Dec. 29, 1942. E. L. TRIMAN 2,306,654

PHONOGRAPH

Filed May 28, 1941 5 Sheets-Sheet 1

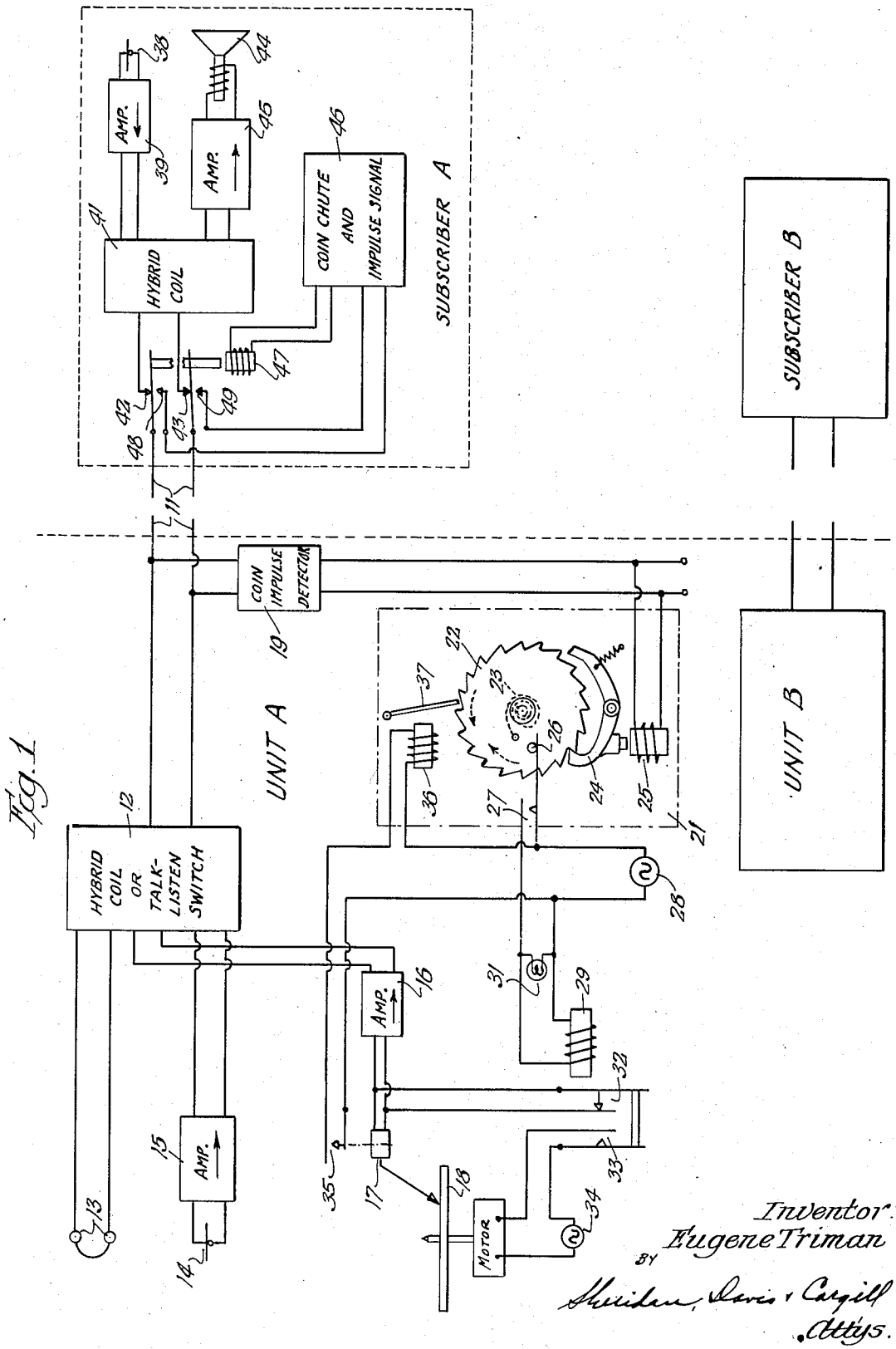


Fig. 1

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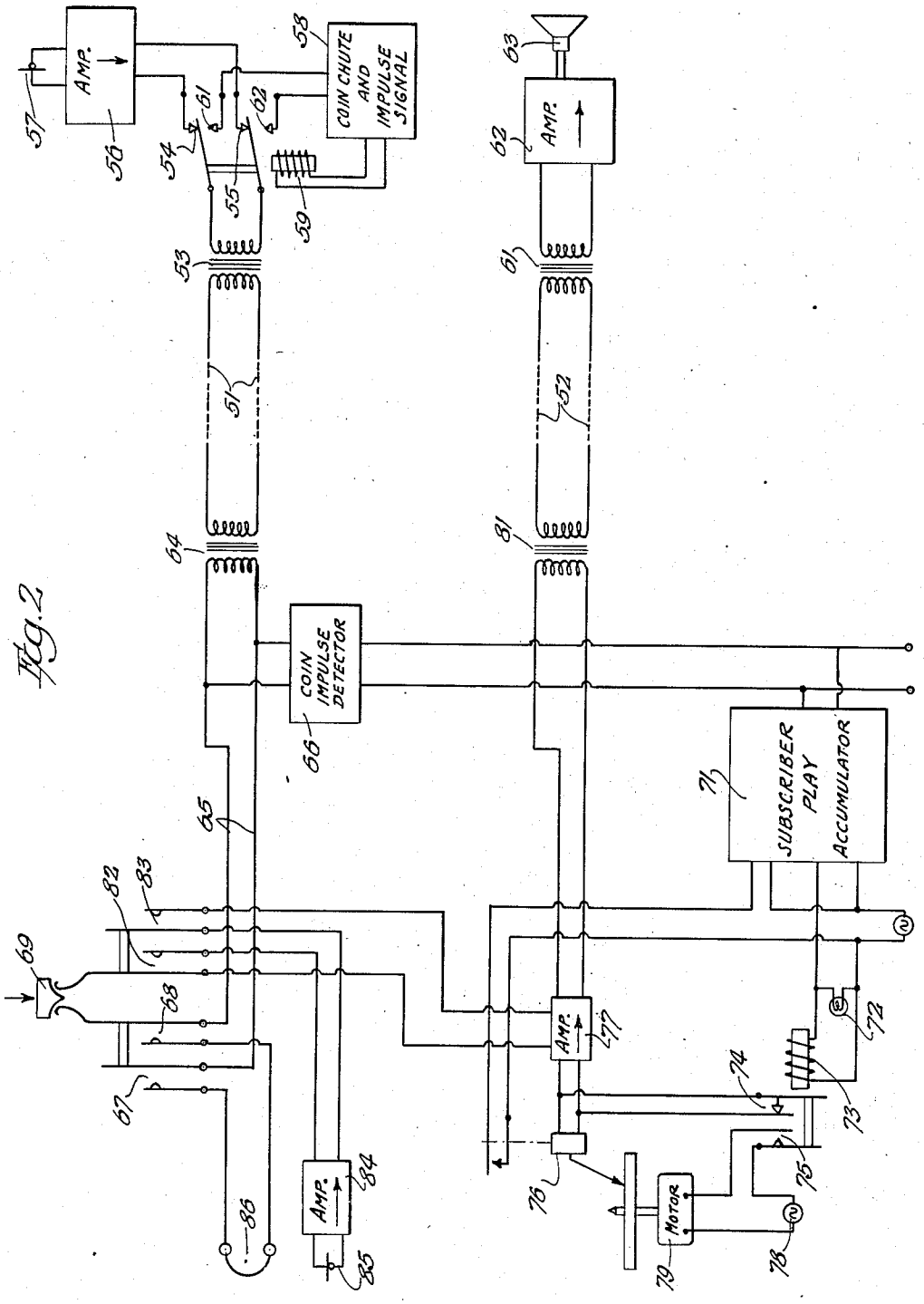


Fig. 2

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Fig. 4

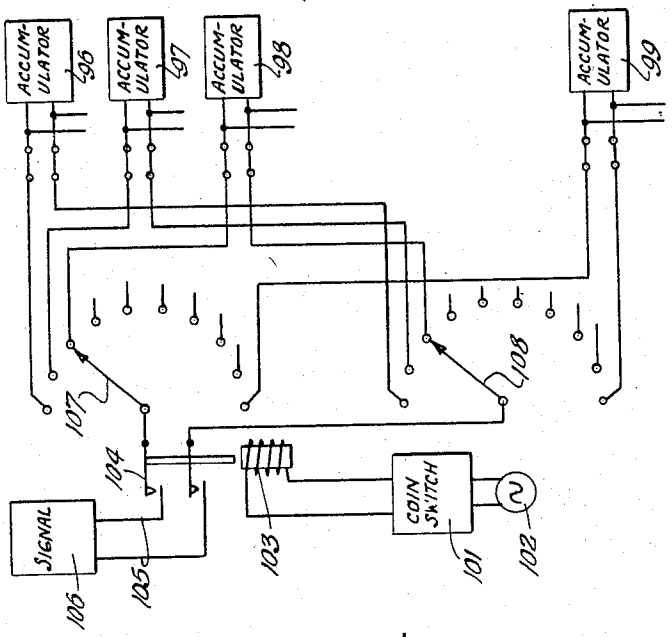
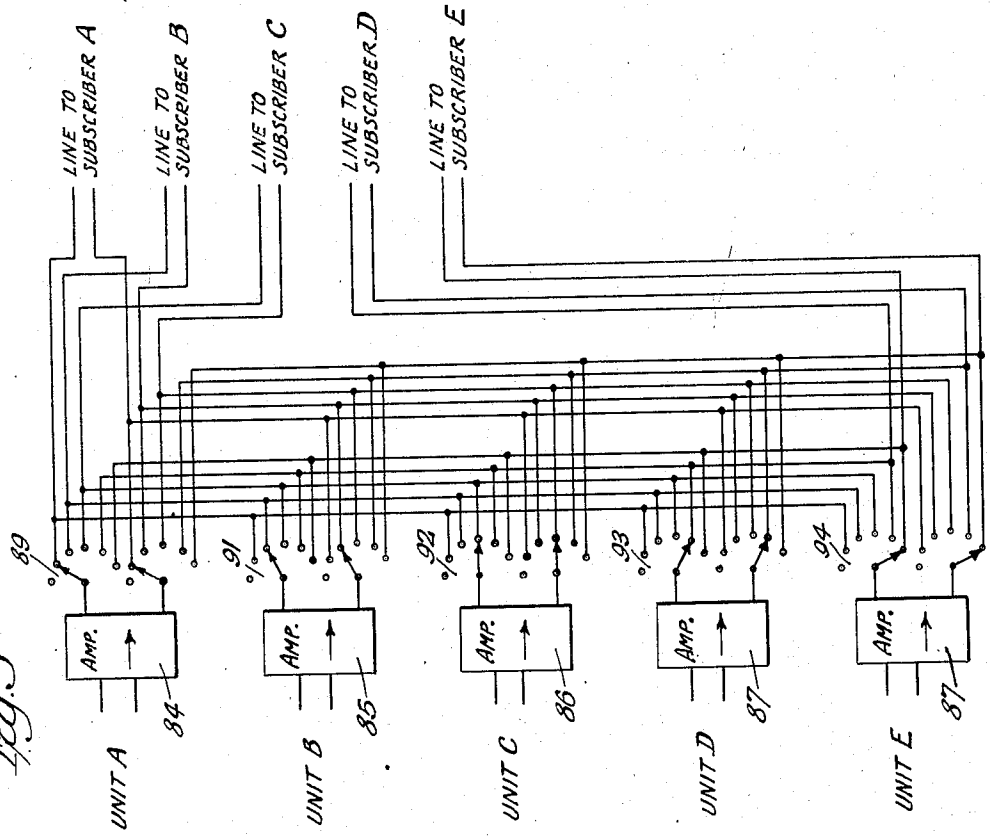


Fig. 3



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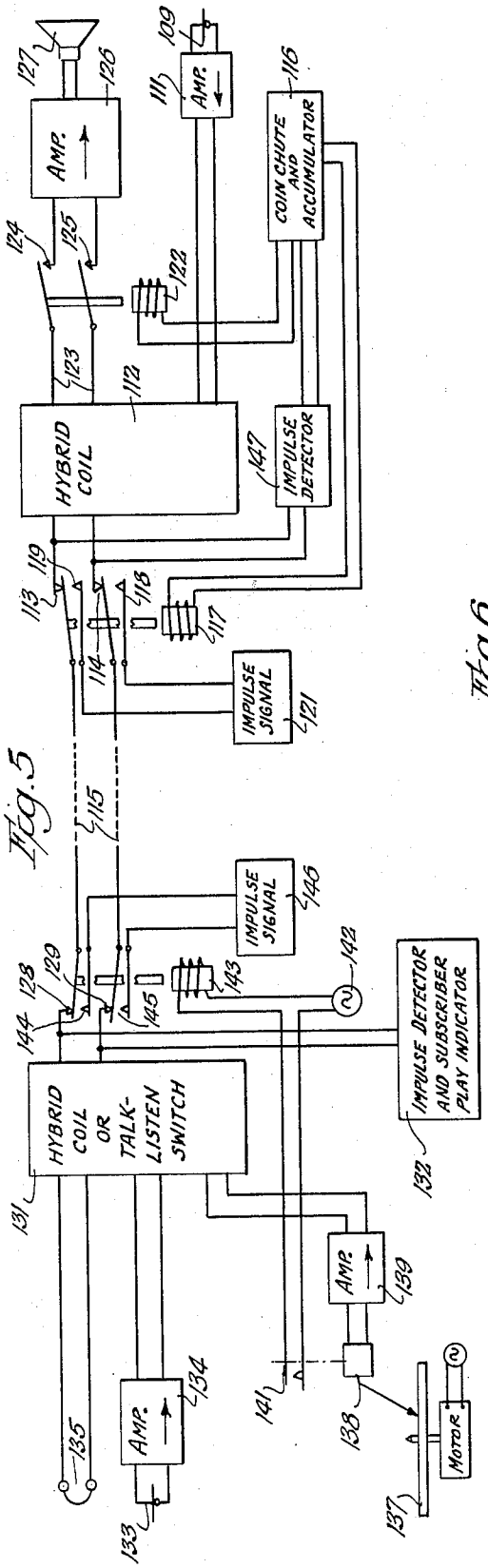


Fig. 5

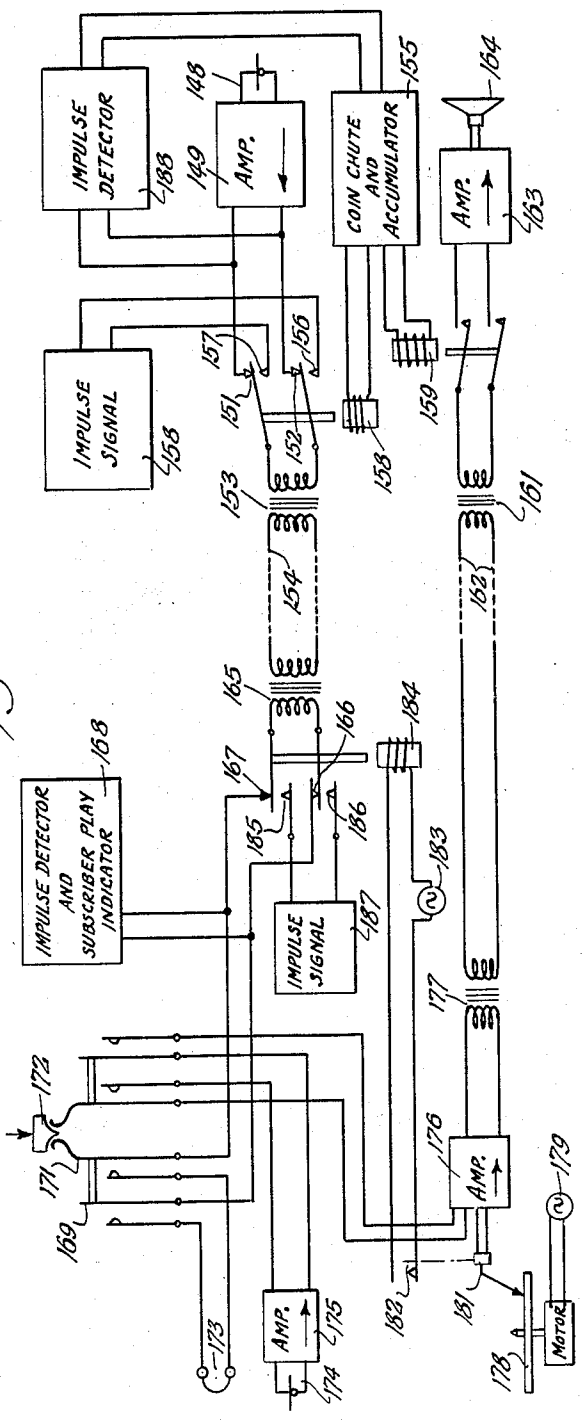


Fig. 6

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Filed May 28, 1941 5 Sheets-Sheet 5

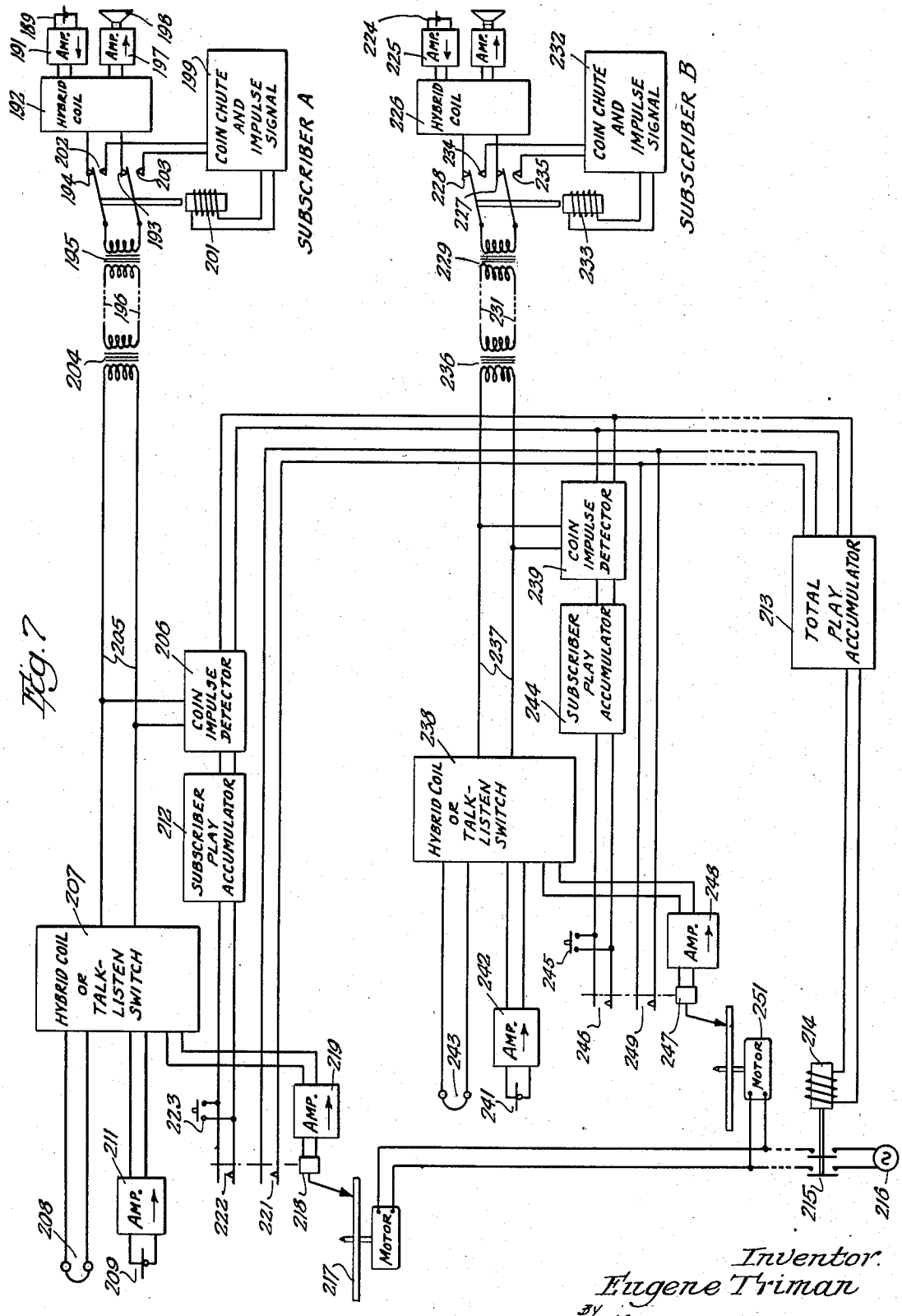


Fig. 7

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Patented Dec. 29, 1942 2,306,654

UNITED STATES PATENT OFFICE

2,306,654

PHONOGRAPH

Eugene L. Triman, Chicago, Ill., assignor to Rock-Ola Manufacturing Corporation, Chicago, Ill., a corporation of Delaware

Application May 28, 1941, Serial No. 395,540

17 Claims. (Cl. 179—6)

My invention relates to phonographs and more particularly to a coin-operated phonograph system for the electrical reproduction of phonograph records.

Heretofore it has been customary to provide phonograph systems for the electrical reproduction of phonograph records comprising a central station and a plurality of subscribers' station each connected thereto by a telephone line whereby at each subscriber station a coin-operated device enabled the subscriber to obtain reproduction of a requested phonograph record. In some of such systems the phonograph records, the phonograph turntable and motor, the phonograph pick-up and amplifier were located at the central station. A sound reproducer and frequently an amplifier were located at each subscriber station, and usually all of these means were continuously energized or capable of being energized by the operator at the central station. Thus it was possible for the central station operator to play phonograph records in addition to those records requested and paid for by the subscriber. It has been found desirable to provide a phonograph system for the electrical reproduction of phonograph records wherein the reproduction of phonograph records is controlled by a coin-operated means located at the subscriber station. Such control can be obtained by having the coin-operated means exclusively control the operation of at least one of the essential elements necessary for the operation of the system and for the electrical reproduction of phonograph records.

It is therefore an object of my invention to provide a phonograph system for electrically reproducing wherein at least one of the elements of the apparatus necessary for the reproduction of phonograph records will be controlled by the coin actuated means located at the subscriber station.

It is therefore another object of my invention to provide a new and improved phonograph system for the coin-operated electrical reproduction of phonograph records.

It is a further object of my invention to provide an improved phonograph system for the electrical reproduction of phonograph records wherein the operation of at least one of the essential elements of the system located at the subscriber station is controlled by a coin-operated device located at the subscriber station.

Still another object of my invention is to provide a new and improved system for electrically reproducing phonograph records wherein the coin-controlled reproducing apparatus at the central station may be connected selectively to reproducing a phonograph record at another subscriber station.

Other and further objects of my invention will become apparent upon reference to the following description taken in connection with the accompanying drawings wherein:

Fig. 1 is a diagrammatic representation of one arrangement of the elements and circuits in a single channel phonograph system which embodies my invention;

Fig. 2 is a diagrammatic representation of another arrangement embodying my invention as applied to a double channel phonograph system;

Fig. 3 is a diagrammatic representation of another feature of my invention which may be applied to the arrangements shown in Figs. 1 and 2;

Fig. 4 is a diagrammatic representation of still another feature of my invention which may be applied to the arrangements shown in Figs. 1 and 2;

Fig. 5 and Fig. 6 are diagrammatic representations of modified single and double channel systems respectively each embodying my invention; and

Fig. 7 is another diagrammatic representation of still other features and modifications of my invention shown as applied to a single channel system.

Referring more particularly to Fig. 1, I have shown therein a central station having a plurality of units such as unit A and unit B which are arranged to serve a plurality of subscribers such as subscriber A and subscriber B. The apparatus for each subscriber which is located at the central station is shown to the left of a dotted line, and comprises a telephone line 11 connected between the subscriber station A and the central station which is connected to a hybrid circuit, or a talk-listen switch 12. The hybrid coil or talk-listen switch 12 is provided to permit the central station operator to communicate with the subscriber by means of headphones 13, a microphone 14 and an amplifier 15. The hybrid coil 12 is further connected to a phonograph amplifier 16, the input of which is connected to a phonograph pick-up 17 which cooperates with a phonograph turntable and motor 18.

The operation of the phonograph pick-up 17 and the phonograph turntable and motor 18 is controlled by certain apparatus operating in response to coin impulses received over the telephone line 11, and which are detected by a coin impulse detector 19, the output of which is connected to con-

trol a subscriber play accumulator apparatus 21 shown within a dotted line enclosure. This subscriber play accumulator comprises a rachet wheel 22 biased by a spring 23 so as to rotate in a clockwise direction whenever permitted to do so by operation of a rachet escapement 24, which in turn is actuated by a magnet or relay coil 25 connected to the coin impulse detector 19. The ratchet wheel 22 is provided with a stud 26 which engages a contact switch 27 so as to normally maintain the contact switch 27 in open circuit condition. Whenever an impulse is received over the line 11 and is detected by the coin impulse detector 19, the relay coil 25 is energized thereby attracting the escapement 24 to permit the ratchet wheel 22 to advance in a clockwise direction the distance of one notch. This moves the stud 26 sufficiently so as to permit the contacts of the switch 27 to close. The switch 27 is connected to supply energy from a suitable source of power 28 to a relay coil 29 and a signal lamp 31. The relay coil 29 when actuated separates a normally closed pair of contacts 32 which may be connected in shunt across the output of the phonograph pick-up 17 or across the input of the phonograph amplifier 16. The operation of the relay coil 29 also closes a pair of normally open contacts 33 so as to supply power from a suitable source 34 to the phonograph motor 18. The phonograph pick-up 17 is arranged to close momentarily a pair of normally open switch contacts 35 whenever the phonograph pick-up 17 has completed the playing of a phonograph record. The switch 35 serves to supply energy from the source of power 28 to an electromagnet 36 which is provided with an armature 37 arranged to engage the teeth of the ratchet wheel 22. From this it will be apparent that each time a phonograph record is played the accumulator apparatus 21 is retracted one unit. If only one coin impulse has been received at the central station the actuation of the armature 37 by the magnet 36 will serve to deenergize the phonograph motor 18 and to render ineffective the phonograph pick-up 17 by the opening of the switch contacts 33 and the closing of the switch contacts 32.

Each subscriber station such as subscriber A is provided with a microphone 38, a suitable amplifier 39 therefor and a hybrid coil 41 which normally is connected to the telephone line 11 by means of the normally closed contacts 42 and 43. The hybrid coil 41 is also connected to a sound reproducer 44, and an amplifier 45 may be connected between the sound reproducer 44 and the hybrid coil 41. The subscriber station is furthermore provided with coin-operated apparatus 46 which may comprise a coin chute and an impulse signal source. Upon inserting a coin into the coin chute apparatus 46 a relay coil 47 connected to the apparatus 46 is energized so as to disconnect the telephone line 11 from the hybrid coil 41 by breaking the pairs of contacts 42 and 43. The coil 47 thereupon connects the telephone line 11 to the contacts 48 and 49 which are connected to supply an impulse signal from the apparatus 46. The impulse signals transmitted by the apparatus described correspond to the value of the coin or coins received by the apparatus 46, thereby to predetermine the playing of a number of phonograph records. It, of course, will be understood that the coin operated apparatus at the subscriber station may be designed to accept coins of different denominations, such as nickels, dimes and quarters, thereby to transmit 1, 2 or 5 impulses, respectively, for coins of these denominations. It, therefore, is apparent that the coin operated means will transmit an impulse or impulses to the central station in accordance with the total value of the coin or coins received thereby.

Whenever the subscriber at subscriber station A wishes to obtain the reproduction of a desired phonograph record, a coin is inserted in the coin-operated apparatus 46 which transmits an impulse signal over the telephone line 11 which is detected by the coin impulse detector 19 at the central station. This impulse actuates the subscriber play accumulator 21 and notifies the operator by means of the signal light 31. The operator at the central station by means of the microphone 14, the amplifier 15 and the headphone 13 communicates with the subscriber at the subscriber station A to determine what phonograph record is desired. The operator at the central station thereupon plays a record or a number of records, dependent upon the value of the coins received by the coin-operated apparatus at the subscriber station and the system operates in the manner described as will be apparent to those skilled in the art. While certain elements essential to the reproduction of phonograph records have been shown as being controlled in a particular manner by the subscriber play accumulator apparatus 21 it, of course, will be apparent that other circuit arrangements and instrumentalities may be employed to provide for the coin-operated reproduction of phonograph records by having the apparatus 21 control the operation or the effectiveness of any one or all of the elements essential to the reproduction of phonograph records.

The various features shown in connection with Fig. 1 may also be applied to a two channel system such as is shown in Fig. 2. In Fig. 2 apparatus is shown for only one subscriber although it is to be understood that the central station may include a plurality of subscribers' units each corresponding to the unit shown in Fig. 2. In the double channel systems a subscriber's unit is connected to the central station by means of two pair of telephone lines 51 and 52. The first pair of telephone lines 51 is connected through a suitable isolating transformer 53 to a pair of switch arms which are normally connected to the switch contacts 54 and 55 which are connected to the amplifier 56 which amplifies the energy received by a microphone 57. A coin chute and impulse signal apparatus 58 is connected to control the energization of the relay coil 59 which serves to disconnect or open the switch contacts 54 and 55 and to close the contacts 61 and 62 so that impulse signals may be transmitted over the telephone line 51 through the transformer 53. The other telephone line 52 is connected through a suitable transformer 61 to an amplifier 62 which is connected to a sound reproducer 63.

At the central station a telephone line 51 may be connected through a suitable transformer 64 to a line 65 which is connected to a coin impulse detector 66 and to the switch contacts 67 and 68 of a talk-listen switch 69. The impulse signal received over the telephone line 51 is detected by the coin impulse detector 66 which is connected to a subscriber play accumulator 71, which accumulator may comprise elements corresponding to those shown in the accumulator 21 of Fig. 1. As shown in Fig. 2 the subscriber play accumulator 71 is connected so as to control the energization of the signal lamp 72, and the magnet coil 73 of a relay having a normally closed pair of contacts 74 and a normally open pair of contacts 75. The normally

closed pair of contacts 74 is connected to maintain ineffective the phonograph pick-up and the amplifier 77. The normally open contacts 75 are arranged to supply energy from a suitable source 78 to the phonograph turntable motor 79 whenever the relay coil 73 is energized. The output of the amplifier 77 is connected through a suitable transformer 81 to the telephone line 52 thereby to reproduce sound at the subscriber station by means of the sound reproducer 63. The operator at the central station upon being signaled by the lamp 72 actuates the talk-listen switch 69 to close a pair of contacts 82 and 83 which are connected between the amplifier 77 and a microphone amplifier 84 which in turn is connected to the microphone 85. The actuation of the talk-listen switch 69 also closes the switch contacts 67 and 68 to connect a headphone 86 to the telephone line 51 by means of the transformer 64 and the conductor 65. The operator inquires of the subscriber as to what number or selection is desired. The operator in speaking over the microphone 85 is transmitting through the amplifier 84, the switch contacts 82 and 83, the amplifier 77, or a portion thereof, the transformer 81, the telephone line 52, the transformer 61, the amplifier 62 and the sound reproducer 63. The subscriber in responding to the central station operator's inquiry transmits, by means of the microphone 57 and the amplifier 56, switch contacts 54 and 55, transformer 53 and telephone line 51, through transformer 64 and conductors 65, switch contacts 67 and 68 to the headphone 86.

In the coin-operated systems shown in Fig. 1 and Fig. 2 the central station operator can only transmit the reproduction of the phonograph record back over a line of the subscriber who rendered effective the phonograph reproducing apparatus. It would, however, be desirable to provide an arrangement which would enable the subscriber to control the operation or the effectiveness of the phonograph record reproducing apparatus or system and yet be able to request the central station operator to dedicate the playing of the record requested to a person located on another subscriber line, such as subscriber B. In order to permit such operation while yet maintaining exclusive control of the effectiveness of at least an essential element of the system to a subscriber and yet permitting the dedication of a phonograph record to another subscriber, the arrangement shown in Fig. 3 may be applied to either of the systems shown in Figs. 1 and 2. For the purposes of illustration the arrangement shown in Fig. 3 is capable of serving five subscribers although a greater or lesser number may be provided for. This arrangement utilizes the phonograph pick-up amplifiers 84, 85, 86, 87 and 88, each of which corresponds to the phonograph pick-up amplifier 16 of Fig. 1 or the amplifier 77 of Fig. 2. The output of each amplifier is connected to a corresponding selectively operable switch such as 89, 91, 92, 93 and 94 respectively. The switch contacts of the selector switches 89 to 94 are connected to the telephone lines leading to the various subscribers such as subscriber A to subscriber E inclusive. Thus, for example, the phonograph pick-up amplifier 81 which is normally connected to the line leading to subscriber A may be connected to any one of the other subscribers such as, for example, subscriber B whenever subscriber A requests the reproduction of a phonograph record to be dedicated to subscriber B. In certain instances where it may be desired to prevent interaction between the various amplifiers or other components of the system, the first contact of each of the selector switches 89 to 94 may be left open so that when, for example, the line 84 is connected to the line of subscriber B the switch 91 which is connected to amplifier 85 normally serving subscriber B may be rotated so that the switch arm rests upon an open circuit contact. From this it will be apparent that it is possible to provide a coin-operated system for electrically reproducing phonograph records whereby the effectiveness or operation of at least one essential element of the system is exclusively controlled by the subscriber, and yet the reproduction of a phonograph record may be transmitted to another subscriber station.

In connection with the coin-operated system shown in Figs. 1 and 2, another method of operation may be provided whereby the reproduction of a phonograph record may be transmitted to a particular subscriber in accordance with the request and wishes of a first subscriber. Such an arrangement is shown in Fig. 4 wherein the various subscriber play accumulators indicated at 96, 97, 98 and 99 each are arranged to be selectively actuated by the central station operator by means of a coin-operated switch 101.

Each of the subscriber play accumulators 96 to 99 corresponds to and may be similar to a subscriber play accumulator 21 of Fig. 1 and the subscriber play accumulator 71 of Fig. 2. The coin-operated switch 101 is arranged to supply power from a suitable source 102 to a magnet coil 103 which controls the operation of a switch 104 the contacts of which are arranged to engage the conductor 105 leading to a signal source 106. The switch contacts 104 which are controlled by the relay magnet 103 are connected to the switch arms 107 and 108 of a rotary switch, the contacts of which are connected to the various play accumulator units 96 to 99. Thus, in the present arrangement whenever a subscriber requests that a phonograph record be dedicated to another subscriber, the rotary switch arms 107 and 108 are rotated to be connected to the subscriber play accumulator corresponding to the subscriber to which the number is to be dedicated. The central station operator thereupon inserts a coin in the coin switch 101 thereby to cause a source of energy 102 to be connected to the relay magnet 103 to transmit a coin impulse signal from the source 106 to the selected accumulator. The accumulator thereupon will render effective the turntable motor and phonograph pick-up corresponding to that particular subscriber as will be apparent from reference to Fig. 1 or Fig. 2.

Another modification diagrammatically set forth in Fig. 5 embodies the present invention whereby the electrical reproduction of phonograph records is accomplished by coin-operated apparatus. For the purpose of simplicity in disclosure, only one apparatus corresponding to a subscriber's unit is shown at the central station and at the subscriber station. The subscribers apparatus comprises a microphone 109 which preferably though not necessarily is connected to an amplifier 111, the output of which is connected to a hybrid coil 112 which is normally connected by means of contacts 113 and 114 to a telephone line 115. A coin-operated apparatus comprising a coin chute and accumulator mecha-

nism 116 is placed into operation by the subscriber by inserting a coin therein. The coin chute and accumulator 116 when so actuated energizes a relay 117 which disconnects the telephone line 115 from the contacts 113 and 114 and connects the telephone line to the contacts 118 and 119 which contacts are connected to a signal impulse source 121. The relay coin 117 is operated in accordance with the value of the coin or coins received by the coin chute and accumulator 116. The actuation of the coin chute and accumulator 116 also energized another relay 122 which connects a pair of conductors 123 connected to the hybrid coil 112 with the contacts 124 and 125 which are connected to an amplifier 126 which in turn is connected to a sound reproducer 127. Thus the sound reproducer 127 is rendered effective by the coin-operated apparatus 116. The telephone line 115 at the central station is normally connected to a pair of contacts 128 and 129 which are connected to a hybrid coil, hybrid circuit or talk-listen switch 131 and an impulse detector and subscriber play indicator 132. The impulses transmitted from the subscriber station are received over the line 115 and detected by the impulse detector and subscriber play indicator to notify the central station operator that a subscriber has rendered effective the phonograph reproducing apparatus. The subscriber play indicator portion of the apparatus 132 indicates to the operator at the central station the value of the coins received by the coin-operated apparatus 116. The central station operator upon being notified by operation of the apparatus 132, communicates with the subscriber by means of a microphone 133 and an amplifier 134 and a headphone 135 with the hybrid coil or switch 131. The central station is provided with a phonograph motor and turntable 137 and a phonograph pick-up 138 cooperating therewith, the output of which is connected to an amplifier 139 which in turn is connected to the hybrid circuit or talk-listen switch 131. The phonograph pick-up arm 138 is arranged so as to actuate momentarily a switch 141 at the end of the playing of each phonograph record. This switch 141 which is normally open circuit is arranged to control the supply of power from a suitable source of power 142 to a relay coil 143. The relay coil 143 when actuated serves to disconnect the telephone line 115 from the contacts 128 and 129 and to connect this telephone line to the contacts 144 and 145 which are connected to a signal impulse source 146 thereby to transmit back to the subscriber station an impulse which will be received at the subscriber station by an impulse detector 147 the output of which is connected to the coin accumulator 116. An impulse received from the central station over the line 115 and detected by the impulse detector 147 serves to retract the accumulator of the apparatus 116 one unit each time that a phonograph record has been played. From this it will become apparent that whenever a number of phonograph records have been reproduced which corresponds to the value of the coins received by the apparatus 116, this apparatus will then be deenergized thereby deenergizing the magnet coil 122 so that the contacts 124 and 125 are opened thereby rendering ineffective the sound reproducer 127.

The arrangement shown in Fig. 6 illustrates the application of the system shown in Fig. 5 when applied to the two channel system. At the subscriber station a microphone 148 is preferably connected through an amplifier 149 and a pair of contacts 151 and 152 to an insulating transformer 153 the output of which is connected to a telephone line 154. A coin chute and accumulator apparatus 155 operates to disconnect the transformer 153 from the contacts 151 and 152 and to connect the transformer to the contacts 156 and 157 which are connected to an impulse signal source 158. This is accomplished by the energization of a relay magnet 158 which controls the connection of the transformer and the pairs of contacts 151—152 and 156—157. By this means an impulse or a series of impulses is transmitted from a subscriber station to a central station in accordance with the value of the coins received by the coin chute and accumulator apparatus 155 which also controls the energization of a relay magnet 159 which serves to complete a connection between an isolating transformer 161, the input of which is connected to a telephone line 162 and an amplifier 163 and a sound reproducer 164. Thus the coin chute and accumulator apparatus 155 operate to render effective a sound reproducer 164.

At the central station the telephone line 154 is connected through a suitable isolating transformer 165 to the contacts 166 and 167 to which are connected an impulse detector and subscriber play indicator apparatus 168 and the switch blades 169 and 171 of a talk-listen switch 172. Upon actuating the talk-listen switch 172 to the left a pair of headphones 173 will be connected to the switch blades 169 and 171. When the talk-listen switch 172 is thrown to the right the microphone 174 is connected through the amplifier 175 to the phonograph pick-up amplifier 176 which in turn is connected through an isolating transformer 177 to the telephone line 162. A phonograph turntable and motor 178 is energized from a suitable source of power 179. The phonograph pick-up 181 which cooperates with the turntable 178 is connected to the input of a phonograph pick-up amplifier 176. Whenever the phonograph pick-up 181 has completed the playing of a phonograph record, a pair of contacts comprising the switch 182 are closed momentarily thereby completing a circuit from a suitable source of power 183 to the magnet coil 184 of a relay which disconnects the telephone line 154 and the transformer 165 from the contacts 166 and 167 and connects the transformer 165 to the contacts 185 and 186 which are connected to an impulse signal source 187. Thus an impulse is transmitted over the telephone line 154 back to the subscriber station where it is detected by an impulse detector 188 which in turn is connected to the coin accumulator apparatus 155 so as to retract this apparatus one unit each time that a record is played. The operation of the apparatus shown in Fig. 6 is therefore similar to Fig. 5 and it is believed that no further explanation thereof is necessary.

In accordance with the present invention whereby the electrical reproduction of phonograph records is controlled by coin-operated means and it is desired to provide an arrangement whereby a subscriber may dedicate the playing of a phonograph record to another subscriber, another modification may be provided such as is shown in Fig. 7. In the arrangement shown in Fig. 7 two units necessary for two subscribers have been shown although it is to be understood that a greater number may be provided for. In the present arrangement the apparatus at the station of subscriber a includes a microphone

189 connected by means of an amplifier 191 to a hybrid coil 192 which normally is connected by means of the contacts 193 and 194 to an isolating transformer 195 which is connected with a telephone line 196. The hybrid coil 192 is furthermore connected to an amplifier 197 and a sound reproducer 198. A coin operated mechanism comprising a coin chute and an impulse signal source 199 is arranged to transmit impulses from the subscriber station to the central station, and this is accomplished by the energization of a magnet coil 201 which when actuated disconnects the transformer 195 from the contacts 193 and 194 and connects the transformer to the contacts 202 and 203 which are connected to the source of impulse signal contained within the apparatus 199.

In the central station the telephone line 196 is connected through an isolating transformer 204 to the conductors 205 which are connected to a coin impulse detector 206 and a hybrid coil, hybrid circuit or talk-listen switch 207. The hybrid coil or talk-listen switch 207 is connected to a pair of headphones 208 and also to a microphone 209 and an amplifier therefor 211. The coin impulse detector 206 is connected to a subscriber play accumulator 212 and also to a total play accumulator 213. The total play accumulator 213 controls the energization of a magnet coil 214 which in turn controls the operation of a switch 215 which is located between a source of power 216 and all of the turntable motors. The apparatus at the central station corresponding to that serving subscriber A includes a phonograph motor and turntable 217, the energization of which is controlled by the switch 215. A turntable 217 is provided with phonograph pick-up 218 which is connected through a suitable amplifier 219 to the hybrid coil 207. The phonograph pick-up 218 is arranged to actuate momentarily one or more switches such as switch 221 and switch 222. The switch 221 is connected to the total play accumulator so that upon the completion of playing of a record on the turntable 217 a total play accumulator will be retracted one unit. At the same time that the switch 221 is actuated, switch 222 is also actuated which is also connected to a subscriber play accumulator 212 so as to retract this accumulator one unit at that time. In parallel with the switch 222 there is provided a manually operated switch 223 the purpose of which will subsequently become apparent.

The apparatus for the other subscribers such as subscriber B in each instance includes a microphone 224, an amplifier therefor 225, a hybrid coil 226, a pair of normally closed contacts 227 and 228 which connect the hybrid coil to an isolating transformer 229 which in turn is connected to the telephone line 231. A coin chute and impulse signal apparatus 232 is provided with a relay coil 233 which serves to disconnect the isolating transformer 229 from the pair of contacts 227 and 228 and to connect the transformer to a pair of contacts 234 and 235 thereby to transmit an impulse from the signal impulse source contained within the signal impulse apparatus 232. Thus the elements at subscriber station B correspond to the elements of subscriber station A and operate in a similar manner. At the telephone central the telephone line 231 is connected through an isolating transformer 236 to the conductors 237 which are connected to the hybrid coin 238 and the coin impulse detector 239. A microphone 241 is connected through an amplifier 242 to the hybrid coil 238 to which is also connected the headphone 243. And, of course, it will be apparent that while another microphone amplifier and headphone have been shown connected to the hybrid coil 238, this apparatus may be the same apparatus shown connected to the hybrid coil 207 for subscriber A since suitable jack and plug apparatus may be provided in order not to duplicate this equipment. The coin impulse detector 239 is connected to a subscriber play accumulator 244 which may be retracted by the operation of the manually operable switch 245, and the switch 246 which is operated by the phonograph pick-up 247 at the end of the playing of a phonograph record. The coin impulse detector 239 is also connected to the same total play accumulator 213 which serves to indicate the total plays accumulated at the central station by all of the subscribers. The phonograph pick-up 247 is connected through an amplifier 248 to the hybrid coil 238. The phonograph pick-up 247 at the end of the playing of each record also actuates momentarily a switch 249 which is connected to the total play accumulator 213 thereby to retract this accumulator one unit as each record is played.

The operation of the arrangement shown in Fig. 7 will be best understood by assuming certain operations on the part of the subscriber. If it is assumed that subscriber A, for example, wishes to have five phonograph records reproduced, one of which is to be dedicated to another subscriber such as B, subscriber A will insert a coin or coins of sufficient value in the coin chute and impulse signal apparatus 199 to record upon the subscriber play accumulator 212 a total of five records. Assuming that no other plays have been accumulated by any other subscriber, there will appear on the total play accumulator 213 for the central station a total of five plays. The record which is to be dedicated to another subscriber such as subscriber B is placed upon a turntable 251 and when this record has been played the phonograph pick-up arm 247 will close momentarily a switch 249 thereby subtracting one unit from the total play accumulator 213 leaving four units indicated to be played. The subscriber play accumulator 212, however, still indicates five plays may be made; but the operator, having placed one of the phonograph records on another turntable, may then actuate the manually operable switch 223 thereby reducing the subscriber play indication to four units. Upon the playing of the other four records requested by subscriber A upon turntable 217, the phonograph pick-up 218 will retract the subscriber play accumulator 212 four units since the phonograph pick-up switch 222 will be closed each time that a record is played. Simultaneously the swtich 221 will have been closed four times thereby reducing the total play accumulator 213 four more units at which time the relay coil 214 wil be deenergized thereby opening the switch 215 and thus interrupting the energy to all of the turntable motors such as 217 and 251.

While there has been shown, for example, in connection with subscriber A the phonograph pick-up operated switch 222 and the manually operated switch 223 with which to retract the subscriber play accumulator 212 each time that a phonograph record is played for subscriber A, this may be accomplished by other means such as eliminating the switches and merely requiring the operator at the central station to keep track

of the number of records played for each subscriber and to manually reset each of the subscriber play accumulator units such as 212. From the above description of the operation it will become apparent that this system provides a coin-operated system for electrically reproducing phonograph records whereby the subscribers control the number of records which are to be played and the subscribers' stations control the phonograph reproducing apparatus so that only a number of phonograph records may be played at the central station corresponding to the total value of coins accumulated by all of the subscriber stations. This arrangement, however, permits convenient dedication of a phonograph record by one subscriber to another subscriber.

While the arrangement shown in Fig. 7 has been illustrated as being applied to the system wherein the subscribers stations are connected with the central station by means of single channels, it, of course, will be apparent that a similar system may be employed where the subscribers stations are connected by double channels such as shown in Fig. 2. In applying the system shown in Fig. 7 to the type of apparatus shown in Fig. 2, the subscriber play accumulator would not control the effectiveness of the phonograph pick-up nor control the application of the power to the individual subscriber turntable motor, but the total play accumulator would control the application of power to all of the turntable motors located at a central station utilizing the system shown in Fig. 2.

It is to be understood, however, as will be readily apparent to those skilled in the art, that while I, for the purpose of illustrating my invention, have shown the application of my invention to certain systems and circuits, that my invention is not to be limited thereby, since it will be apparent that other and further modifications may be made in the circuit arrangements and in the instrumentalities employed as may fall within the true spirit and scope of the appended claims.

What we claim is new and desire to secure by Letters Patent of the United States is:

1. A phonograph system comprising a central station, a plurality of subscribers' stations each connected thereto by a telephone line, means for reproducing phonograph records, certain elements of said means being located at said central station and other elements of said means being located at each of said subscribers' stations, means individual to each subscriber for preventing operation of said reproducing means from the central station and coin-controlled means located at each of said subscribers' stations for controlling exclusively the effectiveness of one of said elements thereby to control the operation of said reproducing means at said central station.

2. A phonograph system comprising a central station, at least one subscriber station connected thereto by a telephone line, means for electrically reproducing phonograph records including a phonograph turntable, a phonograph pick-up, an amplifier therefor, said turntable, pick-up and amplifier being located at said central station, an amplifier and a sound reproducer located at each subscriber station, individual means for each subscriber for preventing unauthorized operation by the central station of said reproducing means and coin-controlled means located at each subscriber station for controlling exclusively the operation of said last means thereby to control the operation of said reproducing means.

3. A phonograph system comprising a central station, at least one subscriber station connected thereto by a telephone line, means for electrically reproducing phonograph records including a phonograph turntable, a phonograph pick-up, an amplifier therefor, and a sound reproducer, said turntable and pick-up being located at said central station, said sound reproducer being located at said subscriber station, individual means for each subscriber for preventing unauthorized operation of said reproducing means by said central station and coin-controlled means located at said subscriber station for controlling the reproduction of a phonograph record by the central station by controlling exclusively said last means which determines the effectiveness of at least one of said elements for reproducing phonograph records.

4. A phonograph system for electrically reproducing phonograph records comprising a central station and a plurality of subscribers' stations each connected thereto by a telephone line, individual means located at but inoperative from said central station corresponding to each subscriber station including certain elements for reproducing phonograph records, a sound reproducer, and coin-controlled means located at each subscriber's station for controlling the effectiveness of at least one of said elements at said central station for rendering said first means operable for the playing of a predetermined number of records.

5. A phonograph system for electrically reproducing phonograph records comprising a central station and a plurality of subscribers' stations each connected thereto by a telephone line, each subscriber station being provided with a sound reproducer and coin-controlled means for transmitting impulses to said central station in accordance with the value of coins received thereby, said central station being provided with means for each subscriber station comprising a phonograph turntable and motor, a phonograph pick-up, an amplifier therefor, at least one of said means being normally ineffective, accumulator means responsiv to impulses received from said subscriber station for recording the number of impulses and for rendering effective said ineffective means responsive to impulses received from said each phonograph record for controlling said accumulator means whereby said means will render ineffective said phonograph reproducing elements whenever the proper number of records have been played.

6. A phonograph system for electrically reproducing phonograph records comprising a central station and a plurality of subscribers' stations each connected thereto by a telephone line, each subscriber station being provided with a sound reproducer and coin-operated means for transmitting impulses to said central station in accordance with the value of the coins received thereby to control the reproduction of a predetermined number of phonograph records, said central station being provided with means for each subscriber comprising a phonograph turntable and motor, a phonograph pick-up, an amplifier therefor, at least one of said means being normally ineffective, accumulator means responsive to impulses received from said subscriber station for recording said impulses and for rendering effective said ineffective means, and means operated by said phonograph pick-up for controlling said accumulator means as each phonograph record is played whereby said accumulator means will render ineffective said

normally ineffective means whenever the predetermined number of records have been played.

7. A phonograph system for electrically reproducing phonograph records comprising a central station and a plurality of subscribers' stations each connected thereto by a telephone line, said subscribers' stations each being provided with a sound reproducer, a coin chute and means for transmitting to the central station impulses corresponding to the value of the coins placed in said coin chute, said central station being provided with means for each subscriber station comprising a phonograph turntable and motor, a source of power therefor, a phonograph pick-up, an accumulator means responsive to impulses received from said subscriber station for recording the impulses and for controlling the application of power from said source to said phonograph motor, and means actuated at the end of each phonograph record for retracting said accumulator means one unit whereby to cause said motor to be deenergized whenever a number of records corresponding to the number of impulses received have been played.

8. A phonograph system for electrically reproducing phonograph records comprising a central station and a plurality of subscribers' stations each connected thereto by a telephone line, each subscriber station being provided with a sound reproducer, coin-controlled means for transmitting to the central station impulses corresponding to the value of the coins received thereby, said central station being provided with means for each subscriber station comprising a phonograph turntable and motor, a phonograph pick-up, accumulator means responsive to impulses received from said subscriber station and for rendering effective said phonograph pick-up, and means actuated by said phonograph pick-up at the end of each record for retracting said accumulator means one unit whereby to cause said phonograph pick-up to be rendered ineffective whenever a number of records corresponding to the number of impulses received have been played.

9. A phonograph system for electrically reproducing phonograph records comprising a central station and a plurality of subscribers' stations each connected thereto by a telephone line, each subscriber station being provided with a sound reproducer, a coin-controlled means for transmitting to the central station impulses corresponding to the value of the coins received thereby, said central station being provided with means for each subscriber station comprising a phonograph turntable and motor, a source of power therefor, a phonograph pick-up, accumulator means responsive to impulses received from said subscriber station for recording the impulses and for controlling the application of power to said phonograph motor and for rendering effective said phonograph pick-up, and means actuated by said phonograph pick-up at the end of each record for retracting said accumulator means one unit thereby to cause said motor to be deenergized and said pick-up to be rendered ineffective whenever a number of records corresponding to the number of impulses received at the central station have been played.

10. A phonograph system for electrically reproducing phonograph records comprising a central station and a plurality of subscribers' stations each connected thereto by a telephone line, each subscriber station being provided with a sound reproducer and coin-controlled means for transmitting impulses to said central station in accordance with the value of coins received thereby to control the reproduction of a predetermined number of records, said central station being provided with a phonograph turntable and motor for each subscriber station, an accumulator means located at said central station arranged to be responsive to all impulses received from all said subscribers' stations, means operated thereby for controlling the energization of all of said phonograph turntable motors, means operated as each phonograph record is played for retracting said accumulator one unit, said accumulator operating to deenergize all of said phonograph motors whenever a number of records corresponding to the total of said received impulses have been played.

11. A phonograph system for electrically reproducing phonograph records comprising a central station and a plurality of subscribers' stations each connected thereto by a telephone line, each subscriber station being provided with a sound reproducer and coin-controlled means for transmitting impulses to said central station in accordance with the value of the coins received thereby to control the reproduction of a predetermined number of records, said central station being provided with means for each of said subscribers' stations including a phonograph turntable and motor, a phonograph pick-up, and means responsive to impulses received from said subscriber station for indicating the number of impulses received therefrom, means controlled by said phonograph pick-up at the end of reproduction of each record for retracting said indicator one unit; means connected to all of said impulse indicating means for accumulatively recording a total of impulses received from all said subscribers' stations, means operated thereby for controlling the application of power to all of said phonograph turntable motors, and means actuated by each of said phonograph pick-ups at the end of each phonograph record for retracting said latter accumulative recording means each time a record has been played thereby to cause all of said motors to become deenergized when a number of records corresponding to the total of impulses received at the central station have been played.

12. A system for electrically reproducing phonograph records comprising a central station and a plurality of subscribers' stations each connected thereto by a telephone line, a phonograph turntable and motor, a phonograph pick-up, an amplifier and a sound reproducer for each subscriber, said turntable motor and phonograph pick-up being located at said central station, said sound reproducer being located at said subscriber station, coin-controlled means located at said subscriber station for controlling the effectiveness of said system for electrically reproducing a predetermined number of phonograph records, and means located at said central station for transmitting an impulse to said coin-controlled means at said subscriber station each time that a phonograph record is reproduced whereby said system is rendered ineffective upon completion of the reproduction of said predetermined number of phonograph records.

13. A system for electrically reproducing phonograph records comprising a central station and a plurality of subscribers' stations each connected thereto by a telephone line, each subscriber station having a sound reproducer which is normally ineffective, a coin-controlled means

for rendering effective said reproducer, said means including an accumulator means actuated in accordance with the value of the coins received thereby, said first means operating to transmit impulse signals to said central station in accordance with the value of the coins received, and means responsive to an impulse received from said central station for retracting said accumulator means one unit, means located at said central station for each subscriber station including a phonograph turntable and motor, a phonograph pick-up, an amplifier therefor, means responsive to impulses received from said subscriber station to indicate the value of coins received by said coin-controlled means at said subscriber station, and means actuated by said phonograph pick-up upon the playing of each phonograph record for sending an impulse to said subscriber station.

14. A system for electrically reproducing records comprising a central station and a plurality of subscribers' stations, a telephone line connected between each subscriber station and said central station, each subscriber station having a sound reproducer, coin-controlled means for connecting said reproducer to said telephone line, said means including an accumulator means actuated in accordance with the value of the coins received thereby to maintain said reproducer connected to said line for the reproduction of a predetermined number of phonograph records, said first means also operating to transmit impulse signals to said central station in accordance with the value of the coins received, and means responsive to an impulse signal received from said central station for retracting said accumulator means one unit; means located at said central station including a phonograph turntable and motor, a phonograph pick-up and an amplifier for each subscriber, means responsive to impulses received from said subscriber station to indicate the predetermined number of records to be played, and means actuated by said phonograph pick-up upon the playing of each record for sending an impulse to said subscriber station.

15. A phonograph system for electrically reproducing a phonograph record comprising a central station and a plurality of subscribers' stations each connected thereto by a telephone line, each subscriber station being provided with a coin-controlled means for transmitting impulses to said central station in accordance with the value of the coins received whereby to control the reproduction of a predetermined number of phonograph records, said central station being provided with means for each subscriber comprising a phonograph turntable and motor, a phonograph pick-up, and an amplifier therefor, at least one of said means being normally ineffective, means responsive to the impulses received from said subscriber station for maintaining effective said normally ineffective means for the reproduction of a predetermined number of phonograph records, and means for connecting said central station phonograph apparatus to reproduce one or more of said predetermined number of phonograph records at the station of another subscriber.

16. A phonograph system for electrically reproducing phonograph records comprising a central station and a plurality of subscriber stations each connected thereto by a telephone line, each subscriber station being provided with a sound reproducer and coin-controlled means for controlling the reproduction of a predetermined number of phonograph records from said central station, a telephone line connected between each subscriber station and said central station, said central station being provided with phonograph apparatus individual to each subscriber station comprising a phonograph turntable and motor, a phonograph pick-up, an amplifier therefor, at least one of said means being normally ineffective, means controlled by said subscriber station coin-controlled means for rendering effective said phonograph apparatus for the reproduction of a predetermined number of phonograph records, and means for selectively connecting said phonograph apparatus to the telephone line of any other subscriber station.

17. A phonograph system for electrically reproducing phonograph records comprising a central station and a plurality of subscriber stations each connected thereto by a telephone line, each subscriber station being provided with a sound reproducer and coin-controlled means for transmitting impulses to said central station in accordance with the value of the coins received thereby to control the reproduction of a predetermined number of phonograph records, said central station being provided with phonograph apparatus for each subscriber station, at least one element of said apparatus being normally ineffective and being controlled in accordance with impulses received from the coin-controlled means of said subscriber station, and coin-controlled means located at said central station arranged to be selectively connected to effect the operation of the phonograph apparatus of any other subscriber station whereby the subscriber of a first subscriber station may cause a phonograph record to be reproduced over the apparatus and line of another subscriber station.

EUGENE L. TRIMAN.

CERTIFICATE OF CORRECTION.

Patent No. 2,306,654. December 29, 1942.

EUGENE L. TRIMAN.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 1, first column, line 8, for "station" second occurrence, read --stations--; page 2, second column, line 64, for "67 and 66" read --67 and 68--; page 6, second column, line 45, for "responsiv" read --responsive--; line 48, for "responsive to impulses received from said" read --, and means responsive to the playing of--; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 24th day of August, A. D. 1943.

Henry Van Arsdale,
Acting Commissioner of Patents.

(Seal)