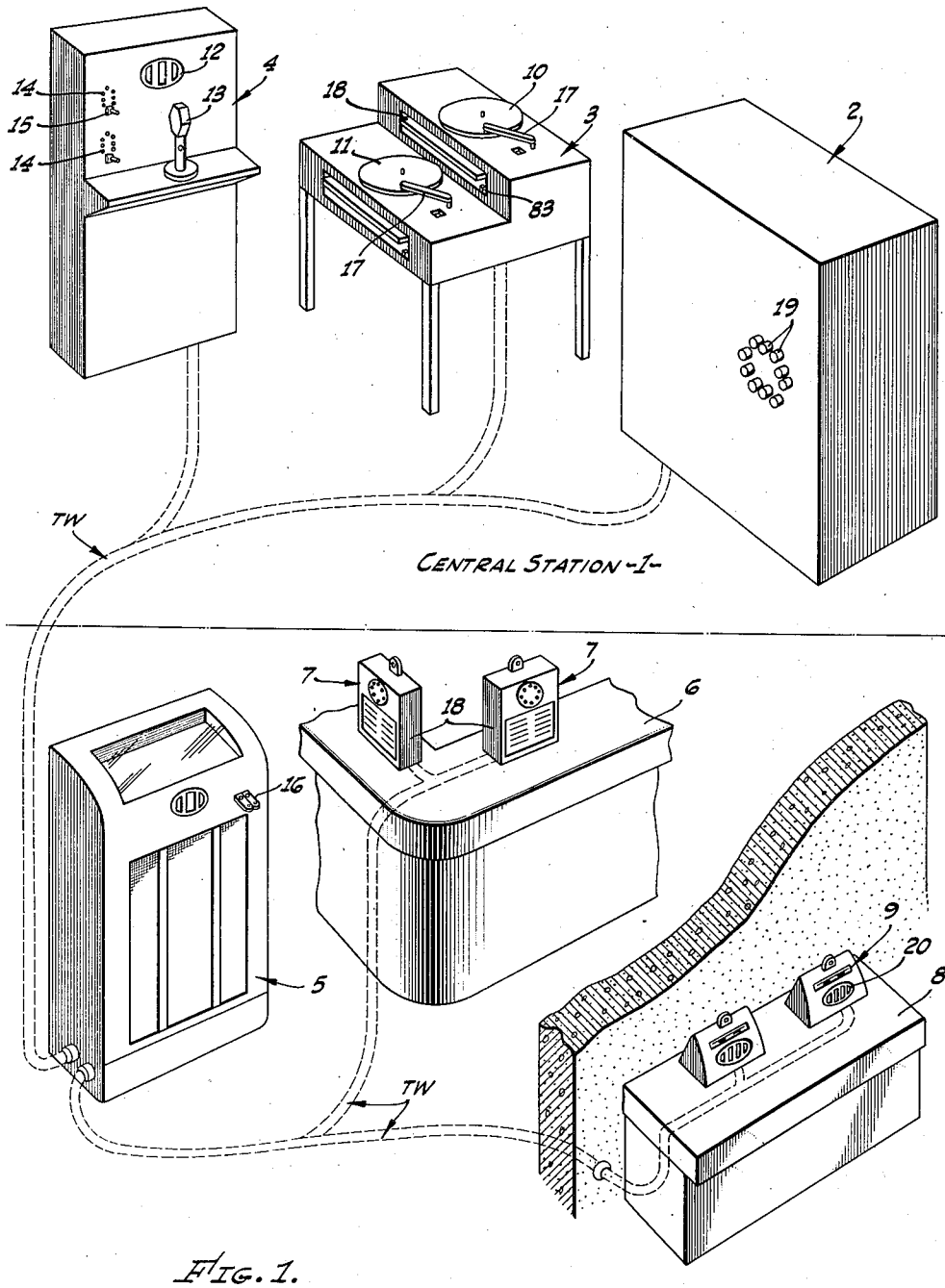


FIG. 1.

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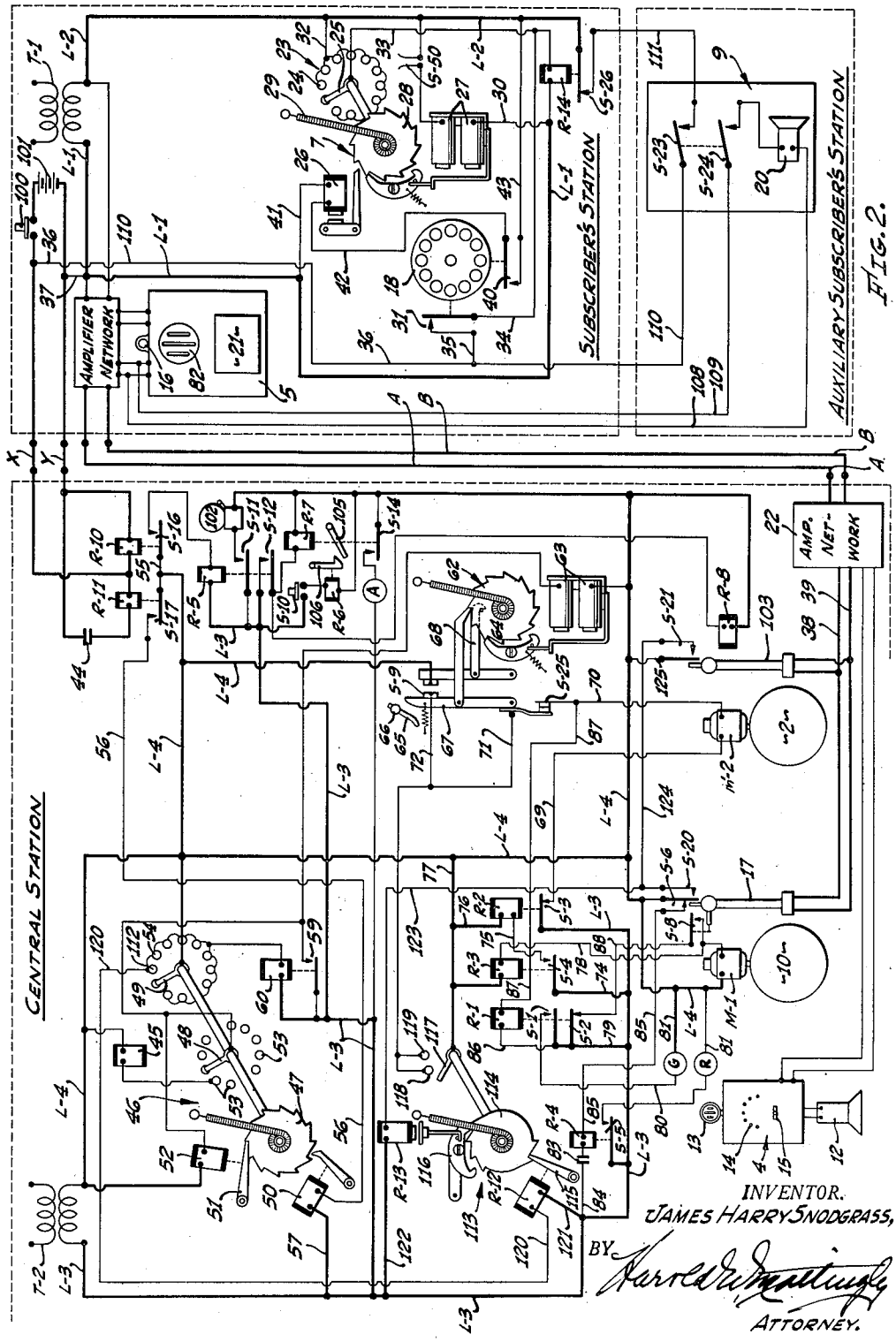


FIG. 2.

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UNITED STATES PATENT OFFICE

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MUSIC REPRODUCTION SYSTEM

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Application February 20, 1945, Serial No. 578,891

10 Claims. (Cl. 179—6)

My invention relates to music reproduction systems and has particular reference to systems in which, upon the deposit of a coin at local outlying stations such as cafes, lunch counters and the like, music is reproduced at such outlying station for the entertainment of patrons.

Briefly stated, there are upon the market at the present time four somewhat distinctive types of music reproduction systems, one of which is known as "wired music," which is characterized by the location in a central station of phonograph turn-tables supervised by an operator to whom signals are transmitted from the outlying sub-stations and further characterized by an inter-talk system whereby the depositor of a coin at the outlying sub-station may converse with the operator at the central station to select the particular record or selection desired to be played by the patron. These systems are illustrated and described in the West et al. Patent No. 2,242,197, issued May 13, 1941, the Stark et al. Patent No. 2,291,115, issued July 28, 1942, and many others.

The second of these systems is known as the "jute box" wherein a phonograph containing a plurality of records is provided with selector mechanism by which a patron depositing a coin in the phonograph may select and have reproduced for him any one of the records in the phonograph. Some of these systems are arranged to have the deposit of the coin and the selection of the particular record made at a point remote from the phonograph itself. One such system is illustrated particularly in the patent to Wilcox No. 2,002,236, issued May 21, 1935.

Still another of the systems operates upon the principle of having a phonograph with a plurality of records contained therein which, upon the deposit of a series of coins, plays the records in a predetermined sequence, either the coins being deposited directly in the cabinet or in remote coin collection boxes. Again this type of system is illustrated in the Wilcox patent above referred to.

A still further type of system is known as "measured music," in which a phonograph is located at a suitable location connected to coin collection boxes, each of which is connected to a loud speaker and arranged in such manner that deposit of a coin in any one of the coin collection boxes will couple the loud speaker of that particular box to the phonograph so that music will be reproduced in the loud speaker for a predetermined length of time dependent upon the number and denomination of the coins deposited in the coin box. One such system is illustrated in the patent to Farrell No. 2,352,188, issued June 27, 1944.

While originally the second, third and fourth types of systems ordinarily used a phonograph located at the particular cafe or other local place of amusement, more recently it has been the practice with system four to have the phonograph mechanism itself located at a central station somewhat corresponding to the central station of the first system described above, the local coin collection boxes and loud speakers in the subscriber's outlying station being connected to the central station by means of telephone wires over which the signaling currents and the music reproduction currents are transmitted.

It frequently occurs that in a particular town or section of town or village the number of possible subscribers to any one of these systems is so small as not to warrant the installation of central station equipment and the hiring of the necessary operators to operate the central station equipment, particularly where it is desired that the entertainment music be available over relatively long periods during a day. However, substantially any town or village will have a sufficient number of cafes, lunch rooms, soda fountains or other places of business at which patrons may desire to be entertained by music transmitted over telephone wires, to support a central station equipment and operators during portions of a day permitting the use of the "wired music" system described above during those portions of the day. However, during other portions of the day the patronage may not be sufficient to warrant the maintenance of the necessary equipment and help required to operate such a system but the automatic selection of phonograph records by the deposit of coins in outlying subscriber's stations may be a sufficiently profitable business if no central station operator is required to be on duty, as in the remotely located "jute box" system described above or in the "measured music" system described above, wherein the phonograph which reproduces the music is located remotely from the outlying subscriber's stations.

It is therefore an object of my invention to provide a system whereby the central station, which includes "wired music" turn-tables, coin registering mechanisms and inter-talk systems, may be successfully employed and in which central station a remotely located "juke box" system may also be successfully located to be supervised by an operator at the central station.

Another object of my invention is to provide a system of the character described in the preceding paragraph, wherein the remotely located "juke box" system at the central station may also be utilized to supply "measured music" to subscribing stations which could not otherwise supply sufficient business to support a record-selecting "juke box" system or a "wired music" system.

A further object of my invention is to provide a system by which any two or more of the systems may be so interconnected as to permit the utilization of the phonograph equipment located at a central station, from which central station local subscribers may subscribe to either the "wired music," the "juke box" record selector system or the "measured music" system, thus minimizing the expense to a music vending operator of the initial equipment and minimizing the amount of labor which is required for the purpose of maintaining all of the systems in operation.

Other objects and advantages of my invention will be apparent from a study of the following specification, read in connection with the accompanying drawings, wherein:

Fig. 1 is a diagrammatic view of a combination central station and two remotely located subscriber's stations, the separation of the central station from the outlying subscriber's stations being indicated by the broken line extending horizontally across Fig. 1; and

Fig. 2 is a schematic wiring diagram which illustrates the manner in which the various systems may be interconnected and may be operated without interference with each other.

Referring to the drawings, I have illustrated in Fig. 1 a central station indicated generally by the reference character 1, at which central station is located a phonograph record player 2 of the type illustrated and described in the above mentioned Wilcox patent and, in addition thereto, a plurality of turn-table devices 3, together with a switchboard 4 of the type employed in the "wired music" system, such as is illustrated in the above mentioned West, et al. and Stark, et al. patents.

In the lower part of Fig. 1, I have illustrated a "wired music" reproducer 5 of the type illustrated in the above entitled West, et al. or Stark, et al. patents, and also a counter 6 upon which may be located coin collection and record selecting mechanisms 7 at various points along the counter. The mechanisms 7 may be located either in the same establishment as the "wired music" reproducer 5 or in a separate establishment.

In Fig. 1, I have also illustrated a typical lunch counter 8 upon which is mounted a plurality of "measured music" coin collection and loud speaker mechanisms 9 which may be employed for the purpose of playing a predetermined length of music selection upon the deposit of a coin therein in the manner described in the above mentioned Farrell patent.

The central station equipment which is employed for the playing of "wired music" usually comprises a plurality of phonograph turn-tables 10 and 11, each of which is driven by a motor (not shown in Fig. 1) and upon which records may be placed one at a time by an operator at the central station in response to an inter-talk communication system employing a speaker 12 on the switchboard 4 and a microphone 13 by which the central station operator can respond to the voice communication coming from the outlying subscriber's station of the "wired music" system.

The number of turn-tables 10 and 11 will be, of course, equal to the number of "wired music" subscriber's stations and the switchboard 4 will be provided with coin registering systems such as indicated at 14 by which the number and denomination of the coins which may be deposited in the "wired music" reproducer mechanism 5 at an outlying subscriber's station may be determined, there being one of these sets of coin registering mechanisms for each of the "wired music" subscriber's stations. Also the switchboard 4 should be provided with a talk-listen switch 15 for each of the subscriber's stations by which the operator may control the inter-talk mechanisms by which the depositor of a coin in the "wired music" reproducer 5 may select the particular record desired to be played upon the turn-tables 10 or 11 associated with that subscriber's station and receive acknowledgement of his selection from the central station operator.

Thus far described, the "wired music" systems correspond in all respects to any one of a number of those in common use as illustrated in the West, et al. or Stark, et al. patents above referred to. Those systems operate generally as follows:

A patron at one of the subscribing stations having a "wired music" reproducer 5 deposits one or more coins in coin chutes 16 at that station, whereupon the number and/or denomination of the coin deposited will be registered upon a coin counter or by suitable lights in the coin registering mechanism 14 of the switchboard 4, the operator at the central station speaking through the microphone 13 requesting the patron to name the particular record desired to be played for reproduction at that outlying station. Suitable mechanism is employed by the operator for checking off or subtracting the value of the deposited coin or coins until all of the coin values previously deposited at that station have been used up. The operator at the central station selects the particular record from a stack of records or library located at the central station, places the first one selected upon the turn-table associated with the reproducer located at the particular outlying subscriber station, starts the motor thereof and places the pick-up arm 17 on that particular record, the music thus reproduced being passed over telephone wires TW to the particular subscriber station where it is reproduced by a loud speaker located in the reproducer 5 at that station.

If more than one record is selected by the depositor of the coin, the additional records are extracted from the library and placed upon a shelf 18 immediately below or adjacent to the particular turn-table associated with that station so that at the termination of the first record it may be removed from the turn-table and the next record selected may be placed upon the turn-table and the record reproduced at the subscriber's station.

The remotely located "juke box" system operates upon the principle that a patron at the counter 6 may deposit a coin in the coin collection box 7 and may operate a selector dial 18 corresponding to the ordinary selector dial employed for telephones, the dial being provided with a suitable number of finger openings so that by rotating the dial through a given portion of a complete revolution a particular numbered selection may be picked out. For example, as illustrated in the above noted Wilcox patent, the phonograph 2 may be provided upon its front with a plurality of selector buttons 19, any one of which when pushed in will select a particular record located within the machine and set into

operation the turn-table mechanism, the selector mechanism necessary to play that particular record, after which a second one of the push buttons 19 which may have been pressed in is effective to cause the selection of that particular record and the playing thereof. While for purposes of convenience a dial selector 18 is shown on the coin collection box 7, other systems in general use employ a series of push buttons, each of which when actuated by a person depositing the coin in the box 7 will transmit a different number of impulses over the telephone line TW to make the desired selection of records to be played upon the phonograph 2 and it is to be understood that the principles of my invention apply to such systems equally as well as to a system employing a dial selector.

As is explained in the Wilcox patent noted above, the "juke box" phonograph 2 may be provided with suitable magnets associated with the push buttons 19 to permit the remote operation of the selector buttons 19 from a remote location, thus readily adapting this particular phonograph reproducing mechanism to the location of the phonograph in a central station for connection to a plurality of coin collection boxes 7 located at remote subscriber's locations.

It is also to be noted that the above noted Wilcox patent illustrates and describes a system in which whenever no selection of any particular record has been made by actuation of the buttons 19 or their associated magnets, the phonograph will continue to play the entire repertoire of the records in the phonograph 2 in a given sequence.

The "measured music" system, as illustrated and described in the above noted Farrell patent, operates along the following lines: A subscriber at the counter 8 deposits a coin in the coin collection box 9, the effect of which is to start into operation the phonograph 2 and cause the phonograph to play a record while at the same time the loud speaker 20 of the particular box in which the coin has been deposited is connected to the electric wires interconnected with the phonograph so as to cause the reproduction of the music at the particular coin collection box 9 in which the coin has been deposited.

Keeping in mind the foregoing principles of the three distinct systems, it will be apparent that by employing suitable adaptor mechanisms, electrical wiring systems, relays and switches, the same central station may be employed for producing either the "wired music" amusement, the "juke box" record selected amusement, or the "measured music" amusement.

In Fig. 2, I have illustrated the adaptor mechanism by which these various systems may be interconnected with each other so as to permit a single central station to purvey music of any of the systems. One outlying subscriber's station is indicated in Fig. 2 by the apparatus illustrated as enclosed within the dotted line box bearing the legend "subscriber's station" while an auxiliary or second subscriber's station adapted to receive the "measured music" is illustrated in another dotted line box bearing the legend "auxiliary subscriber's station." The central station equipment is illustrated diagrammatically as being located within the area denoted by the dotted line outline bearing the legend "central station."

In operating the system in accordance with the principles of my invention, I prefer to employ at least one telephone circuit made up either of one pair of metallic telephone wires or one metallic wire and ground interconnecting the subscriber's station and the central station and an additional signaling circuit which may be either a second metallic pair of telephone wires or a grounded circuit through the telephone isolating circuits on the first pair. For simplicity of illustration herein, I have shown these telephone wire circuits as including one pair indicated by the reference characters A and B to be employed for the purpose of transmitting music and inter-talk communications between the subscriber's station and the central station and also to transmit the signals to the "wired music" operator's switchboard coin counter 14, transmission of the necessary signal impulses to select records on the phonograph 2 being made over an additional circuit shown as a second pair of telephone wires X and Y which are also employed for a special signal to be hereinafter described.

For simplicity of understanding the essential features of my invention, I have illustrated at the subscriber's station a combination of apparatus including a "wired music" reproduction unit 5 and a coin actuated phonograph selector mechanism indicated generally by the reference character 7, while at the auxiliary subscriber's station I have illustrated a set of "measured music" apparatus indicated by the reference character 9.

In the subscriber's station I have illustrated the "wired music" reproducer 5 interconnected to the telephone lines A—B through an amplifier and network system of the type illustrated and described in the Stark, et al, patent hereinbefore referred to, which amplifier and network is provided with the necessary amplifying equipment to insure sufficient volume of output at the speaker 21 thereof and the network is arranged to prevent interference with transmission of the music to the speaker 21 by the various signaling operations including the depositing and counting of the coins and the inter-talk between the subscriber at the reproducer 5 with the operator at the central station, all as is described and illustrated in said Stark, et al. patent.

At the subscriber's station at which the "wired music" reproducer 5 is employed, I have illustrated only one of the coin collecting and record selecting boxes 7 equipped with the dial 18 by which the depositor of a coin therein is permitted to select the particular record on the phonograph 2 which is desired to be played.

In the separate portion of the subscriber's station I have illustrated only one of the "measured music" coin collection boxes 9 equipped with the loud speaker 20.

At the central station, I have illustrated a central station amplifier and network 22 which will be connected to the central station switchboard 4 and to the "wired music" phonograph pick-up 17 as well as to the pick-up 103 of the phonograph 2, the amplifier and network 22 being similar to that illustrated in the Stark, et al. patent to permit the inter-talk between the subscriber's station and the central station and the registering of the number and value of coins deposited in the "wired music" reproducer 5 without interference with each other.

The operation of my system can best be understood by referring to a series of assumed conditions, it being understood that only a single subscriber's station and only a single "measured music" subscriber's station are illustrated and that for as many additional subscriber's stations as may be desired to be operated upon the system four telephone conductors or two pairs of

telephone conductors A and B and X and Y will be required to be extended between additional stations and the central station.

Assuming that the "wired music" reproducer 5 is silent and that a person desiring music deposits a coin in the phonograph selector coin collection box 7, such deposited coin will close a coin actuated switch S—50 to permit the transmission by the selector box of the necessary electrical currents to operate the phonograph 2 in the central station. For simplicity of illustration, I have shown the selector box 7 as being equipped with apparatus which will permit the selection of records by an impulse system such as that already well known and in use in remote-controlled phonograph operations, this mechanism including the dial selector 18 which may correspond in all respects to the ordinary dial selector used on telephones and, in addition, includes a stepping mechanism indicated generally by the reference character 23 by which a number of coins deposited in the box 7 may be used to select a number of records to be played by the phonograph 2 dependent upon the number of and value of the coins so deposited. The stepper mechanism 23 may be of any well known construction but is illustrated herein as a modified form of the stepping mechanism which is shown in Fig. 18 of the Wilcox Patent No. 2,002,236, such mechanism being modified only in the respect that it employs a series of contacts 24 to be engaged by a contact arm 25 in place of the single switch 143—144 shown in the Wilcox patent, and that the mechanism employed for stepping the stepper 23 back includes a magnetically operated mechanism 26 instead of the mechanically actuated step-back mechanism shown in the Wilcox patent. This and similar types of stepping mechanisms are well known in this art.

Assuming now that a single coin was deposited and has closed the contacts of the switch S—50, the stepper mechanism 23 will be actuated one step in the counter-clockwise direction by the energization of step-up magnets 27 which actuate the notched disk 28 to permit the spring 29 to move the notched disk one notch in a counter-clockwise direction. The deposit of the coin in the switch S—50 completes a circuit from a suitable source of local power at the local subscriber's station indicated as a transformer T—1, the primary winding of which may be connected to the ordinary 60-cycle alternating current supply lines found at the local subscriber's station, while the secondary of the transformer T—1 provides a pair of line conductors, indicated by the reference characters L—1 and L—2, to supply the necessary current for operating the apparatus in phonograph selector box 7. The circuit completed by the deposit of the coin extends from line conductor L—1 through conductor 30, the coils of the stepping magnet 27, the switch contact S—50 to line conductor L—2. Stepping of the notch disk 28 one notch in a counter-clockwise direction will move the contact arm 25 into contact with one of the contact terminals 24, all of which are illustrated as being connected together in such manner as to complete a circuit to the dial selector 18 to permit operation of the dial selector to transmit the desired number of impulses over the telephone lines X and Y.

As is well known by those skilled in the telephone art, the dial selector 18 when moved in a clockwise direction will close a switch 32, which switch will remain closed until the dial has been returned to its normal position while at the same time the dial 18 closes and opens the contacts of a selector switch 33 a number of times corresponding to the extent to which the dial has been moved in a clockwise direction by the finger of a person operating the dial.

The operation of the dial 18 will therefore transmit a series of impulses to the telephone wires X and Y, the circuit actuated by the dial selector impulse switch 31 extending from line conductor L—2 through the conductor 32, the contact point on the switch 23, which has been engaged by the contact arm 25 and thence by way of conductors 33 and 34, the contacts of switch 31, and thence by way of conductors 35 and 36 to telephone wire X, the opposite telephone wire Y being connected to line conductor L—1 by means of conductor 37. Assuming that the number of impulses sent over the line by the switch 31 is for the purpose of selecting record No. 1 on the phonograph 2, the apparatus on the phonograph 2 will be operated to start the phonograph motor in the phonograph 2 into operation and to achieve the selection of and the play of record No. 1 thereon, the music so produced being transmitted back over the telephone lines A—B, through the amplifier network 22, through music conductors 38 and 39 to be reproduced on the loud speaker 21 of the reproducer unit 5.

Assuming that only a single coin was deposited in the record selection box 7, the start of the dialing operation will close switch contacts 40 to operate the step-back mechanism 26, causing the disk 28 to be stepped back to its original or off position by the closing of a circuit which extends from line conductor L—1 through conductor 41, coil of the step-back mechanism 26, conductor 42, switch contacts 40 and conductor 43 to line conductor L—2, the operation of the coil of the step-back mechanism 26 being delayed by any suitable mechanism so that the completion of the stepping back operation will occur only after the dialing has been completed as, for example, by maintaining the coin in circuit closing relation in the switch S—50 until the completion of the dialing operation and then permitting the de-energization of the step-up magnets 27 just prior to the return of the dial 18 to its off position.

The particular dialing mechanism 18 and stepping mechanism 23 is intended only to be diagrammatically illustrated herein, there being upon the market many types of dialing mechanisms or mechanisms for transmitting impulses as the result of a deposit of a coin in record selector boxes or the operation of a dial for the purpose of producing upon the telephone lines X and Y the desired number of impulses to select the particular desired record.

The dialing operation transmitting the impulses over the telephone lines X and Y will pass these impulses to the central station to cause the operation of an accepting relay R—11 at the central station, which is preferably connected to wires X and Y in circuit with a suitable condensor 44 so that only alternating current impulses will be accepted by the relay R—11.

The phonograph 2 which is employed at the central station, while illustrated and generally referred to as being of the type shown in the Wilcox patent above referred to, may be any of the well known types of phonographs now in use which are subject to the remote selection of the particular record to be played by the phonograph. For purposes of illustration and description here-

in, I have shown the phonograph 2 as being of the type described in the Wilcox patent above referred to, modified slightly as will be illustrated in the following description.

In the Wilcox patent the phonograph is described as including the buttons 19 by which the particular record may be selected and in Figs. 21 through 24 is illustrated a magnetic mechanism for permitting the remote selection of the records by magnetically actuating the buttons from a remote selection station.

I have illustrated the selection of the records at the phonograph 2 as being made through the selector magnets such as those illustrated at 175 in the above entitled Wilcox patent, such selector magnets being illustrated in Fig. 2 hereof as magnet 45 but to facilitate the operation of the phonograph 2 and to permit this magnetic selection I have illustrated a stepping mechanism 46 which includes a notched disk 47, similar to that shown in Fig. 18 of the Wilcox patent, which disk when actuated will move a pair of contact arms 48 and 49 over a series of terminals to complete the necessary actuating circuits.

In Fig. 2 the notched disk 47 is adapted to be stepped in a clockwise direction by means of an energizing magnet 50 and is adapted to be held in whatever position to which it is rotated by means of a pawl 51 so that the stepping mechanism 46 may be released and restored to its normal or off position by the energization of a release magnet 52.

The selecting impulses transmitted over the telephone lines X and Y and operating the accepting relay R—11 will cause the relay R—11 to close its switch contacts S—17 a number of times corresponding to the number of impulses transmitted over the telephone lines as a result of the operation of the dial 18. The contacts of the switch S—17 are in circuit with the energizing magnet 50 so that upon each closing of the switch S—17 the disk 47 will be stepped one notch in a clockwise direction.

Assuming that the depositor has placed one coin in the coin box 7 and has selected record No. 1, the notching of the disk 47 one notch in the clockwise direction will cause the contact arm 48 to move to that one of the terminals 53 which is connected to the energizing magnet 45 for record No. 1, while at the same time the contact arm 49 will be moved to one of the contact terminals associated with it, indicated by the reference character 54.

Current for operating the stepping mechanism 46 may be derived from a local current source located in the central station and indicated in Fig. 2 as comprising a transformer T—2, the primary winding of which may be connected to the 60-cycle house current found at the central station, while the secondary winding of the transformer is connected to a pair of line conductors which may be termed line conductors L—3 and L—4.

Thus the closing of switch S—17 will cause a circuit to be completed to the energizing magnet 50 from line conductor L—4 through conductor 55, contacts S—17, conductor 56, the coil 50, and conductor 57 to line conductor L—3. The movement of the contact arm 48 to one of the contacts 53 corresponding to the record selected will partially complete a circuit to the particular record selector coil 45, which circuit, however, will not be completed until the end of the dialing operation by reason of the connection of the coils 45 in series relation with the contacts 59 of a relay 60 which is so constructed that it will not close the contacts 59 until the switch arm 49 has come to rest for a predetermined length of time in excess of the time interval between successive impulses sent over the lines X—Y. Thus the contact arm 48 may pass over a series of contacts on its way to a particular selected contact without operating the particular record selector magnets associated with the preceding contact terminals 53.

As soon as a selection has been made on the phonograph 2, the selecting mechanism 46 should be returned to its normal or off position which may be readily accomplished by connecting the release magnet 52 in series relation with the contact terminal 59 of the relay 60 which will permit the energization of the release magnet 52 immediately at the end of one dialing operation.

Also the phonograph 2 is preferably equipped with a step switch 62 corresponding to the step switch illustrated in Fig. 18 of the Wilcox patent, the purpose of which is to register the number and value of the coins deposited for the selection of more than one record on the phonograph 2, the step switch 62 being moved in a clockwise direction by the energization of step-up magnets 63, each energization of which will cause the notch disk of the stepping mechanism 62 to move one notch in a counter-clockwise direction.

In our assumed operation, a single coin having been deposited at the box 7, the stepping mechanism 62 will be moved only one notch, thereby moving a pin 64 a sufficient distance in a counter-clockwise direction as to permit contact terminals S—9 to close, which in turn place into operation the operating motor M—2 of the phonograph 2, while the completion of the playing of one record on the phonograph 2 will result in the notching of the stepping mechanism 62 one notch in a clockwise direction or back to its normal or off position, opening the terminals of the switch S—9. This may be accomplished, as illustrated in Fig. 18 of the Wilcox patent, by having an arm 65 on a shaft 66 operate to move a lever 67 and a pawl 68 in such manner as to step the notch disk of the stepping mechanism 62 back to its normal position, placing the pin 64 in such position relative to a lever 68 carrying one of the contacts of the switch S—9 as to move the switch contacts S—9 to open position.

Thus it will be observed that the deposit of the coin in the box 7 and the operation of the dial selector will actuate the phonograph 2 to select the particular desired record and to close the motor switch S—9, completing the circuit to the phonograph operating motor and through the operation of the phonograph 2 cause the particular record selected to be placed in playing position and to be played. Upon the termination of the play, the operation of the shaft 66 and the arm 65 will result in the de-energization of the phonograph motor M—2 and the phonograph 2 will be out of operation until the deposit of another coin in the box 7.

In order, however, to adapt the phonograph 2 to be used in combination with the "wired music" system, I connect the contacts of the motor switch S—9 for the phonograph motor M—2 in series relation with a switch S—25 and with contacts S—3 of a relay R—2, which relay will be energized whenever the "wired music" system is in actual operation playing a record over the "wired music" system.

Assuming for the purposes of illustration herein that the "wired music" phonograph turn-table is not in operation, the foregoing operations of the

phonograph 2 will be accomplished. On the other hand, if the "wired music" phonograph turn-table is in operation at the time of the deposit of the coin in the box 7, the selector mechanism for selecting the particular record desired to be played by the phonograph 2 will completely function, resulting in the selection of the record and the stepping of the stepper mechanism 62 to such position that the phonograph 2 will immediately be placed in operation when the "wired music" phonograph has completed the playing of such selection as had already been placed upon such turntable and was then in operation at the time of the deposit of the coin.

It will also be apparent that the selector mechanism 46 may be actuated in response to the deposit of a second coin and the dialing of a second selection without interfering with the operation of the phonograph motor M—2 or the "wired music" reproduction since all of the circuits necessary to complete the phonograph selection and to step the stepper mechanism 62 to register a second, third or more records to be played are entirely independent of the fact that the phonograph motor M—2 is already in operation and entirely independent of whether or not the "wired music" turn-table is in operation.

If, however, the coin is deposited in the box 7 at a time when the "wired music" turn-table is in operation, the selection of the records to be played by the phonograph 2 is set up ready to go into operation at the end of the playing of the record on the "wired music" machine.

To illustrate this latter operation, it will be noted that the circuit for the phonograph motor M—2 extends from line conductor L—3 through the contacts S—3 of the relay R—2, conductor 69, phonograph motor M—2, conductor 70, normally closed switch S—25, conductors 71 and 72, the contacts of the motor switch S—9 to line conductor L—4. Thus if the relay R—2 is energized, the circuit to the motor M—2 cannot be completed.

However, the circuit for the relay R—2 extends through the contacts S—4 of a "wired music" system relay R—3 which is connected in parallel relation with the turntable motor M—1 for the "wired music" turn-table 10 so that whenever the circuit for the "wired music" turntable motor M—1 is completed, a parallel circuit is completed to the coil of the relay R—3 to close its contacts S—4, energizing the coil of relay R—2 by way of a circuit which extends from line conductor L—3, through conductor 74, the contacts S—4 of relay R—3, conductor 75, the coil of relay R—2 and conductors 76 and 77 to line conductor L—4.

As will be understood by those skilled in this art, the completion of the playing of a record on a "wired music" turn-table 10 will cause the opening of the circuit to the "wired music" turntable motor M—1 to stop this turn-table, the relay R—3, being connected in parallel relation with the "wired music" turn-table motor M—1 by means of conductor 78, will therefore be de-energized at the termination of the "wired music" phonograph play, permitting its contacts S—4 to open and de-energizing relay R—2, which up to this time has held its contacts S—3 open, preventing the operation of the phonograph motor M—2.

In accordance with the previously described assumed operations, the motor M—1 of the "wired music" phonograph was not in operation. Hence the deposit of the coin 7 resulted in the operation of the phonograph M—2 to play the selected record. To indicate to the operator at the central station that the phonograph is in operation, I provide a signal light indicated at G, the circuit for which is controlled by a relay R—1, the coil of which is in turn connected in parallel with the phonograph motor M—2 so that whenever the phonograph motor M—2 is in operation the contacts S—1 of relay R—1 will complete a circuit through the signal light G from line conductor L—3, through conductor 79, switch contacts S—1, conductor 80, signal light G, and conductor 81 to line conductor L—4. The signal light G may be given any desired distinctive appearance such as a green light.

It will also be noted that relay R—1 when energized not only operates to close the circuit to the green light G but that this relay is also provided with a pair of normally closed contacts S—2 which, when the relay R—1 is energized, are held in open circuit position, opening the circuit to the "wired music" turn-table motor M—1 and preventing the playing of any "wired music" selection until the completion of that record on the phonograph 2 which was then playing.

Assuming that in the meantime someone has deposited a coin in the coin slot 16 of the "wired music" reproducer 5 at the local station, such operation, as is explained in the Stark, et al. patent hereinbefore referred to, will result in the signaling to the operator at the central station that the coin has been deposited and the operator will speak over microphone 13 requesting the depositor to state what selection of record is desired to be played over the "wired music" system, the depositor of the coin replying over the microphone 82 at the "wired music" reproducer 5, naming the desired selection. This message will be reproduced at the central station at speaker 12 and the operator at the central station will select the desired record from the record library at the central station and place the same upon the "wired music" turn-table 10 ready to play this selection at the termination of the previously selected record then playing on the phonograph 2. If more than one coin is deposited at the "wired music" reproducer station 5, the number and value of such coins will be registered upon the coin registering mechanism 14 at the central station and the selections requested corresponding to the number and value of such deposited coins will be taken from the library by the operator at the central station and placed upon the record tray 18 associated with the particular "wired music" turn-table 10 corresponding to the subscriber's station, ready to be played in the sequence in which these records have been called for by the voice communication between the subscriber's station and the central station. At the same time the operator, having selected and placed the records either upon the turn-table 10 or upon the shelf 18, will cancel back the coin counting mechanism 14, indicating that all of the records selected for the value of the coins deposited have been placed ready for reproduction at the subscriber's station.

In addition to the mechanism which is illustrated and described in the Stark, et al. patent, I prefer to provide the record tray 18 with a movable shelf upon which the records will be deposited, such shelf being provided with suitable contact members or a switch indicated generally at 83 arranged to be closed by the insertion upon or the presence upon the shelf 18 of unplayed

"wired music" selected records. Also associated with the "wired music" turn-table and pick-up mechanisms 10 and 17, I provide a switch which is adapted to be normally closed whenever the pick-up 17 is not in playing position upon the turn-table 10 but which will be momentarily opened during the time that the pick-up arm 17 is traversing a record on the turn-table 10 during the playing of a record. This switch I have designated by the reference character S—6 which, as will be observed from an inspection of Fig. 2, is connected in a circuit which extends from line conductor L—3, through conductor 84, the contacts 83 of the "wired music" record shelf switch, thence through the coil of a relay R—4, thence by way of conductor 85, through the normally closed contacts of the switch S—6, to line conductor L—4.

Under the assumed conditions of a record being upon the turn-table 10 and other records being upon the shelf 18, the relay coil R—4 will be energized to close its contacts S—5 which, it will be noted, is arranged to complete a circuit through a red signal light R to warn the operator at the central station that there are records to be played on the "wired music" turn-table as soon as the record then playing on the phonograph 2 has been completed.

Upon the termination of the play of the record then playing on the phonograph 2, if there has been a selection of a record for the "wired music" turn-table 10 and the record is in place on the turn-table 10, the de-energization of relay R—1 by the opening of the phonograph motor control switch S—25 (which will be momentarily opened at the termination of the play) will permit the contacts S—2 of relay R—1 to close, starting the "wired music" turn-table motor M—1 into operation, the circuit for the coil of relay R—1 extending from line conductor L—1, through conductors 79 and 86, the coil of relay R—1, conductor 87, to conductor 70, whence the circuit extends to line conductor L—4, through the contacts of switch S—75, conductors 71 and 72, and the contacts of the switch S—9. The circuit for the motor M—1 will thus be completed, extending from line conductor L—1, through conductor 79, the contacts S—2 of relay R—1, conductor 88, normally closed motor switch S—8 (corresponding to the motor control switch 196 shown and described in the Stark, et al. patent), which will be normally closed but will open momentarily upon the completion of the play of a record upon the turn-table 10.

As pointed out before, the closing of the switch contacts S—2 which starts the motor M—1 also completes a parallel circuit to the relay R—3, which in turn closes its contacts S—4 to complete the circuit for the relay R—2 and the energization of relay R—2, it will be remembered, opens its switch contacts S—3 to prevent the re-completion of the circuit to the phonograph motor M—2 even though the switch S—9 remains closed by reason of unconsumed record selections on the phonograph 2, and the contacts of switch S—25 immediately re-close after having been momentarily opened at the end of a record play on the phonograph 2.

Thus the "wired music" turn-table will operate to play the record selected, the music of such record being reproduced at the subscriber's station through the speaker 21 in the manner described in the Stark, et al. patent hereinabove referred to.

During the play of the record upon the turn-table 10, the movement of the pick-up arm 17 will open the switch S—6, extinguishing the red signal light R if there are additional records on the shelf 18 but the circuit will be re-closed as the pick-up arm 17 passes the switch S—6 at the end of the play to maintain the red signal light illuminated, indicating to the operator that there are additional "wired music" records to be played.

However, as soon as the switch S—8 is momentarily opened at the termination of the play of the record on the "wired music" turn-table 10, relay R—3 will be de-energized, allowing its switch contacts S—4 to open, thus de-energizing relay R—2, permitting its contacts S—3 to close, completing the circuit to the motor M—2 if there are unplayed but previously selected records selected for play on the phonograph 2. Thus the system will continue to operate, alternately playing a record on the phonograph 2 and a record on the "wired music" turn-table 10 as long as there remains selected but unplayed records on these devices.

However, if upon the termination of a play of a record on the "wired music" turn-table 10 there are no further selected but unplayed records on the phonograph 2, the stepping mechanism 62 will have been returned to its normal or off position, as shown in Fig. 2, opening the contacts S—9 for the control of the motor M—2. Hence upon the completion of the play on the "wired music" turn-table, the momentary opening of the switch S—8, de-energizing relay R—3 and resulting in the de-energization of relay R—2 will not start the motor M—2 because switch S—9 is open. Since switch S—9 is open, relay R—1 will be de-energized and a second selection may immediately be played on the "wired music" turn-table 10.

Likewise if upon the completion of the play of a record on the phonograph 2 there are no unplayed records to be played on the "wired music" turn-table 10 and there are further selected but unplayed records set up on the phonograph 2 by a stepping of the stepping mechanism 62 away from its normal position, the momentary opening of the switch contacts S—25 will have no effect and the immediate re-closing of the contacts S—25 will immediately re-start the motor M—2 to play the next selected record and the phonograph 2 will remain in operation until all of the previously selected records have been played on the phonograph 2 unless in the meantime a selection of "wired music" record is made and the pick-up arm 17 has been placed in operating position upon the turn-table 10.

It frequently occurs that either upon the "wired music" turn-table 10 or in the phonograph 2 a record may become "stuck" or for some reason fails to play and I provide a means for warning the central station operator of such "stuck record" condition by providing at the subscriber's station a push button 100 adapted to be connected over the extra telephone wire system X—Y (which may be either a 2-conductor telephone wire system interconnecting the subscriber's station with the central station or may be a single telephone wire and ground). The operation of the push button 100 may be termed a "cancel" operation and supplies current to the central station preferably in the form of direct current derived from a suitable source of direct current 101 indicated as a battery located at the subscriber's station, though it will be understood by those skilled in this art that the source of direct current may be taken from the amplifier

network at the subscriber's station. While I prefer to employ direct current for the "cancel" operations, it will also be understood that if desired the cancellation signals and operations hereinafter described may be employed with alternating current having a frequency which will not interfere with the various frequencies employed for the transmission of music from the central station to the subscriber's station or the intertalk and record selection currents required for the operation of the phonograph 2 and the "wired music" system.

As illustrated in Fig. 2, the closing of the cancel push button 100 will supply direct current through the telephone conductor X to the coil of a cancel relay R—10, such circuit extending from the battery 101, the push button 100, the conductor X, the coil of relay R—10 to conductor Y back to the opposite terminal of the battery 101. The energization of the cancel relay R—10 will close its associated switch contacts S—16, which will in turn complete a circuit to a relay R—5. The relay R—5 is provided with a pair of normally open contact switch members indicated as S—11 and S—12, respectively.

The energization of the relay R—5 closing its contact switch members S—11 will complete a circuit to a gong or other audible signal device 102 at the central station, audibly warning the operator at the central station that a record is to be canceled so that if at the time of the operation of the push button 100 there is a "wired music" record being played, attention will be immediately directed to the "stuck" record on the turn-table 10 and the operator will perform such operations as will be required to correct the improper play of that record.

On the other hand, if at the time of the operation of the button 100 the phonograph 2 is in operation, the closing of switch contacts S—12 upon the energization of relay R—5 will operate a magnet R—8 associated with the phonograph pick-up arm 103 for the phonograph 2, such magnet R—8 being arranged in any manner conforming with the construction of the particular phonograph 2 to cause the stopping of the play of the "stuck" record on the phonograph. As indicated diagrammatically in Fig. 2, the energization of the magnet R—8 will be employed to lift the phonograph pick-up arm 103 off of the record on the turn-table 104 of the phonograph 2, thus stopping the play of that record, and the phonograph mechanism will automatically shut off the phonograph or start the play of another record if another had been previously selected.

It will also be observed from an inspection of Fig. 2 that the closing of the switch contacts S—16 by the energization of cancel relay R—10 also completed a circuit to a locking relay R—7 which is illustrated as having a pair of contact terminals S—14 and with an arm 105 which is adapted to be caught and held in its uppermost position by means of a pawl 106 actuated by a release magnet R—6, the arrangement being such that once the relay R—7 has been energized the interlocking of the lever 105 with the pawl 106 will maintain the switch contacts S—14 closed until a subsequent operation is performed to energize the unlocking magnet R—6 as will be hereinafter described.

The closing of the switch contacts S—14 completes a circuit through a warning signal light A which may be of any color distinct from the green signal light G and the red signal light R, for example, an amber light, which light warns the operator at the central station of the "stuck" record condition in addition to the warning given by the gong 102, the signal light 107 remaining in operation until a correction is made.

After the operator at the central station has noted the phonograph 2 or adjusted the "wired music" turn-table and pick-up 10—17 to correct the improper play condition, the operator will then operate a push button switch S—10 which will complete a circuit to the unlocking magnet R—6, releasing the pawl 106 from the lever 105 and permitting the re-opening of the switch contacts S—14, extinguishing the signal light A.

As hereinbefore described, the "measured music" system, such as illustrated and described in the above referred to Farrell patent, may be connected to the same central station equipment as is being employed for supplying music either by the phonograph 2 or the "wired music" system to a closely adjacent subscriber's station, thus permitting a single phonograph 2 in the central station and a single turn-table for a "wired music" system for a given subscriber to be employed to supply the necessary music for a "measured music" system in a further or auxiliary subscriber's location which is sufficiently close to the first subscriber's station as to be readily interconnected therewith. For example, the particular subscriber's location may be next door to a cafe or other place of business wherein "measured music" coin collection boxes 9 are located and which may be termed as an "auxiliary subscriber's station," thus permitting the interconnection of the subscriber's location and the auxiliary subscriber's location merely by extending a few interconnecting wires between them.

By referring particularly to Fig. 2, it will be noted that the auxiliary subscriber's location is located within the dotted line box bearing the legend "auxiliary subscriber's station" and is interconnected with the subscriber's location containing the "wired music" reproducer 5 by means of four conductors indicated by the reference characters 108, 109, 110 and 111.

For the operation of the "measured music" system all that is necessary is that there be a record in play upon either the phonograph 2 or upon the "wired music" system and in the event there is no record in play on either of these systems the "measured music" system must operate so as to start the play of a record upon the phonograph 2.

The accomplishment of this is illustrated in Fig. 2 as by providing the "measured music" box 9 with coin actuated switches S—23 and S—24, which are adapted to be closed upon the deposit of a coin in the "measured music" box 9. The closing of the switch contacts S—24 will connect the speaker 20 on the "measured music" box 9 across the conductors 108—109 which are an extension of the music carrying conductors extending from the amplifier network in the main subscriber's station so that any record which is in play at the time of the deposit of the coin in the box 9 will be reproduced by the speaker 20. The "measured music" system as illustrated and described in the above noted Farrell patent includes a timing mechanism which will maintain the switch 24 closed for a predetermined length of time subsequent to the deposit of a coin in the box 109.

Assuming that upon the deposit of a coin in the box 9 there was but a part of a record still playing on the "wired music" system or the phonograph 2 and that the length of such un-

played portion of the record is insufficient to satisfy the time purchased by the deposit of the coin in the box 9, the switch contacts S—23 being momentarily closed will cause the phonograph 2 to continue in operation to play another record or, in the event the "wired music" system is operating, the momentary closing of the switch S—23 will result in the operation of the phonograph 2 to play an additional record upon the phonograph 2 to supply the necessary music for the predetermined time period required at the box 9. This latter operation is accomplished by connecting the contacts of the switch S—23 between the conductors 110 and 111, the conductor 111 being in series circuit relation with a pair of switch contacts S—26, which are in turn controlled by a relay coil R—14.

The relay coil R—14 is connected in circuit with the stepper switch 23 in the record selection box 7 so that if this stepper switch has its movable arm 25 on any of the contacts 24, representing the fact that box 7 is in operation, relay 14 will be energized to open its switch contacts S—26. Thus upon the deposit of a coin in the box 9, the closing of the contacts S—23 will have no effect. Immediately, however, upon the completion of dialing or selecting by the box 7 and the movement of the stepper switch brush arm 25 to the off position, the circuit to the coil R—14 will be open and switch contacts S—26 will reclose. If at that time there is a coin deposited in the "measured music" box 9, momentarily closing switch 23, this will supply a signal current to the central station from line conductor L—2 through the switch contacts S—26, conductor 111 and conductor 110 over the conductors X and Y, causing the energization of accepting relay R—11 to operate the stepper mechanism 46 and record selecting mechanism 47 through a single step of its operation, putting the phonograph 2 into operation in the same manner as though a coin had been deposited in the box 7 and the dial 18 had been moved to select record No. 1 on the phonograph 2.

By referring particularly to the stepper mechanism 47 in Fig. 2, it will be noted that the first step which is made by the movable arm 50 will cause this arm to engage a contact terminal 112 so that a circuit may be completed to a stepping mechanism 113, the stepping mechanism 113 being arranged so as to be movable only through two steps of operation, as is clearly indicated in Fig. 2. The stepper mechanism 113 is provided for the purpose of insuring the completion of the circuit to the phonograph motor M—2 and to maintain this circuit complete for only two advance steps if two or more coins are deposited in "measured music" boxes 9 at the auxiliary subscriber's station. Thus if a record is already playing on the phonograph 2 at the time the coin is deposited in the "measured music" box 9, the stepping mechanism 113 will have stepped up one step and will be stepped up to a second step if additional coins are deposited in box 9 at the subscriber's station. The stepping mechanism 113 includes a notched disk 114 having but two notches to be engaged by an operating or step-up pawl 115 actuated by a coil R—12 and additional notches to be engaged and operated by a step-back mechanism 116 which will be energized and actuated upon the completion of each record played by the phonograph 2. The notched disk 114 operates a movable contact arm 117 to move it contact arm first into engagement with one contact terminal 118 and then upon a second operation into engagement with a contact terminal 119. Both of these contacts 118 and 119 are connected in parallel relation to the motor control switch S—9.

Thus if the phonograph 2 is already in play at the time of the deposit of a coin in the box 9, the stepper mechanism 113 will have its contact member on contact 118 while if more than one record has been selected ahead on the phonograph 2, the contact arm 117 will be upon its contact terminal 119. Thus with two records already selected on the phonograph 2, the deposit of the coin in the box 9 and the closing of switch 23 will be ineffective to cause any operation and the depositor of the coin will be insured of the play of the remaining part of that record now playing plus the second or next succeeding record which has been previously selected by the box 7.

If, on the other hand, the last of the selected records selected by box 7 is playing on the phonograph, the deposit of the coin in the box 9 will momentarily close switch 23, sending an impulse through conductors 110—111, over conductors X and Y, causing the energization of accepting relay R—11 to impulse the stepper mechanism 47 again into contact with the terminal 112 and the phonograph will continue to play, as described in the Wilcox patent, the next record in rotation.

It will therefore be apparent that each time a record is selected by the box 7 the step-up mechanism 113 will be actuated by the completion of a circuit to the coil R–12, the circuit extending from line conductor L–4, through contact arm 49, contact terminal 112, conductor 120, the coil R–12, and conductor 121 to line conductor L–3.

However, upon the completion of the play of any record on the phonograph 2, or during the time of play of any one record on the phonograph 2, the pick-up arm 103 thereof will momentarily close a pair of switch contacts S–21 to energize the step-back coil R–13 operating the step-back mechanism 116 of the stepper mechanism 113, this circuit extending from line conductor L–3, through conductor 112, the coil R–13, conductors 123 and 124, the contacts of switch S–21, and thence by way of conductor 125 to line conductor L–4.

Since, as will be remembered, the stepper mechanism 113 can only make two steps, it follows that irrespective of the number of records which may have been previously selected by operation of the selector box 7, no more than two record plays may be spaced ahead on stepper mechanism 113 and the depositor of the coin in the "measured music" box 9 will always be assured of sufficient music reproduction to complete the time period allowed by the "measured music" box 9.

If, as was assumed, only one record had been stepped up on the phonograph 2 by the record selector box 7 prior to the deposit of the coin in the "measured music" box 9, then upon the completion of or during the play of that one record the stepper mechanism 113 will be stepped back to its off position but will be stepped up again to its first position (engaging switch arm 117 and terminal 118) upon the closing of the switch contacts S–26 and the phonograph 2 will be maintained in operation for one more record play.

If now during the playing by the phonograph 2 of one record more than has been selected by selector box 7 (for the purpose of playing out the "measured music" time), another coin is deposited in the "measured music" box 9 or another

"measured music" box in the same location, the result will be to step up the stepping mechanism 113 to its second position, that is, with the contact arm 117 in contact with terminal 118 and the phonograph 2 will remain in play to play a third record providing music reproduction covering the second time interval called for by the deposit of the second coin in the box 9.

It will also be noted that the pick-up arm 17 for the "wired music" turn-table 10, either at the end of the play of the record which may be then playing on the "wired music" system or during the play of that record, will momentarily close a pair of contacts S–20 which are connected in parallel relation with the contacts S–21 actuated by the pick-up arm 103 of the phonograph 2. Thus if a "wired music" record is playing at the time of the deposit of a coin in the "measured music" box 9 and at a time when no record has been selected by the box 7, the stepping mechanism 47 will be actuated to step up one step on the stepper mechanism 113 and at the end of the playing of the record then on the turn-table 10 the phonograph 2 will come into operation to play one record by the phonograph 2 to complete the time interval paid for by the deposit of a coin in the "measured music" box 9.

While as indicated above, the switch contacts S–20 and S–21 may be closed at the end of the play of a record in the phonograph 2, or at the end of the play of the record on the "wired music" turn-table 10, I prefer that the switch contacts S–20 and S–21 should be closed momentarily substantially at the start of such records so that the stepping back of the stepper mechanism 113 will occur at a time prior to the completion of the record then in play, leaving a sufficient time interval to satisfy the demands of the "measured music" box 9 while if the pick-up arms 103 and 17 have moved inwardly upon their records so that an insufficient time interval still remains on the record then playing to satisfy the demands of the box 9, the stepping mechanism 113 will cause the phonograph 2 to go into operation to play another record providing record play for the complete full time interval demanded by the "measured music" box 9.

It will therefore be seen that I have provided a combination "juke box" phonograph system with its associated remote control record selector devices with a "wired music" system having its vocal record selecting functions in such manner that either records played by the phonograph 2 or records played by the turn-table 10 may be reproduced at the subscriber's station. In addition, I have provided means by which the "measured music" system may be tied into the same combination system in such manner as to insure entertainment at the "measured music" boxes for a time period purchased by the deposit of a coin in such boxes.

It will also be noted that each of these systems operates without interference with the other so that all of the record selecting and playing mechanisms may be contained in a single central office where an operator may respond to the voice selections made over the "wired music" system and may supervise the operation of the phonograph 2.

However, during off hours, that is, such periods of the day at which "wired music" is not likely to be in demand, the "measured music" boxes 9 and the record selection boxes 7 will still be operative to actuate the phonograph 2 to provide entertainment purchased at either of these boxes.

Thus it will be seen that by the use of my system all of the phonograph equipment may be so located in a single central station from which "wired music" may be purchased by some subscribers, "juke box" phonograph music may be purchased by other subscribers or as an additional service to a subscriber to the "wired music" system. Also music may be purchased by an auxiliary subscriber's station by way of a "measured music" system with a minimum of equipment required to satisfy all of these demands, in addition to simplifying service problems by maintaining all of the phonograph equipment in a single location where it may be readily observed, supervised, operated and correction of misplays, "stuck" records or other defects may be immediately made.

While I have shown and described the preferred embodiment of my invention, I do not desire to be limited to any of the details of construction shown and described, except as defined in the appended claims.

I claim:

1. In a music reproduction system, a central station, a remotely located subscriber's station, a pair of telephone circuits connecting the subscriber's station to the central station, a manually operated phonograph at the central station connected to one of said telephone circuits to supply to said circuit music produced by said manual phonograph, a speaker at the subscriber's station connected to said named telephone circuit to reproduce the music at the subscriber's station, a second phonograph at the central station of the type in which a number of records may be selected and automatically played in the order of their selection, means connecting said second phonograph to said named telephone circuit to reproduce the music at the speaker at the subscriber's station, means at the subscriber's station for collecting coins and for actuating the record selecting mechanism of said second phonograph, means connecting said coin collecting and record selecting means to the other of said telephone circuits, means at the central station connected to said other telephone circuit and operable in response to electric current transmitted over said second circuit for registering the number of coins deposited in said record selecting means at the subscriber's station and for operating said second phonograph to play the records in the order of their selection, and means at the central station interconnecting said manual phonograph and said second phonograph responsive to operation of said manual phonograph to prevent said second phonograph from playing a record until the termination of the play of a record then on the manual phonograph and responsive to the termination of play of said record for starting the play of a previously selected record on said second phonograph and preventing a subsequent play of a record on said manual phonograph and responsive to the termination of the play of a record on said second phonograph for starting the play of a previously selected record on the manual phonograph and preventing the play of a second previously selected record on the second record on the manual phonograph.

2. In a music reproduction system, a central station, a remotely located subscriber's station, telephone circuits interconnecting said central station and said subscriber's station, a manual phonograph at said central station adapted to play records manually placed thereon, an automatic phonograph at said central station adapted to play a succession of records in response to an

electrically operated record selecting mechanism and in the order of their selection by the selecting mechanism, means connecting both of said phonographs to said telephone circuits to place thereon the music reproduced by said phonograph, a speaker at the subscriber's station connected to said telephone circuits to reproduce the music played by either of said central station phonographs, coin collecting and record selecting mechanism at the subscriber's station and connected to said telephone circuits and having means for producing upon said telephone circuits electrical impulses denoting the number and value of coins deposited therein and for placing upon said telephone circuits a different number of electrical impulses for each of the records in said automatic phonograph to actuate the automatic phonograph selecting mechanism to play one or more of the records in said automatic phonograph in succession and in the order of their selection, and means at said central station actuatable in response to the termination of the play of any record on either of said phonographs for alternately disabling the phonograph upon which the record has just completed play from playing a second record if selected unplayed records are ready to be played upon the other of said phonographs.

3. In a music reproduction system, a central station, a remotely located subscriber's station, telephone circuits interconnecting said central station and said subscriber's station, a manual phonograph at said central station adapted to play records manually placed thereon, an automatic phonograph at said central station adapted to play a succession of records in response to an electrically operated record selecting mechanism and in the order of their selection by the selecting mechanism, means connecting both of said phonographs to said telephone circuits to place thereon the music reproduced by said phonograph, a speaker at the subscriber's station connected to said telephone circuits to reproduce the music played by either of said central station phonographs, coin collecting and record selecting mechanism at the subscriber's station and connected to said telephone circuits and having means for producing upon said telephone circuits electrical impulses differing in character from the sound currents on said telephone circuits denoting the number and value of coins deposited therein and for placing upon said telephone circuits a different number of electrical impulses for each of the records in said automatic phonograph to actuate the automatic phonograph selecting mechanism to play one or more of the records in said automatic phonograph in succession and in the order of their selection, means at said central station operable only by said impulses for actuating the automatic phonograph mechanism to cause said phonograph to play the selected records in sequence and in the order of their selection, and means at said central station actuatable in response to the termination of the play of any record on either of said phonographs for alternately disabling the phonograph upon which the record has just completed play from playing a second record if selected unplayed records are ready to be played upon the other of said phonographs.

4. In a music reproduction system, a central station, a remotely located subscriber's station, telephone circuits interconnecting said central station and said subscriber's station, a manual phonograph at said central station adapted to play records manually placed thereon, an automatic phonograph at said central station adapted to play a succession of records in response to an electrically operated record selecting mechanism and in the order of their selection by the selecting mechanism, means connecting both of said phonographs to said telephone circuits to place thereon the music reproduced by said phonograph, a speaker at the subscriber's station connected to said telephone circuits to reproduce the music played by either of said central station phonographs, coin collecting and record selecting mechanism at the subscriber's station and connected to said telephone circuits and having means for producing upon said telephone circuits electrical impulses differing in character from the sound currents on said telephone circuits denoting the number and value of coins deposited therein and for placing upon said telephone circuits a different number of electrical impulses for each of the records in said automatic phonograph to actuate the automatic phonograph selecting mechanism to play one or more of the records in said automatic phonograph in succession and in the order of their selection, means at said central station operable only by said impulses for actuating the automatic phonograph mechanism to cause said phonograph to play the selected records in sequence and in the order of their selection, means at said central station actuatable in response to the termination of the play of any record on either of said phonographs for alternately disabling the phonograph upon which the record has just completed play from playing a second record if selected unplayed records are ready to be played upon the other of said phonographs, signaling means at the subscriber's station for placing on said telephone circuits an electric current differing in character from the music currents and said impulse currents, a signal at said central station, and means at said central station connected to said telephone circuits and responsive only to currents of said last named character for actuating said signal at said central station.

5. In a music reproduction system, a central station, a remotely located subscriber's station, telephone circuits interconnecting said central station and said subscriber's station, a manual phonograph at said central station adapted to play records manually placed thereon, an automatic phonograph at said central station adapted to play a succession of records in response to an electrically operated record selecting mechanism and in the order of their selection by the selecting mechanism, means connecting both of said phonographs to said telephone circuits to place thereon the music reproduced by said phonograph, a speaker at the subscriber's station connected to said telephone circuits to reproduce the music played by either of said central station phonographs, coin collecting and record selecting mechanism at the subscriber's station and connected to said telephone circuits and having means for producing upon said telephone circuits electrical impulses differing in character from the sound currents on said telephone circuits denoting the number and value of coins deposited therein and for placing upon said telephone circuits a different number of electrical impulses for each of the records in said automatic phonograph to actuate the automatic phonograph selecting mechanism to play one or more of the records in said automatic phonograph in succession and in the order of their selection, means at said central station operable only by said im-

pulses for actuating the automatic phonograph mechanism to cause said phonograph to play the selected records in sequence and in the order of their selection, means at said central station actuatable in response to the termination of the play of any record on either of said phonographs for alternately disabling the phonograph upon which the record has just completed play from playing a second record if selected unplayed records are ready to be played upon the other of said phonographs, signaling means at the subscriber's station for placing on said telephone circuits an electric current differing in character from the music currents and said impulse currents, a signal at said central station, a circuit for said signal including a switch, means at said central station responsive only to currents of said last named character for closing said switch to actuate said signal holding means for holding said switch in closed position, and manually actuated means at said central station for releasing said holding means.

6. In a music reproduction system, a central station, a remotely located subscriber's station, telephone circuits interconnecting said central station and said subscriber's station, a manual phonograph at said central station adapted to play records manually placed thereon, an automatic phonograph at said central station adapted to play a succession of records in response to an electrically operated record selecting mechanism and in the order of their selection by the selecting mechanism, means connecting both of said phonographs to said telephone circuits to place thereon the music reproduced by said phonograph, a speaker at the subscriber's station connected to said telephone circuits to reproduce the music played by either of said central station phonographs, coin collecting and record selecting mechanism at the subscriber's station and connected to said telephone circuits and having means for producing upon said telephone circuits electrical impulses differing in character from the sound currents on said telephone circuits denoting the number and value of coins deposited therein and for placing upon said telephone circuits a different number of electrical impulses for each of the records in said automatic phonograph to actuate the automatic phonograph selecting mechanism to play one or more of the records in said automatic phonograph in succession and in the order of their selection, means at said central station operable only by said impulses for actuating the automatic phonograph mechanism to cause said phonograph to play the selected records in sequence and in the order of their selection, means at said central station actuatable in response to the termination of the play of any record on either of said phonographs for alternately disabling the phonograph upon which the record has just completed play from playing a second record if selected unplayed records are ready to be played upon the other of said phonographs, an auxiliary subscriber's station, means at said auxiliary subscriber's station for reproducing at said auxiliary subscriber's station music of records played by either of the phonographs at the central station, said means including a speaker and coin collecting means for producing electrical impulses denoting the number and value of coins deposited therein, and means connecting the auxiliary subscriber's station to said telephone circuits extending to the subscriber's station.

7. In a music reproduction system, a central station, a remotely located subscriber's station, telephone circuits interconnecting said central station and said subscriber's station, a manual phonograph at said central station adapted to play records manually placed thereon, an automatic phonograph at said central station adapted to play a succession of records in response to an electrically operated record selecting mechanism and in the order of their selection by the selecting mechanism, means connecting both of said phonographs to said telephone circuits to place thereon the music reproduced by said phonograph, a speaker at the subscriber's station connected to said telephone circuits to reproduce the music played by either of said central station phonographs, coin collecting and record selecting mechanism at the subscriber's station and connected to said telephone circuits and having means for producing upon said telephone circuits electrical impulses differing in character from the sound currents on said telephone circuits denoting the number and value of coins deposited therein and for placing upon said telephone circuits a different number of electrical impulses for each of the records in said automatic phonograph to actuate the automatic phonograph selecting mechanism to play one or more of the records in said automatic phonograph in succession and in the order of their selection, means at said central station operable only by said impulses for actuating the automatic phonograph mechanism to cause said phonograph to play the selected records in sequence and in the order of their selection, means at said central station actuatable in response to the termination of the play of any record on either of said phonographs for alternately disabling the phonograph upon which the record has just completed play from playing a second record if selected unplayed records are ready to be played upon the other of said phonographs, an auxiliary subscriber's station, means at said auxiliary subscriber's station for reproducing at said auxiliary subscriber's station music of records played by either of the phonographs at the central station, said means including a speaker and coin collecting means for producing electrical impulses denoting the number and value of coins deposited therein, means connecting the auxiliary subscriber's station to said telephone circuits extending to the subscriber's station, and means interposed in the circuits between said subscriber's station and said auxiliary subscriber's station to prevent the transmission of impulses from said auxiliary subscriber's station during the time period when any unplayed but previously selected records remain to be played in response to the record selecting mechanism at the subscriber's station.

8. In a music reproduction system, a central station, a remotely located subscriber's station, telephone circuits interconnecting said central station and said subscriber's station, a manual phonograph at said central station adapted to play records manually placed thereon, an automatic phonograph at said central station adapted to play a succession of records in response to an electrically operated record selecting mechanism and in the order of their selection by the selecting mechanism, means connecting both of said phonographs to said telephone circuits to place thereon the music reproduced by said phonograph, a speaker at the subscriber's station connected to said telephone circuits to reproduce the music played by either of said central station phonographs, coin collecting and

record selecting mechanism at the subscriber's station and connected to said telephone circuits and having means for producing upon said telephone circuits electrical impulses differing in character from the sound currents on said telephone circuits denoting the number and value of coins deposited therein and for placing upon said telephone circuits a different number of electrical impulses for each of the records in said automatic phonograph to actuate the automatic phonograph selecting mechanism to play one or more of the records in said automatic phonograph in succession and in the order of their selection, means at said central station operable only by said impulses for actuating the automatic phonograph mechanism to cause said phonograph to play the selected records in sequence and in the order of their selection, means at said central station actuatable in response to the termination of the play of any record on either of said phonographs for alternately disabling the phonograph upon which the record has just completed play from playing a second record if selected unplayed records are ready to be played upon the other of said phonographs, an auxiliary subscriber's station, means at said auxiliary subscriber's station for reproducing at said auxiliary subscriber's station music of records played by either of the phonographs at the central station, said means including a speaker and coin collecting means for producing electrical impulses denoting the number and value of coins deposited therein, means connecting the auxiliary subscriber's station to said telephone circuits extending to the subscriber's station, means interposed in the circuits between said subscriber's station and said auxiliary subscriber's station to prevent the transmission of impulses from said auxiliary subscriber's station during the time period when any unplayed but previously selected records remain to be played in response to the record selecting mechanism at the subscriber's station, means responsive to the transmission of impulses by the coin collecting mechanism in said auxiliary subscriber's station for permitting the effective registration of only two impulses, and means actuated by the termination of play of each record on either of the phonographs at said central station for enabling said last named means to thereafter register a coin deposited at said auxiliary subscriber's station between said termination and the termination of the next record played on either of said phonographs.

9. In a music reproducing system, a central station, a remotely located subscriber's station, telephone circuits interconnecting said two stations, a manually actuated phonograph at the central station for transmitting over said telephone circuits music of records played thereon, a speaker at said central station for reproducing said music, inter-talk mechanism at said central station and said subscriber's station for permitting the vocal selection of records to be played on said phonograph, record holding means upon which records selected to be played subsequent to a record then playing on said phonograph may be placed, and means responsive to the location of any record on said record holding means for actuating a signal denoting selected but unplayed records to be played on said phonograph.

10. In a music reproduction system, a central station, a remotely located subscriber's station, telephone circuits interconnecting said central station and said subscriber's station, a manual phonograph at said central station adapted to play records manually placed thereon, an automatic phonograph at said central station adapted to play a succession of records in response to an electrically operated record selecting mechanism and in the order of their selection by the selecting mechanism, means connecting both of said phonographs to said telephone circuits to place thereon the music reproduced by said phonograph, a speaker at the subscriber's station connected to said telephone circuits to reproduce the music played by either of said central station phonographs, coin collecting and record selecting mechanism at the subscriber's station and connected to said telephone circuits and having means for producing upon said telephone circuits electrical impulses differing in character from the sound currents on said telephone circuits denoting the number and value of coins deposited therein and for placing upon said telephone circuits a different number of electrical impulses for each of the records in said automatic phonograph to actuate the automatic phonograph selecting mechanism to play one or more of the records in said automatic phonograph in succession and in the order of their selection, means at said central station operable only by said impulses for actuating the automatic phonograph mechanism to cause said phonograph to play the selected records in sequence and in the order of their selection, means at said central station actuatable in response to the termination of the play of any record on either of said phonographs for alternately disabling the phonograph upon which the record has just completed play from playing a second record if selected unplayed records are ready to be played upon the other of said phonographs, record holding means upon which records selected to be played subsequent to a record then playing on said phonograph may be placed, means responsive to the location of any record on said record holding means for actuating a signal denoting selected but unplayed records to be played on said phonograph, and signaling means responsive to the record selecting mechanism of said automatic phonograph when selected records remain unplayed on said phonograph for actuating a signal denoting selected but unplayed records on said automatic phonograph.

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