May 2, 1944. L. E. DETTLE 2,347,995

PHONOGRAPH

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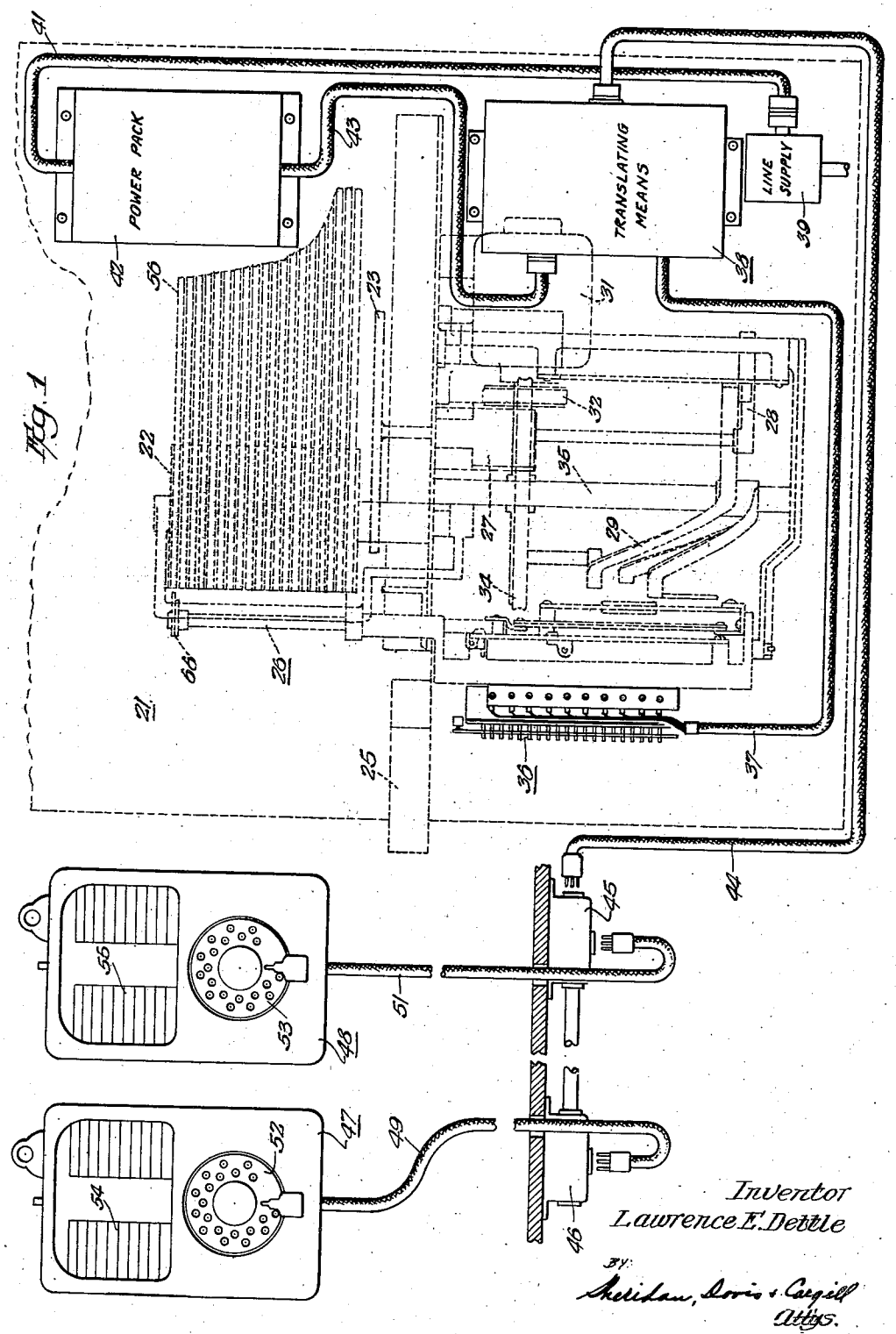


Fig. 1

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Fig. 2

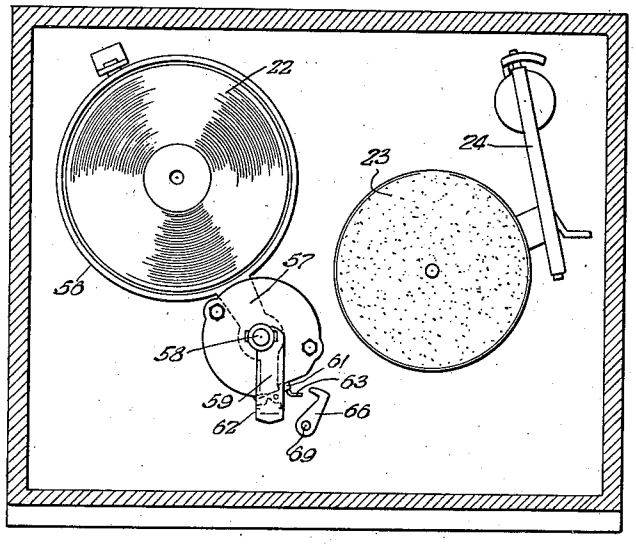
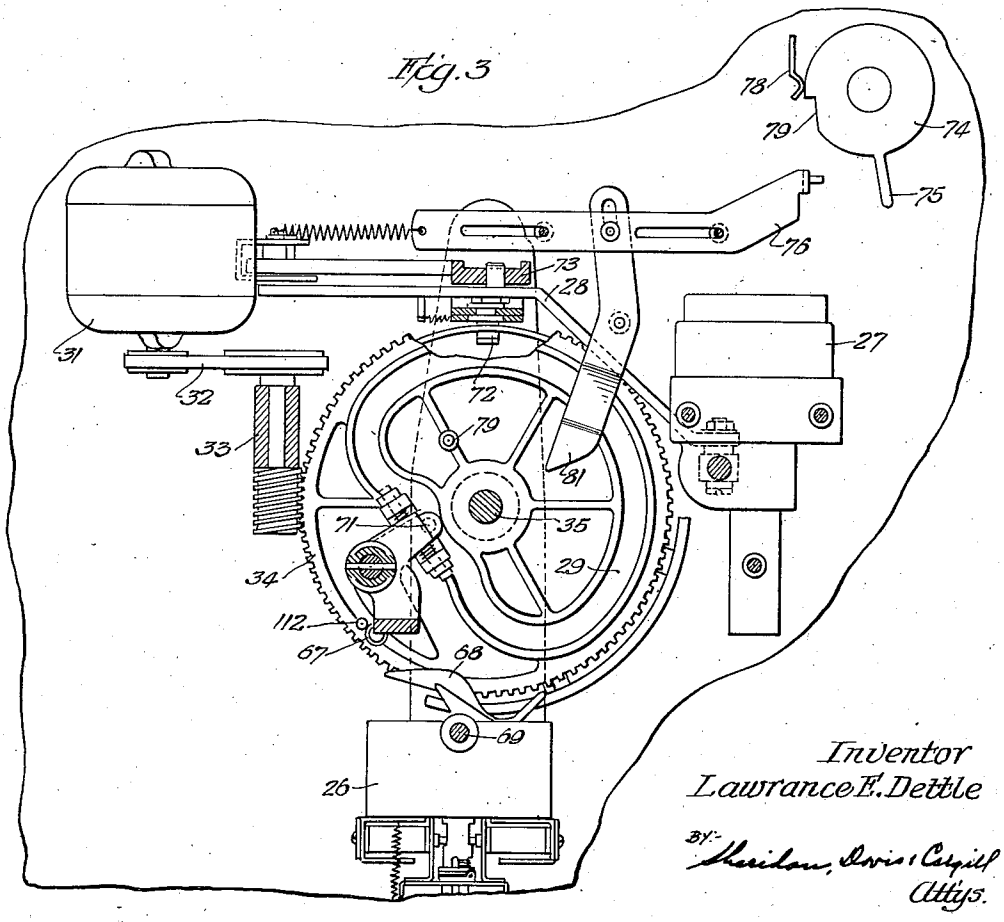


Fig. 3



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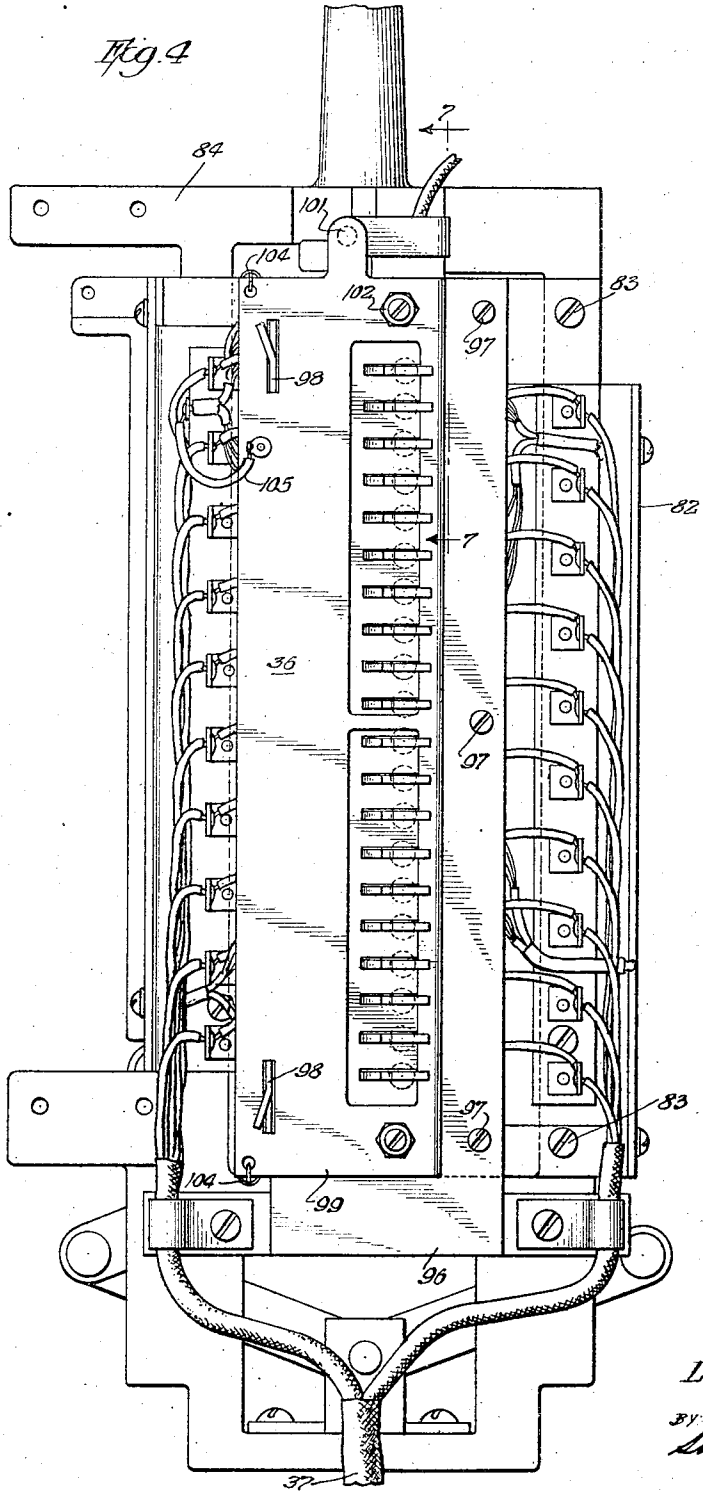
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Fig. 4



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Fig. 5

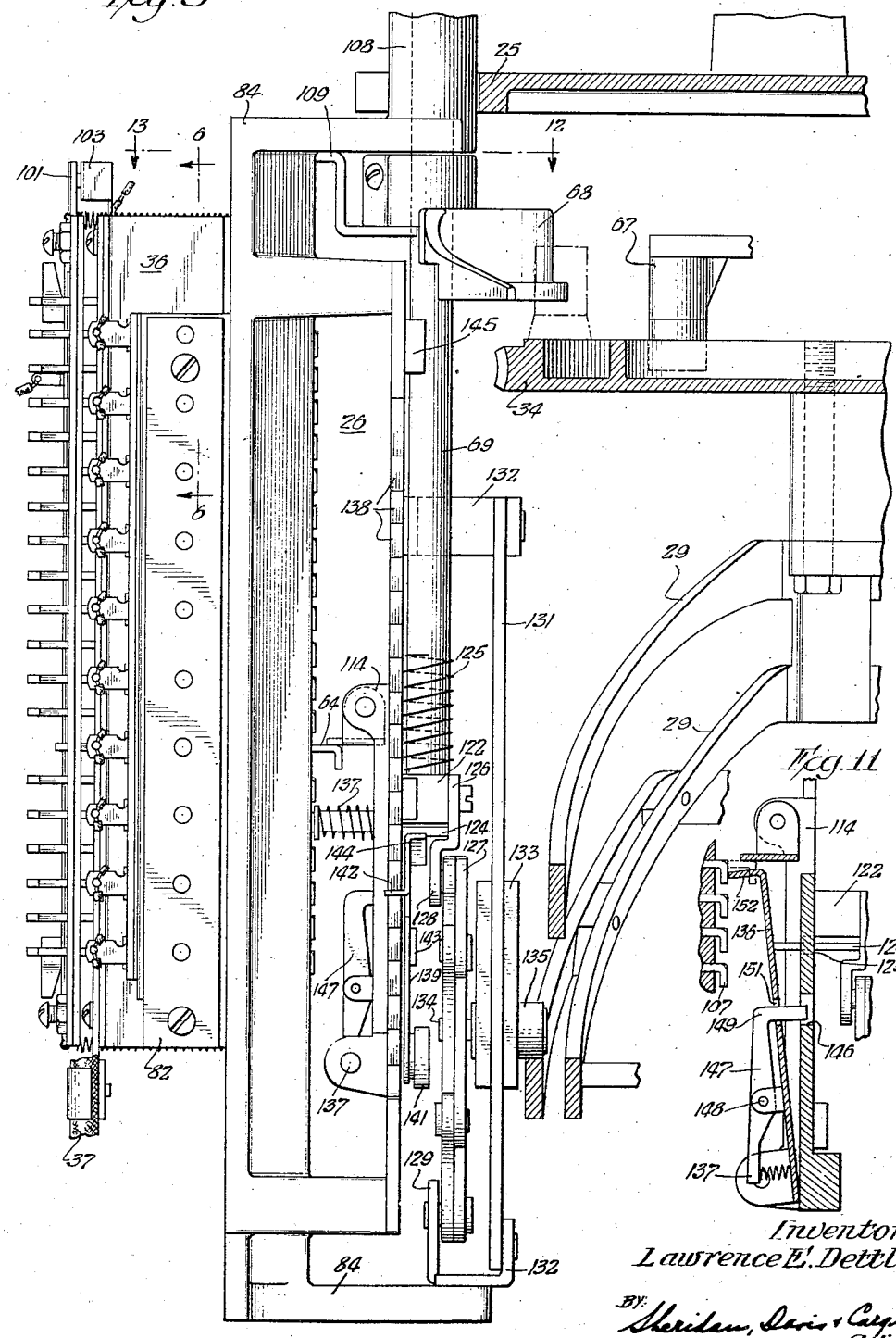


Fig. 11

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Fig. 6

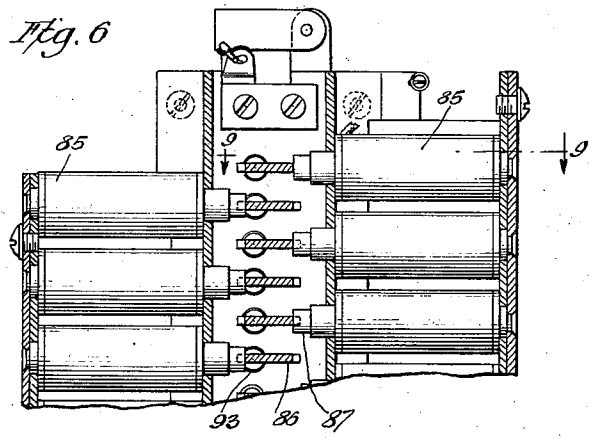


Fig. 9

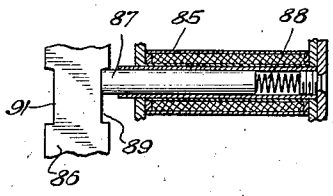


Fig. 7

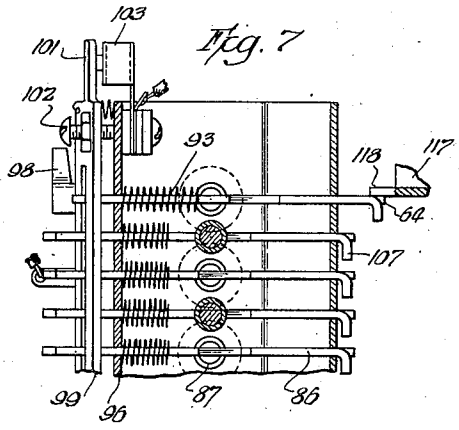


Fig. 10

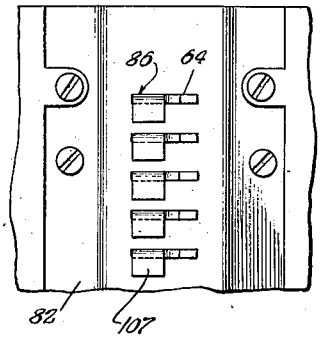
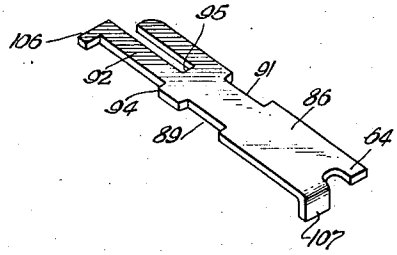


Fig. 8



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Fig. 12

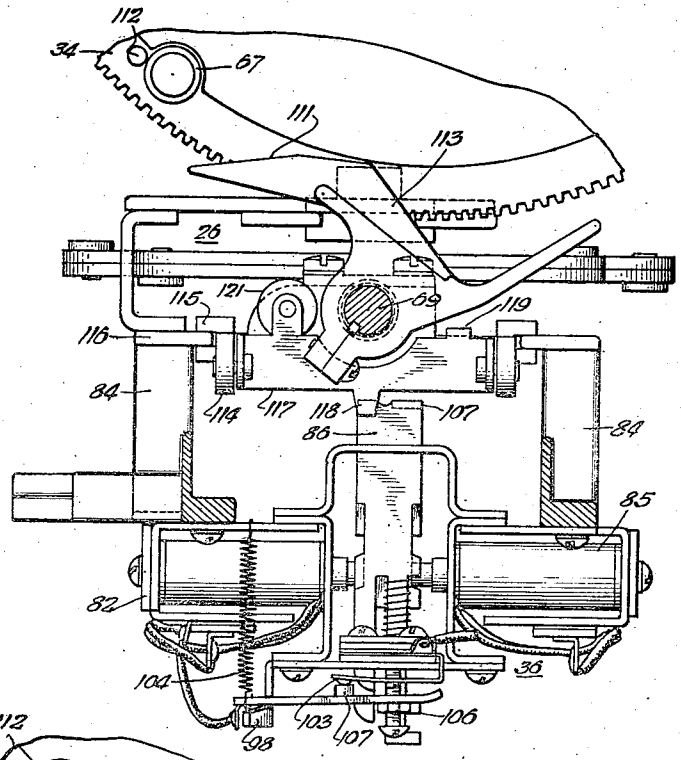
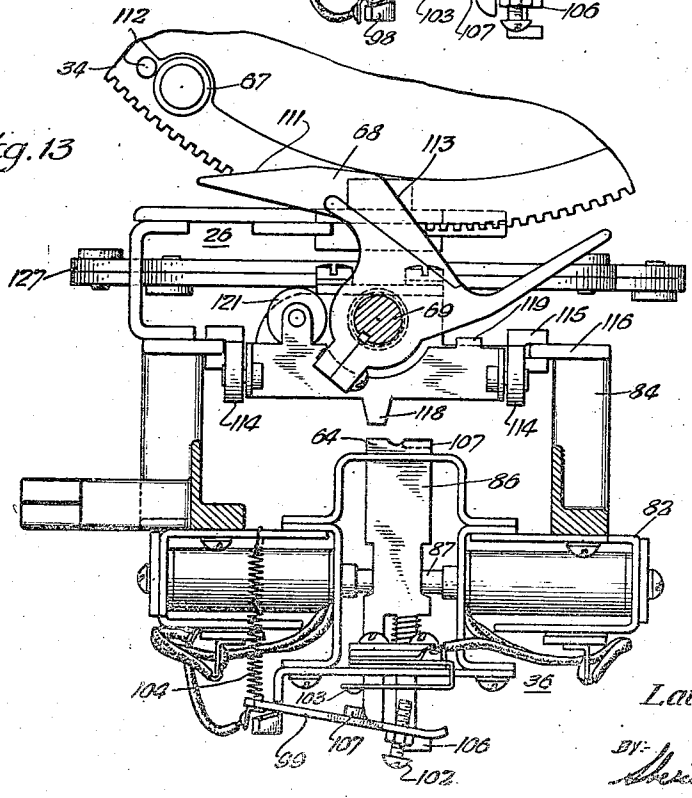


Fig. 13



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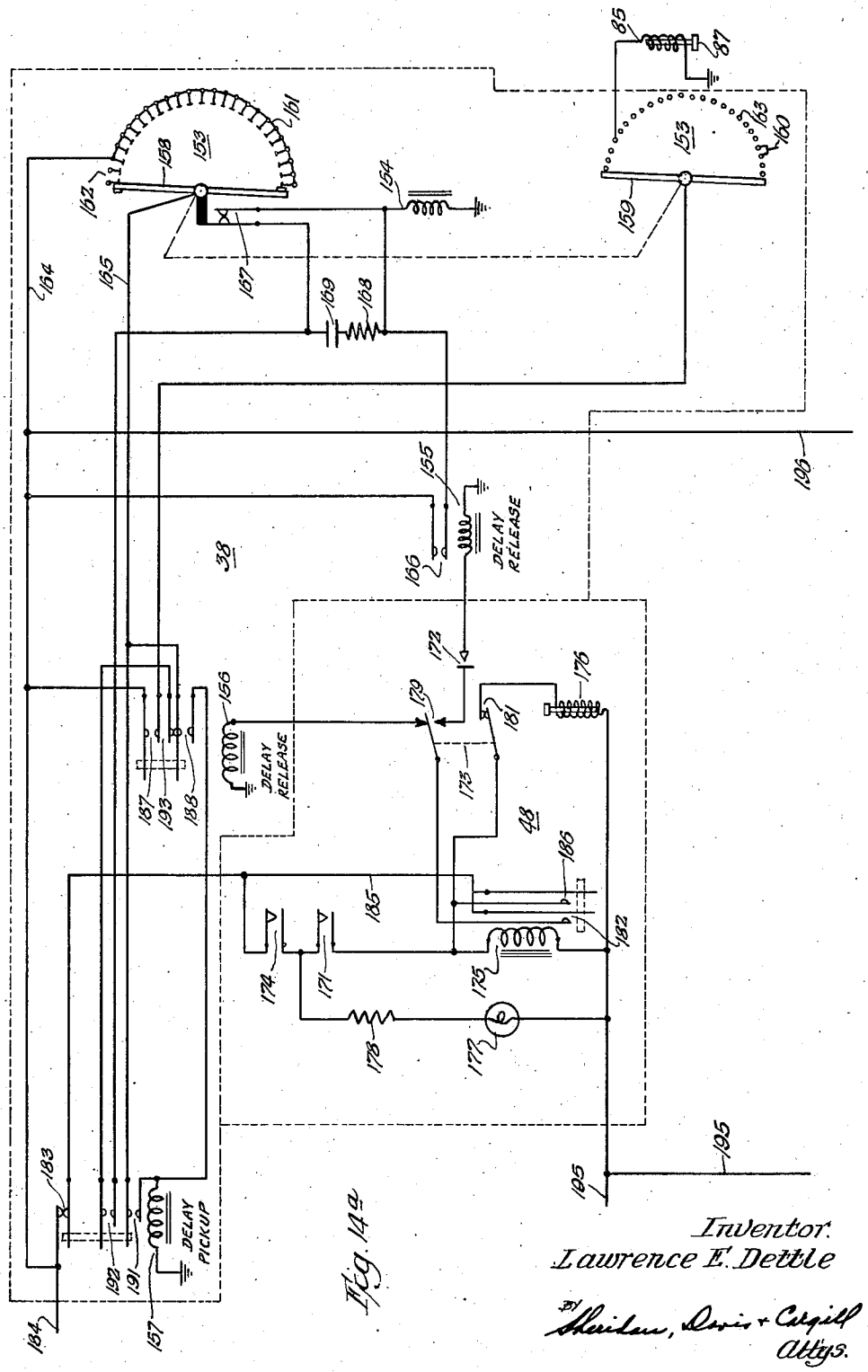


Fig 14a

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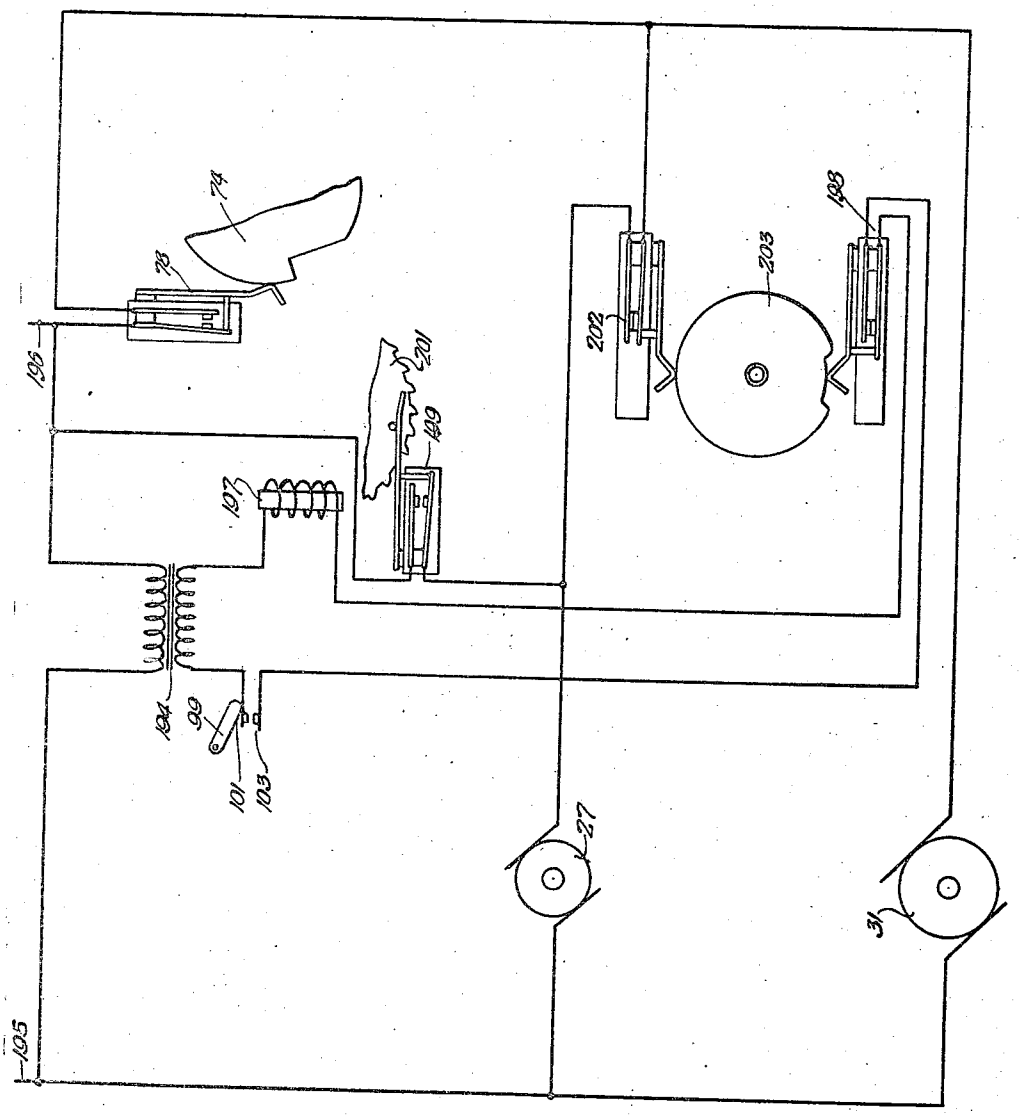


Fig. 11b

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Patented May 2, 1944 2,347,995

UNITED STATES PATENT OFFICE

2,347,995

PHONOGRAPH

Lawrence E. Dettle, Chicago, Ill., assignor to Rock-Ola Manufacturing Corporation, Chicago, Ill., a corporation of Delaware

Application October 6, 1941, Serial No. 413,811

14 Claims. (Cl. 192—143)

This invention relates to phonographs and more particularly to selective multi-record phonographs provided with means for selectively predetermining the playing of any record or each of a plurality of records.

It is an object of this invention to provide a multi-record phonograph with a new and improved means for predetermining the operation of the phonograph.

Another object of this invention is to provide a new and improved means for predetermining the operation of the phonograph which may be adapted for remotely controlling the operation of the phonograph.

Still another object of this invention is to provide in a multi-record phonograph having a reciprocable selector, improved means for controlling the operation of said selector and which will be simple and economical to manufacture.

Other and further objects of this invention will become more readily apparent by reference to the following description taken in connection with the accompanying drawings wherein:

Fig. 1 is a diagrammatic representation of certain essential components of a multi-record automatic phonograph embodying the present invention;

Fig. 2 is a top view of the phonograph showing the mounting panel above which there is the record magazine, the turntable, the phonograph pick-up and a portion of the selector mechanism;

Fig. 3 is a detailed top view of the master cam and related mechanism as seen directly below the mounting panel of the phonograph;

Fig. 4 is a front view of the electromagnetic selector controlling means;

Fig. 5 is a side view of the electromagnetic means of Fig. 6 showing its relation to the reciprocable selector and other related mechanism of the phonograph;

Fig. 6 is a cross-sectional view of a portion of the electromagnetic means as seen from the line 6—6 on Fig. 5;

Fig. 7 is a cross-sectional view of a portion of the electromagnetic means as seen from the line 7—7 in Fig. 5;

Fig. 8 is a perspective view of one of the reciprocable stop members of the electromagnetic means of Figures 4 to 7;

Fig. 9 is a cross-sectional view taken across one of the solenoids as viewed from the line 9—9 in Fig. 6;

Fig. 10 is a partial rear view of the mechanism shown in Fig. 4;

Fig. 11 is a detailed view of a portion of the selector mechanism shown in Fig. 5;

Figs. 12 and 13 are detailed views of the electromagnetic means and the selector taken across the line 12—13 of Fig. 5, and which serve to illustrate certain operations; and

Figs. 14*a* and 14*b* are a circuit diagram of the phonograph including the means for selectively energizing the electromagnetic selector controlling means.

Referring more particularly to Figs. 1, 2, and 3 of the drawings, there is shown a multi-record phonograph 21 having a record magazine 22, a turntable 23, and a phonograph pick-up 24 supported above a mounting panel 25, which panel forms part of a cabinet enclosing the phonograph mechanism. By means of a record selector 26, a portion of which is above the mounting panel 25, and the remainder of which is below the mounting panel 25, the records contained in the record magazine 22 are moved from the record magazine to a position directly above the turntable 23. The turntable 23 is movable for moving a record to and from playing relationship with the reproducer or phonograph pick-up 24, so as to remove the phonograph record from one of the record trays or carriers of the record magazine 22. The phonograph turntable 23 is rotated by a suitable electric motor 27, and the turntable 23 is elevated into position with respect to the phonograph pick-up 24 by a reciprocable slide 28 which is actuated by a master cam 29. The master cam 29 is actuated by an electric motor 31 by means of a suitable belt and pulley arrangement 32 which drives a worm screw 33 engaging a gear wheel 34 fastened to the master cam shaft 35.

Automatic multi-record phonographs of the type shown in Figs. 1 to 3 are known to the art, by way of illustration being substantially identical to that shown in U. S. Letters Patent No. 2,159,834 of Paul H. Smyth, Jr., dated May 23, 1939. Since the illustrated phonograph has been disclosed in detail in that patent, it is unnecessary to repeat the detailed disclosure thereof herein. By way of explanation and to facilitate obtaining a clear understanding of the invention, brief reference has been made above to certain general structural features of that phonograph to which the present invention has been applied.

Referring more particularly to Fig. 1, it will be seen that the phonograph of the type referred to is provided with means for predetermining any record or each of a plurality of records which

includes an electromagnetic selector controlling means 36 mounted so as to cooperate with the selector mechanism 26. The electromagnetic selector controlling means is connected through a cable 37 to a translating means 38 which may be enclosed within a suitable container mounted within the phonograph cabinet. The translating means is energized from a suitable power line entering a junction box 39 which in turn is connected through a cable 41 to a power pack 42 which is connected by a cable 43 to the translating means 38. The translating means 38 is furthermore connected by a cable 44 and suitable connecting boxes 45 and 46 to one or more control actuating means 47 and 48 by means of cables 49 and 51, respectively. The control actuating means 47 and 48 may be remotely located with respect to the phonograph cabinet or one of these control actuating means may be mounted on or incorporated with the phonograph cabinet. The control actuating means 47 and 48 may constitute any one of a number of devices well known in the art, but preferably are of the type shown, described, and claimed in the co-pending patent application of David C. Rockola, Lawrence E. Dettle, and Eugene L. Triman, for improvements in Phonographs, Serial No. 390,774, filed April 28, 1941. The control actuating means 47 and 48 are each provided with a dial 52 and 53 respectively, each of which is provided with a certain number of finger apertures for cooperation with a suitable stop, the structure of which is commonly known in the art. The apertures in the dials 52 and 53 correspond to numbered selections provided within a suitable index such as 54 and 55 respectively. The actuation of the dial causes certain electrical circuits to be completed and causes electrical impulses of a predetermined number to be transmitted to the translating means 38. The essential circuit elements of the control actuating means such as 47 and 48, and the translating means 38 will subsequently become apparent when the circuit arrangement shown in Figs. 14*a* and 14*b* is described in detail.

The operation of the selector or selector mechanism 26 will be better understood by reference to Figs. 1, 2, 3, and 5, from which it will be noted that the record magazine 22 is composed of a plurality of record carriers 56 of ring shape or equivalent configuration each having an outwardly extending arm 57 which is pivotally or otherwise mounted in stacked or column relation on a post 58. The arm 57 of each record carrier 56 has a portion 59 extending beyond the pivot post 58 for pivotally carrying a latch member 61. The latch member is engageable with a record moving means 62 and an operating member 63 for releasing the corresponding record carrier and drivingly coupling it with a record carrier moving means when the phonograph begins a cycle of operation. The electric motor 31 is energized thus driving the gear 34 attached to the master cam shaft 35 which carries the master cam 29. Rotation of the master cam 29 produces a reciprocable movement of the selector mechanism 26. The selector mechanism 26 travels to its upper limit of travel and then returns downwardly until it engages a suitable stop member 64 which is a part of the electromagnetic selector control means 36. When the selector mechanism 26 has stopped at a predetermined elevation, the upper end thereof which carries a selector cam or finger 66 is rotated on the shaft of the selector mechanism 26 by a stud 67 mounted upon the gear 34 by actuation of a cam lever 68 which is mounted upon the shaft 69 of the selector mechanism 26. The cam lever 68 upon being actuated by the stud 67 upon the gear 34 produces a rotation of the shaft 69 thus causing the selector cam or finger 66 to engage the member 63 of the record magazine 22 thus unlatching one of the rings 56 for movement out of stack relation over to and above the turntable 23.

Upon rotation of the master cam 29, cam followers 71 and 72 are engaged. The cam follower 71 is operatively connected to the record carrier moving means 62 and cooperates with the master cam 29 for driving the record carrier moving means to move any record carrier ring 56, of which the latch 61 has been operated through its operating member 63 into engagement with the record carrier moving means, to a position over the turntable 23. The rotating master cam 29 by engaging the cam follower 72 thereafter raises a reciprocable slide 73 which carries with it a turntable reciprocating arm 28 thereby to raise the rotating turntable 23. During this raising movement, the rotating turntable 23 passes through the record carrier ring 56 and removes the record therefrom. The rotating master cam 29 continues the upward movement of the turntable 23 to move the record into playing engagement with the record reproducer or phonograph pick-up 24.

When the master cam 29 has been rotated sufficiently to bring the turntable 23 into reproducing position, a switch is operated which opens the electrical circuit for the cam motor 31, thus stopping the cam motor 31, but not stopping the phonograph turntable motor 27. The phonograph record upon the turntable 23 thereupon is reproduced by means of a suitable amplifier and sound reproducer, not shown, as will be understood by those skilled in the art. The reproducer 24 travels across the phonograph record on the turntable 23. Such movement of the phonograph reproducer 24 causes rotation of a cam member 74 attached to the shaft upon which the phonograph pick-up 24 is mounted. Rotation of the cam member 74 causes travel of a projection thereon 75 toward a reproducer return means 76. The cam member 74 is furthermore provided with a notched portion 77 which is arranged to actuate a portion of a switch 78 so that when the switch 78 is actuated the master cam motor 31 is again energized.

Thus upon the completion of the playing of a phonograph record the cam driving motor 31 again rotates the master cam 29 so that the cam follower 72 and the slide 73 are moved by the cam in a direction to cause the turntable 23 to move downwardly away from the reproducer 24 and back through the positioned record carrier 56 whereby to deposit the played record thereon. After the played record has been moved out of playing engagement with the reproducer 24, a pin or stud 79 on the rotating master cam 29 engages the transverse arm portion 81 of the reproducer return means 76 and moves it to rotate the disc 74 by means of the projection 75 in a direction to return the reproducer 24 to its initial or starting position. The actuation of the disc 74 by the reproducer return means 76 and 81 does not, however, serve to deenergize the circuit for the cam motor 31 since by movement of the shaft 35 of the master cam 29 another switch has been closed which maintains the electrical circuit for the motor 31.

The cam driving motor 31, therefore, continues to operate and drive the master cam 29 until it

has completed the movement of the cam follower 72, the slide 73 and the turntable reciprocating arm 28 in moving the turntable 23 away from the playing position.

Selector control means

From the previous description of the phonograph and the operation of the selector, it will be apparent to those skilled in the art that the reciprocable selector mechanism when stopped at a predetermined level operates to cause a predetermined phonograph record to be reproduced. The operation of the selector mechanism is controlled by an electromagnetic means 36 which operates to predetermine the playing of any record or each of a plurality of records. The details of this electromagnetic means are shown in Figs. 4 to 11. The electromagnetic selector control means 36 comprises a suitable supporting frame 82 which is mounted by suitable fastening means 83 upon the frame 84 of the selector mechanism 26. The frame 82 supports a plurality of electromagnetic coils 85 which are arranged in a common plane and in two rows. In between the two rows of electromagnetic coils 85 there is a row of selector stops 86. Each of the selector stops 86 is arranged for movement upon selective energization of its corresponding electromagnetic coil 85. Each electromagnetic coil 85 is provided with a magnetic core 87 which is magnetically biased by a spring 88 so as to be in engagement with its corresponding selector stop or slide 86. Each of the selector stops 86 is of the same configuration, such as may be seen in Fig. 8. On each side of the selector stop 86 there is provided an indentation or notch 89 and 91. One of these notches 89 or 91 is engageable with one of the solenoid cores 87 so as normally to retain the slide or stop 86 out of the path of movement of a selector mechanism 26. Each slide 86 is provided with an elongated finger-like portion 92 about which there is placed a coil spring 93. One end of the coil spring 93 is in engagement with the stop portions or shoulders 94 and 95 of the slide or stop 86, and the other end of the spring 92 is in engagement with a back plate 96 which is secured to the frame 83 by suitable fastening means or screws 97.

The back plate 96 is provided with a pair of upstanding portions 98 which serve to hingedly support a switch actuating plate 99 which carries at its upper end a switch contact 101. The switch actuating plate 99 may be limited in its forward movement by means of a suitable set screw arrangement 102. The contact 101 is arranged to engage a cooperating contact 103 which is insulated from and supported by the back plate 96. The switch actuating plate 99 is suitably biased to open circuit position by means of a pair of springs 104. One side of each of the electromagnetic coils 85, and the switch actuating plate 99 are connected by suitable conductors 105 to ground or to one side of the electrical circuit including the cable 37. At the forward end of the finger 92 of the slide stop member 86 there is provided a transverse projection 106 which serves to actuate the switch plate 99 whenever any one of the slide stops 86 has been released so as to project into the path of operation of the selector mechanism 26. At the back end of the slide 86 there is provided a downwardly turned portion 107 for the purpose of permitting certain elements of the selector mechanism 26 to restore to original position the selector stop 86 whenever a phonograph record corresponding to this particular stop has been reproduced.

From Figs. 6 to 9 it will readily become apparent that one of the notches 89 or 91 of each of the selector stops 86 is engaged by one of the solenoid cores 87 to normally retain the slides 86 in a position out of the path of movement of the selector mechanism 26. As a predetermined electromagnetic coil 85 is energized, the electromagnetic force of the coil exerts a pull on the core 87 thus overcoming the bias of the spring 88 and withdrawing the solenoid core 87 from the notch 89 or 91 of the slide 86. The withdrawal of the solenoid core 87 from the notch on the side of the slide 86 permits the bias exerted by the spring 93 surrounding the finger-like portion 92 of the slide 86 to force the slide to move in a direction transverse with respect to the path of movement of the selector mechanism 26. This forward or reciprocable movement of the selector stop 86 thus places a stop 86 in the path of movement of the selector mechanism 26 and also closes the electrical contacts 101 and 103. These contacts are maintained in closed circuit relation as long as any of the selector stops 86 remain in the path of operation of the selector mechanism 26.

Selector mechanism

When the record carriers 56 are in column or stack position, as in Fig. 2, the operating members of the record tray latches 63 are arranged one above another in vertical alignment and are selectively operable by the selector cam 66 of the selector mechanism. For the purpose of selecting one of the phonograph records in the stack, the selector 26 is vertically movable to positions corresponding to those of the latch operating members corresponding to the latch operating member of the particular record, and is operable in any such position to engage the corresponding latch member of the record carrier holding means. The selector mechanism which controls this operation is best shown in Figs. 5, 12, and 13, and comprises a vertical shaft 69 which is slidably and rotatably journaled at 108 in the selector frame 84. The selector shaft 69 is provided with a keyway extending longitudinally thereof for cooperation with a cam lever 68. The cam 68 is secured against reciprocable movement with the shaft 69 at a level just below the upper portion of the selector frame 84 which is directly beneath the mounting panel 25, by means of a bracket 109. The keyway and cooperating keying means of the shaft 69 permit the selector shaft 69 to reciprocate longitudinally and provide a driving connection between the cam lever 68 and the selector shaft 69 whereby the shaft may be rocked about its longitudinal axis whenever the cam lever 68 is operated by a stud 67 mounted on the master cam gear wheel 34. The cam lever 68 has a cam surface 111 which is engageable by the cam follower or stud 67 and by a stud or pin 112 also mounted upon the master cam gear 34 for rotating the selector shaft in a direction to cause the selector cam 66 to operate one of the latch members 63. The cam lever 68 also has a cam surface 113 contiguous with the cam surface 111 for permitting and controlling the rotation of the cam lever 68 and the selector shaft 69 in the opposite direction after the pin or stud 112 has moved beyond the cam surface 111.

A reciprocable plate-like slide member 114 provided with a plurality of bifurcated lugs 115 at its opposite ends slidably engages the inner sur-

faces of a pair of spaced guide rails 116 suitably secured to rearwardly projecting studs or portions of the selector control frame 84. The slide plate 114 supports a pivoted plate 117 which has a projected portion or finger 118 for engaging the stop portion 64 of one of the reciprocable slide members 86. The pivoted plate 117 is provided with a depending finger 119 at the rear side of the plate, and which is engageable with the upper portion of the slide plate 114 for limiting the rotation of the plate 117 in one direction. A weight 121 is supported at the rear side of the plate 117 to return the plate to its horizontal position whenever it is displaced therefrom.

The reciprocable plate-like slide member 114 is provided at its rear side with a pair of spaced lugs 122 located above a rectangular aperture 123 in the slide plate 114 to facilitate rotatably securing the selector shaft 94 to the slide plate 114. In securing the selector shaft 69 to the slide plate 114, the lower end of the shaft is arranged between the lugs 122 in such manner that an arm 124 is positioned below the lugs 122 and extends into the aperture 123 whereby the shaft 69 and slide plate 114 reciprocate together. If desired, a coil spring 125 may be arranged surrounding the lower portion of the shaft 69 above the lugs 122 for engagement therewith and with the under side of the cam lever 68 for yieldably impeding the upward movement of the selector mechanism at its upper limit of travel and for resiliently assisting and starting the selector mechanism downwardly during each operating cycle of the phonograph. A strap 126 may be bridged between the rear ends of the lugs 122 for retaining the lower end of the selector shaft 69 between the lugs during operation. The arm 124 is rockable with the shaft 69 during the rotation of the shaft for moving the selector cam 66 to operate a latch member 63. The outer free end of the arm 124 swings through the aperture 123 to a position forwardly of the slide plate 114, the purpose of which subsequently will become apparent.

Rearwardly of the slide plate 114 there is a collapsible, expansible or lazy tongs linkage 127 which is secured at its upper end to a depending portion 128 of the bridging strap 126, and at its lower end to a forward upstanding lug 129 suitably secured to the lower portion of the selector frame 84. Spaced to the rear of the lazy tongs linkage 127 is a pair of spaced vertical guide rails 131 which are secured in spaced relation at their upper ends by a bracket 132 secured to the guide rail 116, and at their lower ends to rearward upstanding lugs 132 supported from the lower portion of the selector frame 84. The guide rails 131 slidably carry a grooved rail engaging block or member 133 which is pinned or otherwise secured at 134 to an intermediate pivot of the lazy tongs linkage 127 and at its opposite side is provided with a cam roller or follower 135. The cam roller 135 is adapted to be engaged by the master cam 29 for operating the slide member 133 to raise the selector sufficiently to move the selector cam 66 above the level of the uppermost latch member 63 while the turntable is being lowered. The elevated position of the selector just described is the normal starting position and it is held in that position by the master cam 29 which engages the cam roller 135 until a cycle of operation of the phonograph is initiated. The rearwardly extending portion adjacent the bottom of the selector frame 84 serves to limit the downward travel of the selector when the slide plate 114 engages that portion of the frame, and the lazy tongs linkage 127 cushions the downward travel of the selector shaft 69.

Thus the selector mechanism 26 is operable to move the selector cam 66 between an upper level above the uppermost latch member 63 and a lower position level corresponding to the lowermost latch member 63, and to move the selector cam 66 in a latch member operating direction for engaging one of the latch operating portions 63 with the record carrier operating means whereby to select the record in the corresponding record carrier 56. In moving the selector cam 66 in the last mentioned direction, the arm 124 moves through the aperture 123 in the slide plate 114 and engages the upper end of a pivoted plate 136. The pivoted plate 136, supported by a suitable lug 137, is thereby moved forwardly above its pivot. The upper end of the pivoted plate 136 is resiliently secured to the forward face of the slide plate 114 by a pin and spring assembly 137 which permits pivotal movement of the plate 136 when the cam lever 68 is operated to rotate the selector shaft 69 in a selected direction and which automatically rotates the selector shaft 69 in the opposite direction when the cam stud 67 passes beyond engagement with the cam lever 68 thereby to return the selector to its non-selecting or initial position. Thus when a selection has been made by the selector, and the selector has been released by the cam stud 67, the pin and spring assembly 137 operates to move the upper end of the plate 136 rearwardly to rotate the arm 124 and the shaft 69 together with the selector cam 66 to their initial position.

At the beginning of each cycle of operation of the phonograph, the master cam 29 is supporting the selector shaft 69 and the associated mechanism at the uppermost limit of travel, whereupon the selector mechanism is permitted to be lowered until the projecting finger 118 of the pivoted member 117 engages the stop portion 64 of a stop slide 86. To support the selector at such elevation, the guide rail 116 is formed with a rack 138 along one of its longitudinal edges. The selector is supported at the elevation corresponding to the lowermost latch member 63 by engagement of the slide plate 114 on the lowermost extension of the selector frame 84. The rack 138 is provided with one fewer supporting teeth than there are latch members. A rockable pawl plate 139 is pivotally mounted at 141 on the rear face of the slide plate 114. The pawl plate 139 is stamped or otherwise formed with a pawl 142 which is engageable with the teeth of the rack 138. The pawl plate 139 is provided with an arcuate aperture, not shown, through which the shank of a headed pin or rivet 143 passes, the pin being anchored in the slide plate 114. Thus the pawl 142 is rockable about the shaft 141 between limits determined by the length of the arcuate aperture through which the shank of the headed pin or rivet 143 passes. Suitable spring means are preferably provided to swing the pawl plate 139 in a direction to move the portion 142 into engagement with the teeth of the rack 138 for supporting the selector in an elevated position.

During the elevation of this slide plate 114, the selector shaft 69 and other selector mechanism, the pawl 142 slides along the rack 138 to the uppermost position of the selector assembly. At the uppermost position a portion of the pawl plate 139, adjacent the pawl 142, which is in the

form of a rearward projection 144 engages a stud 145 which is mounted on the guide rail 116, thus moving the pawl plate 139 sufficiently to clear an aperture 146 in the slide plate 114. A spring-urged lever 147 is pivoted at 148 on the face of the pivoted plate 136, and is provided at its upper end with a rearwardly extending finger 149 which registers with aligned apertures 151 and 146 in the pivoted plate 136 and the slide plate 114, respectively. The purpose of the lever 147 is to hold the pawl plate 139 and the pawl 142 out of engagement with the rack 138 until the finger 149 with the plate 136 is moved forwardly when the cam lever 68 is actuated to move the selector shaft 69 in a selected direction. The finger 149 thereupon springs rearwardly through the apertures 151 and 146 and dogs the pawl plate 139 in that position. During the forward movement of the pivoted plate 136, a finger or projection 152 located at the free end thereof operates to engage the portion 107 of the stop slide 86, thereby to return the stop slide 86 to a position where it is no longer in the path of travel of the selector mechanism.

During the lowering of the slide plate 114, the pawl 142 does not, therefore, engage the rack 138. When the pivoted plate 136 is swung forwardly, as previously described, by rotation of the selector shaft 69 and the selector cam 66, the spring urged lever 147 moves forwardly thus disengaging the pawl plate 139. The pawl plate 139 being suitably biased thereupon swings the pawl 142 into supporting engagement with the rack 138 whereby to support the slide plate 114 the selector shaft 69, and the selector cam 66 in their respective elevated positions.

Translating means

The construction and operation of the translating means 38 may be better understood by reference to Figure 14*a*, and which comprises certain elements of conventional form, the structure of which is well known in the art and which will not be shown in detail. The elements contained within the translating means 38 are represented schematically within a dotted line enclosure in Fig. 14*a*.

This translating means 38 comprises a rotary switch 153 of the automatic telephone type, actuated by a solenoid 154 which in turn is energized by means of a stepper relay 155. The operation of the rotary switch 153 is further controlled by a selector relay 156 and a cancel relay 157. The rotary switch 153 is provided with two groups of contacts which are engaged by two switch arms 158 and 159 pivoted intermediate their ends for rotation together by a step-by-step movement resulting from the operation of the relay or solenoid 154 actuating a ratchet mechanism. The arms 158 and 159 engage a plurality of electric contacts which are arranged in arcuate position. During the operation of the rotary switch, first one end of each of the switch arms 158 and 159 engages the contacts and then when these arms have been advanced to the end of the arcuate groups of contacts, the other end of the arm begins to engage the contacts. In the arrangement illustrated, the arcuate groups of contacts are 25 in number. All of the contacts 161 of the first group with the exception of the first two contacts are electrically connected together. These first two contacts 162 remain open and will be referred to as "dead" contacts. The first two contacts of the other arcuate group 163 are also dead contacts, and the next 20 contacts are each connected to one of the electromagnetic selector control magnets 85 shown in Figs. 4 to 13. The last two contacts of the group of contacts 163 are also left open circuit, and the third from the last contact is connected by a conductor 160 to the last contact energizing one of the electromagnetic coils 85. The purpose of this connection will subsequently become apparent. The switch arm 158 is so constructed that in passing from one contact to another, the arm during its transition momentarily makes contact with two of the contacts, so that the circuit between conductors 164 and 165 is not broken by operation of the rotary switch during the time that it goes from one contact to another, other than the first two dead contacts 162. The other switch arm 159 is so constructed as to engage only one contact at a time.

The stepper relay 155 is provided with a pair of contacts 166 which are closed each time that the stepper relay 155 is energized. The stepper relay 155 by means of the contacts 166 therefore supplies energy from the conductor 164 to the coil of the actuating relay 154 of the rotary switch 153 to ground. The coil 154 of the selector switch 153 is connected to a switch 167 which is opened each time that the solenoid 154 is energized. The contacts of the switch 167 normally short circuit a resistor 168 serially connected to a capacitor 169, the function of which subsequently will become apparent.

The selector relay 156 is of a type which has a time delay release operation, and it is provided with a plurality of switch contacts which cooperate with the rotary switch 153 to perform certain operations. The cancel relay 157 is of a type which has a delay upon initial operation and it is provided with a plurality of contacts which cooperate with certain of the contacts of the relay 156 and the switch arm 158 and the contacts 161 of the switch 153 to perform certain functions. The cancel relay 157 also has contacts which control the operation or energization of a control actuating means such as 47 or 48 shown in Fig. 1. The control actuating means 48 comprises certain elements which may be of conventional form, the structure of which is well known in the art and which will not be shown in detail. The elements contained within the control actuating means 48 are represented schematically within a dotted line enclosure in Fig. 14*a*.

As has been pointed out, a control actuating means such as 47 or 48 has a dial which is provided with a certain number of finger apertures by means of which the dial is rotated through a predetermined arc. The dial is spring biased so as to return to its original position. The dial is mounted on a shaft which is provided with a switch actuating arm which cooperates with a normally open circuit switch 171. The dial furthermore is connected to an interrupter wheel which operates to interrupt a switch 172, thereby to transmit a predetermined number of current impulses corresponding to the angular distances through which the dial has been rotated. The initial actuation of the dial of the control actuating means 48 also operates another switch 173, which is returned to its former position when the dial returns to rest. As will be seen from Fig. 1, the control actuating means such as 47 and 48 is provided with a coin chute for receiving a coin or coins. Whenever a coin is inserted, the coin operates to close a switch 174. The switch 174 is serially connected with the switch 171 to

a relay 175 which is provided with a plurality of contacts which are connected to the switch 171 and the switch 173. The switch 174 upon being actuated by a coin is arranged so as to remain closed until the switch is opened by the action of a coin switch relay 176. The control actuating means 48 is also provided with a signal light 177 connected in series with a suitable resistor 178, for the purpose of telling the operator that the operator should dial again. The signal light 177 is illuminated whenever another control actuating means is in operation.

The control actuating dial, such as 52 or 53, is so related to the switches of the control means 48 so that as the selector dial 53 is advanced a slight distance which, however, is insufficient to bring the first opening in the dial adjacent the dial stop, certain operations occur which, however, have no effect upon the rotary selector switch 153. If the dial 53 is advanced slowly to a distance short of the dial stop corresponding to the first selector opening, the switch arm on a shaft of the dial mechanism permits the switch 173 to open the upper contact 179, thereby opening the circuit which is energizing the coil of the selector relay 156. The contacts 181 of the switch 173 are the next contacts to be broken, and subsequent thereto the lower contacts of the first contacts 179 are closed. The closing of the lower contacts 179 of the switch 173 closes a circuit leading to the interrupter switch 172 which is actuated by the interrupter wheel of the control actuating means 48. The interrupter switch 172, however, is not energized until the dial has operated to close the switch 171 which completes a circuit for the energization of the relay 175. These parts are thus so correlated that in operation the interrupter switch 172 is never supplied with energy while the switch 171 is closed. Unless the selector dial 53 has been revolved from its position of rest until at least the first opening in the dial has reached or passed the finger stop, no preparatory action has been completed by the operation of the dial.

When, however, the dial 53 has been moved to a position beyond the first opening of the dial 53 with respect to the finger stop, the relay 175 has been actuated thereby closing its contacts 182 which complete a circuit through the contacts 183 of the cancel relay 154 to the power conductor 184. Thus power is supplied from the conductor 184, the switch contacts 183, the conductor 185, the switch contacts 182, through the lower contacts 179 to the interrupter switch 172 by means of which impulses are transmitted to the interrupter relay 155. A predetermined number of impulses transmitted by the interrupter switch 172 causes a predetermined number of actuations of the stepper relay 155 to close its contacts 166 thereby advancing the switch arms 158 and 159 of the rotary switch 153 to a predetermined set or sets of contacts.

When the dial 53 returns to a position of rest the switch 173 is operated so as to close the upper contacts 179 and the contacts 181. The lower contacts 179 have been opened now deenergizing the circuit through the interrupter switch 172 and the stepper relay 155. The relay 175, which has been locked into closed position by means of contacts 186 thereby completing a circuit through the upper contacts of the switch 179 to supply energy from the conductor 184, the contacts 183 of the cancel relay 157, the conductor 185, the switch contacts 186 of the relay 175, the upper contacts 179 of the switch 173 to the coil of the selector relay 156.

The selector relay 156 now comes into operation first closing the contacts 187 which complete a circuit from the conductor 164 to supply energy to the switch arm 159 of the rotary switch 153. The switch arm 159 has previously been positioned upon a contact connected with a predetermined one of the coils 85 of the electromagnetic selector control means 36. The energization of one of the coils 85 of the selector control means 36 causes the solenoid core 87 to be withdrawn so as to permit one of the stop members 86 to project into the path of operation of the selector mechanism 26. This action of the stop member 86 causes the contacts 101 and 103 shown in Fig. 14b to initiate a cycle of operation of the phonograph.

The next contacts to be closed by the operation of the selector relay 156 are contacts 188 which complete a circuit from ground through the coil of the cancel relay 157, the switch arm 158, the rotary contacts 161 of the switch 153, and the conductor 164 to the conductor 184 thereby causing operation of the cancel relay 157.

The operation of the cancel relay 157 first closes the contacts 191 which lock the coil of the cancel relay 157 into circuit by means of the switch arm 158 of the rotary switch 153. The next contacts to be closed by the cancel relay 157 are the contacts 192 which complete a circuit between the contacts 167 of the rotary selector switch 153, and the open contacts 193 of the selector relay 156. As the cancel relay 157 completes its operation, the contacts 183 are broken thereby cutting off the supply of energy to the control actuating means 48, thus causing the selector relay 156 to become deenergized.

Upon deenergization of the selector relay 156, the contacts 188 are first separated thereby breaking the circuit which locked in the coil of the cancel relay 157. The next contacts to be opened are contacts 187 which interrupt the circuits through the electromagnet coils 85 of the selector control means 36. The contacts 193 close at the same time the contacts 187 are interrupted.

The closing of the contacts 193 completes a circuit from the conductor 184, the conductor 164, the switch contacts 161, the switch arm 158, the contacts 193, the contacts 192 of the relay switch 157 through the contacts 167 to the coil 154 of the rotary switch. This energizes the solenoid 154 which operates upon a ratchet which rotates the switch arms 158 and 159. Each time that the switch arms 158 and 159 are advanced one position, the contacts 167 are interrupted thereby releasing the armature of the relay coil 154. The capacitors 169 and resistors 168 serve to reduce to a minimum any arcing which may occur between contacts of the switch 167. This operation continues to move the arms 158 and 159 until the arm 158 engages the dead or open circuit contacts 162. The selector switch 153 in this position is then ready for a new cycle of operation to be initiated from a control actuating means such as 47 or 48. When the operation of the rotary switch 153 is completed by engagement of the arm 158 with the open circuit contacts 163, the cancel relay 156 is deenergized so that current is again supplied to the control actuating units 47 and 48 by the closing of the contacts 183 of the deenergized cancel relay 157.

When the dial 53 of the control actuating

means 48 has returned to rest, the switch 173 is again actuating so as to close the upper contacts 179 and the contacts 181. The closing of the contacts 181 energizes the coil of the relay 176 which operates to open the switch 174. This operation occurs only if the dialing operation and the operation of the translating means has been complete. In the event that the dialing operation is incomplete by reason of a dialing operation occurring from some other control actuating means or for any other reason, the switch 174 will still be closed, thereby completing a circuit through the resistors 178 and the signal lamp 177 to instruct the operator to again perform the dialing operation.

Phonograph circuit

Whenever one of the electromagnetic coils 85 of the automatic selector control means 36 has been energized by the operation of the translating means 38, the projection of one of the stop slide members 86 causes the switch operating means 99 to close a pair of contacts 101 and 103, which as may be seen from Fig. 14b, are connected to the secondary winding of a transformer 194, the primary winding of which is connected so as to be energized from energy received through a pair of electric conductors 195 and 196. The other side of the secondary winding of the transformer 195 is connected in series with an electromagnet or relay coil 197 and a switch 198. The switch 198 is so arranged that it is normally closed at the end of each cycle of operation of the phonograph. Thus when the switch actuating means 99 closes the contacts 101 and 103, the relay coil 197 is energized. The relay coil 197 is so arranged as to bring about the operation or closing of a switch 199. The switch 199 is normally retained in open circuit relation by a pin mounted upon a ratchet wheel 201, which ratchet wheel may be a part of an accumulator mechanism commonly found in phonographs of this type. The operation of the electromagnet 197 causes the ratchet mechanism 201 to be advanced, which unit thereby closes the switch 199. The closing of the switch 199 operates to supply energy from the electric conductor 196 to the phonograph motor 27 and to the master cam motor 31.

Energy is supplied to the master cam motor 31 through a normally closed switch 202, which switch remains closed until one-half of the cycle of operation of the phonograph has been completed. The switches 202 and 198 are actuated by a cam wheel 203 which is arranged to be mounted upon the master cam shaft 35, or to operate in synchronism with the rotation of this master cam shaft. The phonograph mechanism thereupon operates to reproduce a selected phonograph record.

Upon termination of the reproduction of the phonograph record, the phonograph pick-up arm operates to move the cam 74 so as to bring about operation of an electric switch 78 which is connected between the power conductor 196 and one side of the master cam motor 31. Thus upon completion of the reproduction of a phonograph record, the master cam motor 31 which previously has been maintained in a deenergized state by the opening of the switch 202 is again energized. As previously explained, the master cam operation thereupon returns the phonograph pick-up to its starting position thereby opening the switch 78, but the cam motor 31 continues to operate since rotation of the master cam shaft 35 has produced a rotation of the cam 203 which is sufficient to again close the contacts of the switch 202. The master cam motor 31 thereupon continues to operate until the cam 203 assumes the position shown in Fig. 14b. Thereupon a suitable ratchet operating means actuates the ratchet wheel 201, thereby to open the switch 199, thus deenergizing the phonograph and preparing it for a new cycle of operation.

Operation

While each of the components of the phonograph has been described in detail together with the operation thereof, it is believed that the following brief general description of the operation will assist in an understanding of the correlation between the various components in their operation. From the previous description it will be remembered that at the beginning of each cycle of operation of the phonograph or whenever the phonograph is not operating, the selector mechanism 26 is positioned at its uppermost limit of travel so that the selector cam or operating arm 66 in Figure 2 is above the uppermost latch operating member 63 which controls the release of a particular phonograph record in the stack of records 22. An operator inserts a coin into the coin chute of a control actuating means 48 thereby closing a switch 141 shown in Figure 14a. The operator, then having referred to the list of selections 55, inserts a finger into one of the finger apertures of the dial 53 and moves the dial until the finger stop has been reached. The initial movement of the dial closes the switch 174 and operates the switch 173 of Figure 14a. Upon releasing the dial, a predetermined number of impulses is transmitted by the impulse switch 172 to the stepper relay 155 of the translating means 38 shown in Figures 1 and 14a. The stepper relay 155 of the translating means 38 causes the selector switch 153 to be operated so as to move the switch arms 158 and 159 to a predetermined pair of contacts. When this operation has been completed, the relays 156 and 157 of the translating means 38 perform certain operations so that energy is supplied through the switch 153 to energize one of the electromagnet coils 85 of an electromagnetic selector control means 36.

The energization of an electromagnetic coil 85 of the selector control means 36 produces a withdrawal of one of the core members 87 thereby permitting one of the slides 86 to be moved transversely with respect to the solenoid 85 and with respect to the path of movement of the phonograph selector mechanism 26. Thus the stop portion 64 of the slide 86 is now in the path of movement of the selector mechanism 26. As soon as this has occurred, the rearward portion 106 of the slide 86 has actuated the switch operating plate 99 thereby closing switch contacts 101 and 103 which are connected in the circuit shown in Figure 14b. The closing of these contacts initiates a cycle of operation of the phonograph. Meanwhile, however, the operator may desire to predetermine the playing of several other selections whereupon as each coin is inserted in the control actuating means 48, the dial 55 is actuated so as to transmit a predetermined number of impulses to the translating means 38. Each operation of the translating means 38 causes another one of the electromagnetic coils 85 to be energized thereby releasing another one of the slide members 86 and

their stop portion 64 into the path of operation of the phonograph selector mechanism 26.

Since actuation of the electromagnetic selector control means 36 has caused the contacts 101 and 103 of Figure 14b to be closed, and it may be assumed that the phonograph mechanism initially was at rest, a circuit has been completed through the secondary winding of the transformer 194, the electromagnet 197, and the electric switch 198. The energization of the electromagnet 197 has caused the ratchet wheel 201 to be stepped forward one unit thereby permitting the electric switch 199 to be closed. The closing of the electric switch 199 produces energization of the electric motors 27 and 31. The electric motor 31 drives the master cam 29 so as to permit the selector mechanism 26 to be lowered until the projecting finger 118 on the pivoted member 117 of the selector mechanism has engaged the uppermost one of the projections 64 of the slides 86 which previously has been released by the energization of one of the electromagnets or solenoids 85 of the selector control means 36. The selector mechanism 26 having been stopped at a predetermined level is then locked into position by the operation of the pawl 142 shown in Figure 5. The master cam motor 31 meanwhile continues to rotate the master cam until the stud 67 engages the selector operating arm 68 to cause rotation of the selector shaft 69. Rotation of the selector shaft 69 produces rotation of the selector finger or cam 66 shown in Figure 2 so that this member engages the latch release member 63, thus preparing a predetermined one of the phonograph records in the phonograph carrier 56 for movement over the turntable 23.

The master cam in its subsequent operation causes the record carrier ring 56 to be moved over the phonograph turntable 23 whereupon further actuation of the master cam causes the turntable 23 to be elevated through the ring or record carrier 56 to remove the record therefrom and to move the record on the phonograph turntable 23 into engagement with the phonograph pick-up 24. When the phonograph turntable 23 has been moved into position for reproducing a phonograph record thereon, the cam 203 shown in Figure 14b has been rotated through 180 degrees so that the switch 202 has been opened thereby deenergizing the master cam motor 31.

The phonograph motor 27 continues to be energized until the phonograph record has been reproduced whereupon the movement of the phonograph pick-up 24 to the innermost portion of the phonograph record causes the cam 74 to be moved to a position where the electric switch 78 is closed. The closing of the switch 78 again supplies energy to the master cam motor 31 to again bring about further movement of the master cam 29. The master cam 29 thereupon causes the phonograph turntable 23 to be lowered and also returns to its initial position the phonograph pick-up 24. The return of the phonograph pick-up 24 again opens the switch 66, but meanwhile the cam 203 has moved sufficiently so as to close again the electric switch 202 thereby maintaining a supply of energy to the master cam motor 31. The phonograph turntable continues to move down and to deposit the phonograph record upon the ring or carrier 56. When the phonograph turntable 23 has reached its lowermost position, the master cam operates to return the record carrier 56 to the stack. At this point in the operation the master cam has moved the cam 203 to the position shown in Figure 14b and also causes the ratchet wheel 201 to be returned one unit, thereby opening the switch 199 and deenergizing the phonograph turntable motor 27 and the master cam motor 31. At this point the selector mechanism 26 is again at its uppermost limit of travel.

If the operator of the control actuating means 48 has selected several phonograph records, the remaining slide members 86 which have not been restored and which correspond to records still to be played, maintain the electric contacts 101 and 103 in closed circuit relation and hence when the cam 203 returns to the position shown in Figure 14b, the solenoid or electromagnet 197 is again energized thereby again actuating the ratchet wheel 201 to close the switch 199 which again initiates another cycle of operation of the phonograph. Thus as long as any of the slide members 86 of the electromagnet means 36 remain in the path of operation of the selector 26, successive operations of the phonograph will be initiated until the phonograph selector 26 has completed the playing of all the records selected and has restored each of the slide members 86 to their initial positions where they no longer project into the path of operation of the selector mechanism.

It will be remembered that each time that the selector mechanism 26 is stopped in its downward travel by the projecting portion 64 of one of the slide members 86, the selector is maintained in position by the pawl 142 which engages the rack 138, shown in Figure 5. When the selector shaft 69 is rotated so as to unlatch a predetermined one of the record carriers 56, the rotation of the selector shaft 69 also causes an arm 124, shown in Figure 11, to actuate the plate 136 thereby to restore to the former position that pin slide member 86. If, for example, in the position shown in Figure 5 the projecting member 64 corresponds to the first selection made by the operator, and a subsequent selection actuates a slide located nearer the top of the selector control means 36, the return of the selector 26 to its uppermost limit of travel will not disturb this slide member, since the pivoted member 117 is provided with a weight 121 which permits this member to pivot in passing projecting slide members during the upward travel of the selector mechanism 26 and the weight 121 restores to its former position the pivoted member 117 so that at the uppermost limit of travel of the selector mechanism 26 the pivoted member 117 is again in position to arrest the downward movement of the selector at the uppermost one of the slides 86 which is then projecting into the path of operation of the selecting mechanism.

While for the purpose of illustration there has been shown the application of this invention to a particular type of phonograph, it is to be understood that the invention is not to be limited thereby since obviously the invention may be applied to other phonographs having reciprocable selector mechanisms, and modifications may be made in the circuit arrangements and in the instrumentalities employed without departing from the spirit and scope of the invention as set forth in the appended claims.

I claim:

1. In a selective multi-record phonograph including a reciprocable selector mechanism for phonograph records, a selector control mechanism comprising a plurality of independently movable

stop members, spring means urging said stop members toward the path of operation of said selector mechanism, means normally retaining said stop members outside of said path, and electrically operated means for selectively rendering ineffective said retaining means to permit said spring means to project selected stop members into said path of operation of said selector mechanism.

2. In a selective multi-record phonograph including a reciprocable selector mechanism for phonograph records, a selector control mechanism comprising a plurality of reciprocable stop members biased toward the path of operation of said mechanism, means normally retaining said stop members in a position outside of said path of operation of said mechanism, electrically operated means for selectively rendering ineffective said retaining means to permit selected stop members to project into said path of operation, and means actuated by said mechanism for restoring to position one of said stop members during each cycle of operation of said phonograph.

3. In a selectively operable multi-record automatic phonograph having a reciprocable selector mechanism, a selector control mechanism comprising a plurality of like independently slidable stops arranged in a row parallel to the path of operation of said selector mechanism, biasing means for urging said stops into the operating path of said selector mechanism, a plurality of spring biased members for latching each of said stops in a position outside of the path of said selector mechanism, an electromagnetically operated means for each of said biased latching members for releasing said stop, and means for selectively energizing said electromagnetically operated means to control the operation of said selector mechanism.

4. In a selective multi-record phonograph, the combination comprising a reciprocable selector mechanism for phonograph records, and means for selectively controlling the operation of said mechanism comprising a plurality of reciprocable stop members each biased so as to project into the path of operation of said selector mechanism whenever released, each stop member having a portion thereof engaged by a reciprocable restraining member biased toward said stop member, electric means for each of said restraining members for withdrawing said restraining member from engagement with said stop member, means for selectively controlling the energization of said electric means, and means carried by said selector mechanism for restoring the position of each released stop member.

5. In a selective multi-record phonograph, the combination comprising a reciprocable selector mechanism and means for selectively controlling the operation thereof, said means comprising a plurality of movable core solenoids arranged in two rows in a common plane, a plurality of reciprocable stop members arranged between said rows of solenoids for operation transverse to the plane of said solenoids and transverse to the path of operation of said mechanism, each of said stop members being biased toward said selector mechanism and being restrained in position by a respective core of one of said solenoids, each core of said solenoids being biased toward said stop members, and means for selectively energizing each of said solenoids to release said stop members into the path of operation of said selector mechanism.

6. In a selective multi-record phonograph, the combination comprising a reciprocable selector mechanism, and an electrically operated means for selectively controlling said mechanism, said means comprising a plurality of electromagnetic coils arranged in a common plane, a movable core member for each of said coils, said core members being mechanically biased to tend to expel said members from said electromagnetic coils, a plurality of reciprocable stop members, each arranged for operation in a direction transverse with respect to the movement of said selector mechanism and transverse with respect to the movement of said core members, each of said stop members being biased toward the path of operation of said selector mechanism, each of said stop members being provided with means engaged by one of said movable core members to retain said stop members outside of the path of operation of said selector mechanism, and means for selectively energizing said electromagnetic coils to control the operation of said selector mechanism.

7. In a selective multi-record phonograph including a reciprocable selector mechanism for phonograph records, an electrically operated means for selectively controlling said selector mechanism, comprising a plurality of electromagnetic coils arranged in a plurality of rows in a common plane, a movable core member for each of said coils, each said core member being mechanically biased to tend to expel said core from its magnetic coil, a plurality of like reciprocable stop members each arranged for operation in a direction transversely with respect to the movement of said selector mechanism and transversely with respect to the movement of said core members and being located in a row therebetween, each of said stop members being mechanically biased toward the path of operation of said selector mechanism and being provided with means engaged by one of said movable core members to retain said stop members outside of the path of operation of said selector mechanism, means for selectively energizing said electromagnetic coils to control the operation of said selector mechanism, and means operable by said selector mechanism for restoring the position of one of said stop members during each cycle of operation of said phonograph.

8. In a selectively operable multi-record automatic phonograph having a reciprocable selector mechanism, a control mechanism for said selector mechanism comprising a plurality of like independently slidable stops arranged in a row parallel to the path of operation of the selector mechanism of said phonograph, individual stop biasing means for urging said stops into said operating path, a plurality of spring biased members for latching each of said stops in a position outside of said path, electromagnetically operated means for each of said biased latching members for releasing said stop, and means for selectively energizing said electro-magnetically operated means to control the operation of said mechanism.

9. In a selective multi-record phonograph having a reciprocable selector mechanism, a control means for selectively controlling the operation of said reciprocable selector mechanism comprising a frame supporting a row of independently reciprocable stop members each biased for movement transversely of said frame whenever released, each stop member having a portion thereof engaged by a reciprocable restraining member

biased toward said stop member, and electric means for each of said restraining members for withdrawing any selected restraining member for engagement with said stop member.

10. A control mechanism for the reciprocable selector mechanism of a selective multi-record phonograph comprising a plurality of movable core solenoids arranged in two rows in a common plane, a plurality of reciprocable stop members arranged between said rows of solenoids for operation transverse to the plane of said solenoids and transverse to the path of operation of said reciprocable selector mechanism, each of said stop members being biased toward said path of operation and being restrained in position by a respective core of one of said solenoids, each core of said solenoids being biased toward said stop members, and means for selectively energizing each of said solenoids.

11. An electrically operable means for selectively controlling a reciprocable selector mechanism in a selective multi-record phonograph comprising a plurality of electro-magnetic coils arranged in a common plane, movable core member for each of said coils, means for biasing said core members away from said electro-magnetic coils, a plurality of reciprocable stop members each arranged for operation in a direction transverse with respect to the movement of said core members and transverse with respect to movement of said reciprocable selector mechanism, means biasing each of said stop members toward the path of movement of said selector mechanism, each of said stop members being provided with means engageable by one of said movable core members to retain said stop members outside of said path of operation, and means for selectively energizing said electro-magnetic coils whereby said electrically operated means will control the operation of the reciprocable selector mechanism.

12. An electrically operated means for selectively controlling a multi-record phonograph selector mechanism having a linear path of operation comprising a plurality of electro-magnetic coils arranged in a plurality of rows in a common plane, a movable core member for each of said coils, means for each of said core members for biasing said members to tend to expel said core from its magnetic coil, a plurality of like reciprocable stop members each arranged for operation in a direction transversely with respect to said linear path of movement of said selector mechanism and transversely with respect to the movement of said core members and being located in a row therebetween, means biasing each of said stop members toward the path of operation of said selector mechanism, and means provided on each of said stop members for engagement by one of said movable core members to retain said stop members outside of the path of operation of said selector mechanism.

13. A control mechanism for the selector of a selective multi-record phonograph, comprising a plurality of stop members, means for mounting said stop members in a linear row for independent movement along parallel paths to and from positions of cooperable relationship with the selector, means for urging each said stop member to its position of cooperable relationship with the selector, means for releasably latching each said stop member against movement by the last said means, electromagnetically operable means for each of the latching means, for operating the same to release said stop members, and means for energizing said electromagnetically operable means to cause the movement of any number of said stop members to their positions of cooperable relationship with the selector.

14. In combination in a selective, multi-record phonograph, a linearly reciprocable selector mechanism including a stop member projecting laterally therefrom, and linearly reciprocable therewith, a plurality of stops slidable in paths intersecting the path of the linearly reciprocable stop member, means for urging each said stop into the path of said stop member, means for releasably latching each of said stops out of the path of said stop member, electromagnetically operated means for each of the latching means for operating the same to release said stops, and means for energizing any number of said electromagnetically operated means to selectively control the movement of said stops into the path of said stop member.

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