

March 3, 1942.

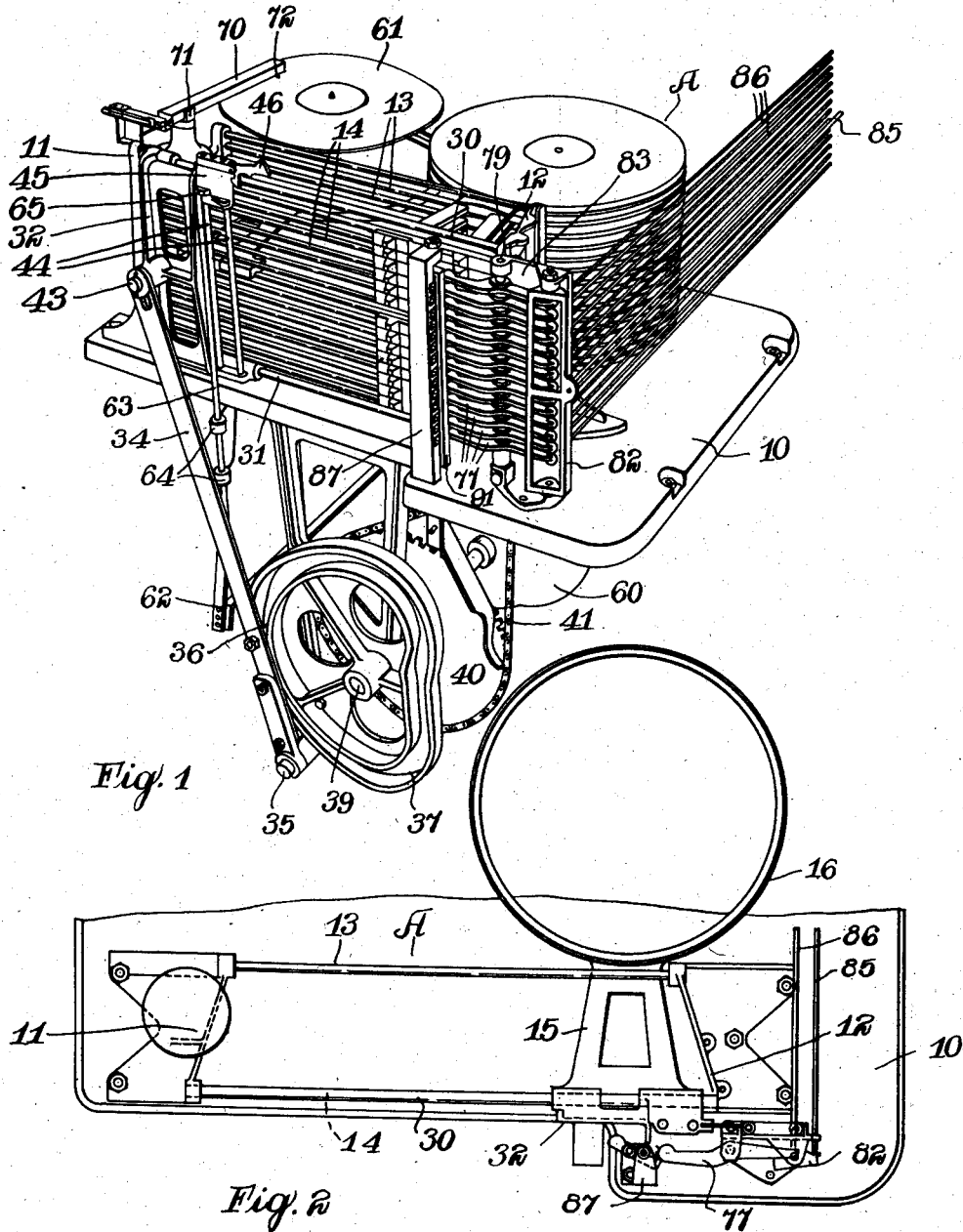
W. M. FILBEN

2,274,921

AUTOMATIC PHONOGRAPH

Filed July 15, 1937

5 Sheets-Sheet 1



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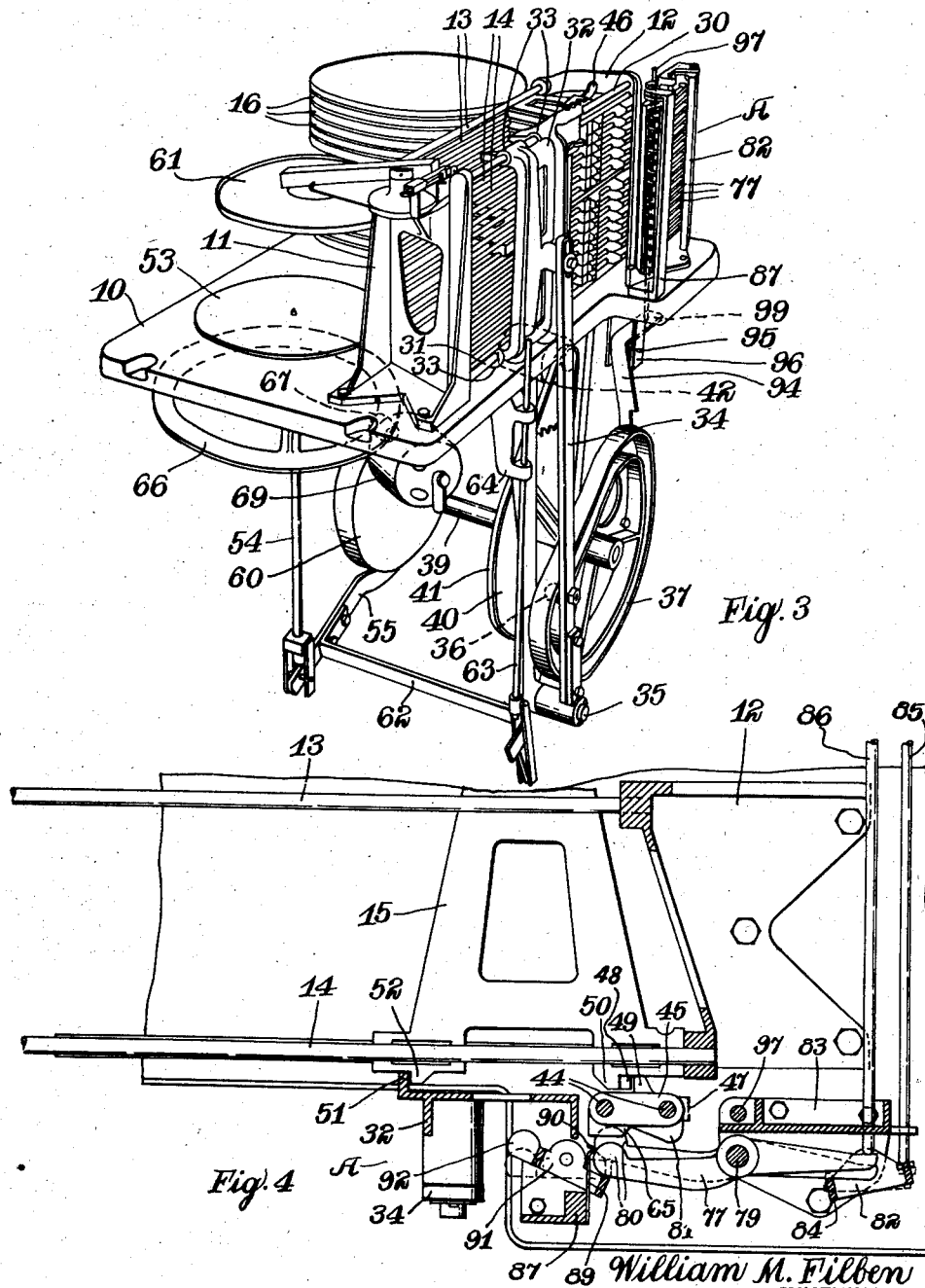
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AUTOMATIC PHONOGRAPH

Filed July 15, 1937

5 Sheets-Sheet 2



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2,274,921

5 Sheets-Sheet 4

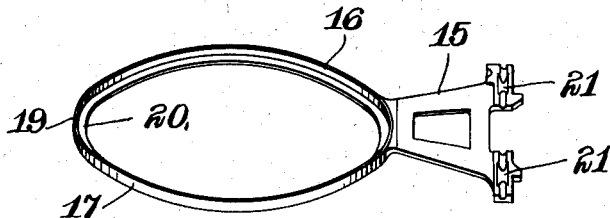


Fig. 7

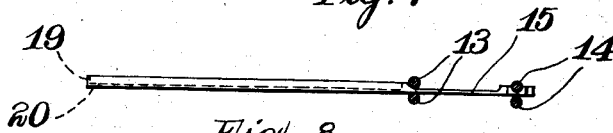


Fig. 8

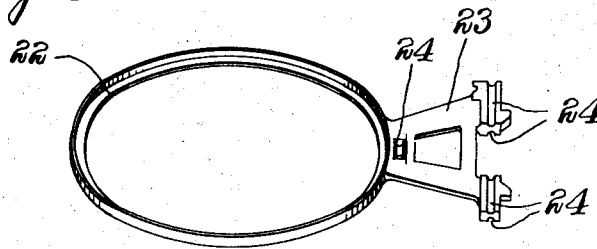


Fig. 9

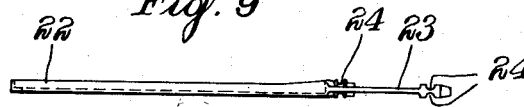


Fig. 10

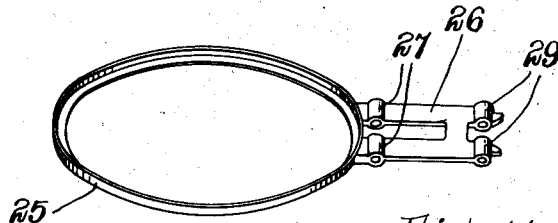


Fig. 11

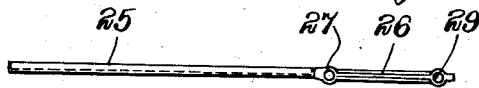


Fig. 12

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5 Sheets-Sheet 5

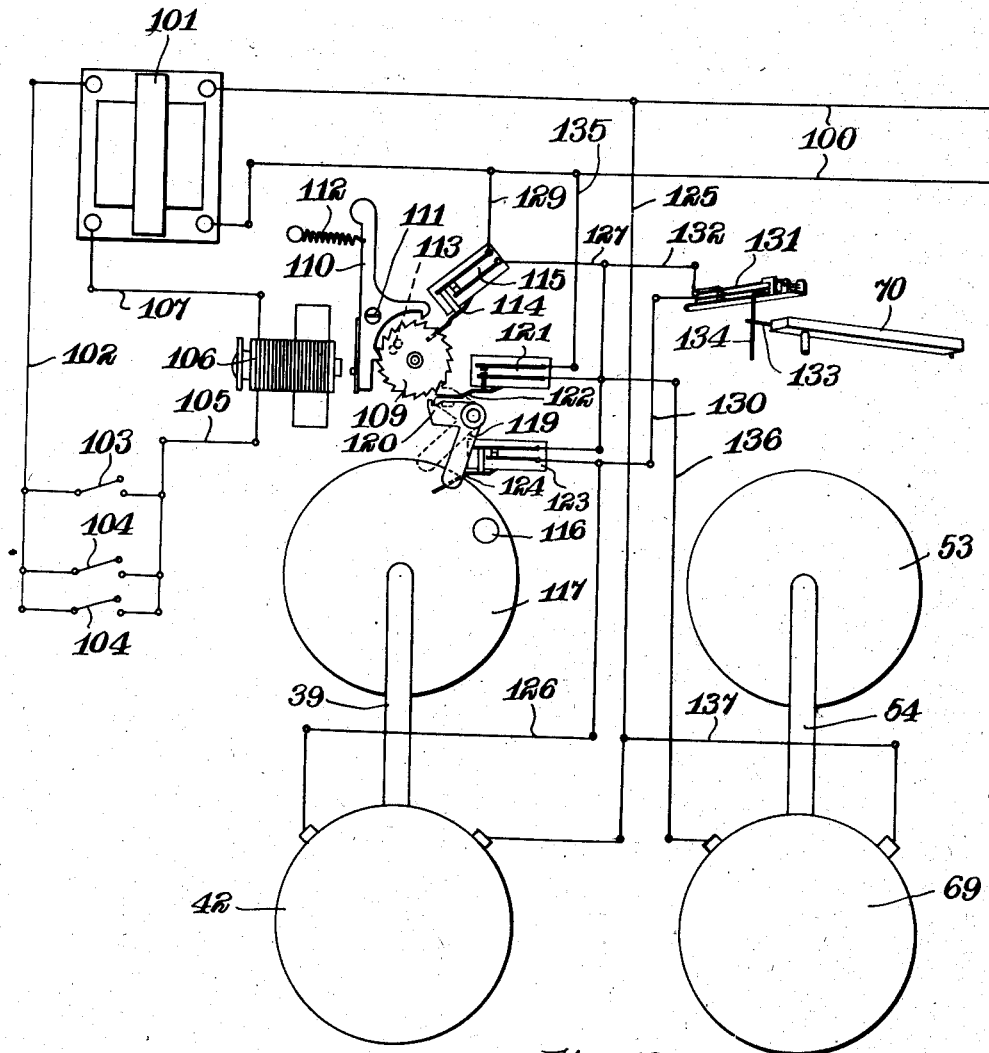


Fig. 13

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UNITED STATES PATENT OFFICE

2,274,921

AUTOMATIC PHONOGRAPH

William M. Filben, St. Paul, Minn.; Bernice M. Filben administratrix of said William M. Filben, deceased

Application July 15, 1937, Serial No. 153,772

34 Claims. (Cl. 274—10)

My invention relates to an improvement in an automatic phonograph wherein it is desired to provide a device operable to play a series of phonograph records consecutively or to play a selective series of records consecutively.

Several types of automatic phonographs have been previously constructed for playing a series of records consecutively. These former constructions may be divided into two general classes, the first group of which supports a series of records on pivotally mounted arms or trays and pivots a selected record into playing position. The second group of these constructions, supports a stack of records in superimposed relationship and selects a desired record by allowing a predetermined number of superimposed records to drop down into contact with a rotary turntable. Some prior devices have been formed which are combinations of these two groups, and other automatic phonographs support a series of records on a rotatable spindle and mount the phonograph pickup in such a manner that it may be selectively moved into contact with any selected record.

It is the object of the present invention to mount a plurality of records upon individually slidably movable trays or arms, and to provide a selector mechanism which causes engagement of any selected record with a slidable carriage, so as to move the selected record into playing position. In providing such a mechanism, many of the difficulties encountered with prior devices may be entirely obviated. The difficulty of pivoting any one of a number of record supporting means into playing position is avoided as no such pivoted record supporting means is employed. Furthermore, the selection of the record is positive and will operate similarly in every instance. It will be recognized that when one record is stacked directly upon another the warping of any record is apt to change the spacing between the records, thereby preventing proper operation of the selector mechanism. Any such difficulty is avoided with my present invention.

It is a feature of my invention to provide a series of superimposed record supporting means which are slidably movable into and out of record playing position, and to provide a means for automatically moving any selected record supporting means first into record playing position, and then back into superimposed position when the playing of the record is completed. With this construction, it is not necessary to use any spring means to move the record supporting means in either direction, thus lessening the chance of

having the device operate improperly or break down by failure of a spring. Furthermore, the mechanical movement of the records in both directions makes possible a gradually starting and stopping movement of the record supporting means, avoiding breakage of records or wearing of parts.

It is a feature of my invention to provide a selector mechanism in the form of a slug which is vertically slidable on the carriage used for moving the record supporting means into and out of playing position. This slug is supported at the top of its slidable position until the phonograph is started into operation, whereupon it drops into contact with a record supporting means containing a selected record. This record is then moved into playing position whereupon the slug is again moved to suspended position at the top of the carriage from where it may drop into contact with the next selected record.

It is a feature of my invention to provide a selector mechanism which will move into engagement with the uppermost selected record supporting means of a superimposed stack of records supporting means, and which will automatically cancel this selection as it moves the selected record supporting means into playing position. Continued operation of the device will cause the selector to engage the next uppermost selected record supporting means operating similarly to cancel this selection.

It is an added feature of my invention to provide a means of supporting slidable record supporting means, and to provide a carriage to slidably move any selected record supporting means. This carriage also actuates this pickup mechanism in such a way that simultaneously with the movement of the carriage to return any selected record supporting means into inoperative position, the pickup mechanism will be reset to start playing the next record.

These and other features and novel objects of my invention will be more clearly and fully set forth in the following specification and claims.

In the drawings forming a part of my specification:

Figure 1 is a rear perspective view of the operating mechanism of my phonograph.

Figure 2 is a top plan view of a part of my mechanism, illustrating the record supporting and selecting mechanism.

Figure 3 is a rear perspective view similar to Figure 1, showing the mechanism from a different angle.

Figure 4 is a sectional view taken on a hori-

zontal plane through the record supporting and selecting mechanism.

Figure 5 is a front perspective view of my phonograph operating mechanism, the records having been removed therefrom.

Figure 6 is a plan view of the pickup mechanism and the means operating the same.

Figure 7 is a perspective view of one type of record supporting tray used in my device.

Figure 8 is a side elevation view of the record supporting means illustrated in Figure 7.

Figure 9 is a perspective view of a slightly different form of tray or record supporting means from that illustrated in Figures 7 and 8.

Figure 10 is a side elevation view of the record supporting means illustrated in Figure 9.

Figure 11 is a perspective view of another type of record supporting means.

Figure 12 is a side elevation view of the record supporting means illustrated in Figure 11 of the drawings.

Figure 13 is a wiring diagram disclosing the manner of operation of my device.

In order that the construction of my device may be properly understood, I have divided my device into several units which, of course, cooperate to produce the desired result. These parts include a record supporting mechanism, a record moving mechanism, a turn-table mechanism, a pickup mechanism, and a selector mechanism. Each of these units will be discussed in detail in the following description.

Record supporting mechanism

My phonograph A is provided with a base 10 having mounted thereupon a pair of spaced standards 11 and 12. Extending between the standards 11 and 12, I provide two sets of superimposed spaced rods 13 and 14. These rods 13 and 14 extend in parallel relationship and are slightly spaced to permit the supporting end 15 of the record supporting means or tray 16 to slide therebetween. The record supporting trays are perhaps best illustrated in Figures 7 and 8 of the drawings. These trays 16 include a circular ring portion 17, which is angular in cross-section, and includes a vertically extending circular wall 19 and a transversely extending rim 20. This supporting ring 19 is secured to the supporting end 15 which extends between a pair of rods 13, and is provided with bearings 21 which engage the lower surface of one of the rods 14 as may be seen in Figure 8 of the drawings.

If it is desired, the record supporting means illustrated in Figures 9 and 10 could be substituted for that illustrated in Figures 7 and 8. This second type of record supporting means comprises a record supporting ring 22 similar or identical to the ring 17 previously described. The supporting end 23 is provided with a roller 24 which is engageable with a rod 13 and which is interposed between two of the rods 13. The end of the supporting end 23 is provided with opposed journals 24 for engagement with the rods 14.

In the record supporting means illustrated in Figures 11 and 12 of the drawings, the record supporting ring 25 is similar to the rings 17 and 22. The supporting end 26, however, is provided with aligned openings 27 through which one of the rods 13 slidably extends. The supporting end 28 is also provided with aligned openings 29 through which one of the rods 14 may extend to slidably support the tray.

In each of the forms of trays described, lugs 75

are provided on the supporting end for slidably moving the record supporting means. These lugs, however, will be later described in connection with the record moving mechanism.

From the foregoing description, it is clear that each of the record supporting means 16 is slidably supported upon the rods 13 and 14 which extend transversely of the machine at the rear of the base 10 thereof, and are individually slidable along the rods 13 and 14, between the brackets 11 and 12.

Record moving mechanism

Above the uppermost rod 14 of the series of rods, I provide a parallel rod 30. Below the lowermost rod 14, of the series, I provide a second parallel rod 31. Slidably journaled upon these rods 30 and 31, I provide a carriage 32, equipped with journals 33 through which the rods 30 and 31 extend. This carriage 32 is reciprocated along the rods 30 and 31 by a lever 34 pivoted at its lower end to a fixed pivot 35, and being actuated by a cam roller 36 engageable with the cam 37. The cam 37 is mounted upon a shaft 39, bearing a sprocket 40 which is driven by means of a chain 41 by a motor 42. The carriage 32 is pivoted to the lever 34 at 43 in a slot in the end of the lever 34.

The carriage 32 supports a pair of vertical parallel spaced rods 44 upon which a slug 45 is slidably engaged. A latch 46 pivoted to the carriage 32, supports the slug 45 suspended at the top of the rods 44 by engagement with a lug 47 mounted upon the slug 45.

The slug 45 is provided with a finger 49 best illustrated in Figure 4 of the drawings which engages with a notch 48 in the notch projection 50 on the supporting end 15 of the record supporting means 16. The slug 45 may be supported adjacent any one of the record supporting means 16 so that movement of the carriage 32 to the left from the position illustrated in Figure 4, will cause the finger 49 to engage in the notch projection 50 which prevents the slug 45 from dropping upon the bars 44 and which causes movement of the carriage 32 to move any of the record supporting means 16 into playing position.

The return movement of the record supporting means 16 into superimposed position with the other record supporting means, is effected by a shoulder 51 on the carriage 32 illustrated in Figure 4, which engages a projection 52 on the record supporting means 16 moving the same to the right with the carriage 32.

Turn-table mechanism

As may be seen from the drawings, the record supporting means 16 are normally positioned at one end of the rods 13 and 14. A selected record to be played is carried by one of the record supporting means to the other end of the rods 13 and 14 adjacent the bracket 11. When the carriage 32 reaches the position illustrated in Figure 1 of the drawings, a turn-table 53, mounted upon a vertical shaft 54, moves upwardly through the ring 17 of the record supporting means, and raises the record to be played into contact with the pickup mechanism. Vertical movement of the turn-table 53 is effected by a lever 55 best illustrated in Figures 3 and 5 of the drawings. This lever 55 is pivoted at 56 to a fixed point on a bracket 57 depending from the base 10, and is actuated by an arm 59 supporting a roller engageable in the cam 60. The cam 60 is mounted

upon the shaft 39 and operated by the motor 42 as was previously described. The cam 60 is so constructed as to raise the turntable 53 after the cam 37 has moved the carriage 32 into the extreme position illustrated in Figure 1, during a time when the cam 37 holds the carriage 32 from movement. The motor 42 is stopped by a suitable switch mechanism when the turn-table 53 is in playing position, stopping both the cams 37 and 60 until the playing of the record 61 is completed. The motor 42 is then started by a suitable switch mechanism which will be later described, and the cam 60 actuates the lever 55 to lower the shaft 54 and the turn-table 53, dropping the record 61 into the record supporting means 16 before the cam 37 actuates the lever 34 to return the carriage 32 into operative position.

An observation of Figures 1 and 3 of the drawings, will disclose a bracket 62 forming a part of the lever 55 pivotally connected to a vertically slidable rod 63 supported in journals 64 mounted on the base 10. This rod 63 engages a lip 65, on the slug 45 as shown in Figure 1 of the drawings, raising this slug 45 upwardly on the rod 44 into engagement with the latch 46 which holds the slug suspended. This rod 63 slides downwardly together with the shaft 54 before the carriage 32 starts its motion toward the right from the position illustrated in Figure 1.

A wheel 66 is splined to the shaft 54 and is rotated by frictional engagement with a roller 67 on a turn-table motor 69 secured to the base 10. The motor 69 rotates the wheel 66 and accordingly the shaft 54, thus rotating the turn-table 53 to play the record 61.

Pickup mechanism

Any desired type of electrical or mechanical pickup may be employed with my device. The pickup arm 70 is best illustrated in Figures 1 and 6 of the drawings. The pickup arm 70 is pivoted along a transverse axis 71 and is also rotatable on a vertical pivot to permit the needle 72 at the end of the pickup arm 70 to travel inwardly on the record 61 toward the center thereof. As the record 61 is lowered out of engagement with the pickup arm 70, this arm pivots downwardly into engagement with the bracket 73. An arm 74 is mounted on the pickup standard, and is rotatable with the pickup arm. When the record is completed, the pickup arm 70 and the arm 74 will be in the dotted position illustrated in Figure 6 of the drawings. It will remain in this position until the carriage 32 moves toward the right from the position illustrated in Figure 2, whereupon the cam 75 on the carriage 32, will engage the arm 74 and pivot the pickup arm 70 into the position illustrated in full line in Figure 6. A shoulder 76 is provided on the end of the bracket 73 to prevent the pickup arm 70 from rotation about its vertical axis, until the pickup arm 70 is raised out of contact with the shoulder 76 by the upward movement of a record 61 on the turn-table 53. When in the full line position illustrated in Figure 6, the pickup arm 70 is in proper position to start playing the record.

If a mechanical pickup or an electrical pickup is used, any desired amplifying means may be provided for amplifying the sound. This amplifying means is well known and forms no part of the present invention.

Selector mechanism

An observation of Figures 1 and 3 of the drawings, will illustrate a series of superimposed rock-

er arms 77, pivotally mounted on a vertical pivot 78. These rocker arms in the dotted position illustrated in Figure 4 of the drawings, obstruct the downward path of the slug 45 by engagement with the lip 65 thereon. As the slug 45 slides downwardly on the rods 44, the lip 65 will engage the rounded head 80 of the uppermost rocker arm 77 pivoted into the dotted outline position of Figure 4. Each rocker arm 77 is at a proper height to support the slug 45 adjacent one of the notch projections 50 in a record supporting means 16. Accordingly, the slug 45 is moved by the carriage 32 upon movement thereof, into engagement with a notch projection 50 to move this record supporting means into record playing position. A cam shoulder 81 on the slug 45, pivots the rocker arm 77 in engagement with the lip 65, into the full line position illustrated in Figure 4, thereby cancelling the selection made as the selected record is moved into playing position. Subsequent raising of the slug 45 by the rod 63, and subsequent disengagement of the latch 46, will cause the slug 45 to move downwardly into engagement with the next uppermost rocker arm 77 in dotted position.

A pivoted frame 82 mounted upon the bracket 83 supporting the vertical pivot 78, is provided with a vertical side member 84 pivotally engageable with the rocker arm 77 to move all of these rocker arms in unison into the full line position illustrated in Figure 4. This frame 82 is operated by a push rod 85 extending to the front of the machine. By pushing the push rod 85, the frame 82 may be pivoted moving all of the rocker arms 77 into the full line position. Then by subsequent pushing of one or more of the rods 86, each of which engage the end of a rocker arm 77 opposite the head 80 thereof, certain of the rocker arms 77 may be pivoted into the dotted position illustrated in Figure 4. It may therefore be seen that if the frame 82 which may be termed a clearing device is first actuated to move the arm 77 into the full line position illustrated in Figure 4, and selected rods 86 are operated to pivot certain of the rocker arms 77, any number of selected records may be played in consecutive order.

A vertically extending bracket 87 is mounted to the base 10 adjacent the end 80 of the rocker arm 77. This bracket 87 supports springs 89 one of which is positioned against each head 80. Each spring 89 is provided with a rounded head 90, which engages the head end 80 of the rocker arm 77, to hold the rocker arm either in one extreme position or another. In other words, the springs 89 hold the rocker arm 77 either in the full line position or the dotted line position illustrated in Figure 4, and no intermediate position of these arms can be sustained.

A frame 91, somewhat similar to the frame 82, is vertically pivotally supported upon the bracket 87, adjacent the head end of the rocker arm 77. When this frame 91 is pivoted in a counter-clockwise direction, all of the rocker arms 77 are moved from the full line position, illustrated in Figure 4, to the dotted outline position thereof. A rounded operating end 92 extends from the lower extremity of this frame as illustrated in Figure 3 of the drawings, and this end 92 may be engaged by the inclined cam portion 81 of the slug 45. The cam 81 only engages the operating end 92 of the frame 91, when the slugs 45 drop into engagement with the lower-most record supporting means. Obviously, if the slug 45 is permitted to drop into engagement with the low-

er-most record supporting means, all of the rocker arms 77 above this point, have been pivoted into the full line position. Accordingly, movement of the carriage 32 actuates the frame 91 to pivot all of the rocker arms into the dotted position of Figure 4, so that as the carriage 32 moves back into inoperative position, the slug 45 will engage the uppermost rocker arm 77, therefore engaging the uppermost record supporting means, and playing this record. Through operation of the cam member 81, with the rocker arm 77 after each record is played, the next uppermost record will be played, and unless certain records are selected by means of operation of the rods 85 and 86, the records will be played consecutively from the uppermost record to the lowermost record, and then this procedure will repeat itself.

Attached to the rear surface of the cam 37, I provide a cam projection 93 best illustrated in Figure 5 of the drawings. This cam projection 93 cooperates with a pivoted lever 94 the end of which is illustrated in Figure 5, and which is more clearly shown in perspective in Figure 3 of the drawings. The lever 94 is pivoted at 95 to a bracket 96 depending from the base 10 of the machine. A vertically extending rod 97 extends through the bracket 83 and rests upon the end 99 of the lever 94.

The latch 46 extends over the upper extremity of the rod 97 when the record supporting means are all returned to superimposed position. As the motor 42 starts its operation to rotate the cam shaft 39 and the cam 37, the cam projection 93 engages the end of the lever 94 and pivots the end 99 of this lever upwardly. This slides the rod 97 upwardly engaging the latch 46 and permitting the slug 45 to slide downwardly on the rods 44 into engagement with the uppermost rocker arm 77 in dotted outline position.

Operation

From the foregoing description of the operation of my phonograph, the manner in which the records may be selectively or consecutively played is believed clear. The electrical control of the device is diagrammatically illustrated in Figure 13 of the drawings. Current from the line wires 100 energize the transformer 101 which closes a circuit through the wire 102 through any of the switches 103 or 104, the wire 105, the magnet 106, and the wire 107, back to the transformer 101. The switches 103 and 104 are coin-actuated switches. The single switch 103 being momentarily closed when the coin is inserted in the machine while the switches 104 are consecutively operated by a larger coin to produce two impulses to the magnet 106.

A ratchet wheel 109 is rotatably mounted adjacent the magnet 106. This ratchet is actuated by the double pawl device 110 pivoted at 111. At each impulse in the magnet 106, the pawl 110 rotates the ratchet wheel 109 one notch in a clockwise direction. The spring 112 holds the pawl 110 in proper position.

A pin 113 is mounted on the wheel 109, and is pivotally engageable with a switch arm 114. The switch 115 operated by the switch arm 114 is normally closed, but may be opened upon engagement of the pin 113 with this switch arm 114. If, for example, the switches 103 or 104 are consecutively operated five times, the pawl 110 will rotate the ratchet 109 five notches which will permit the playing of five records as will be later described.

A projection 116 on the wheel 117 on the cam shaft 39, actuates a bell crank 119 to move the ratchet 109 in a counter-clockwise direction through a distance of one notch each time it is actuated by the projection 116. Simultaneously, with the movement of the end 120 of the lever 119 to move the ratchet 109, this lever 119 closes a contact in the switch 121 through engagement with a switch operating lever 127. A third switch 123 is provided with an operating arm 124 which is engaged by the projection 116 to break contact in this switch during each rotation of the cam shaft 39.

The circuit to the motor 42 extends from one line wire 100 through the wire 125 to one terminal of the motor 42 and from the other terminal of the motor through the wire 126 to the switch 123. From the switch 123, a circuit extends through the wire 127, through the switch 115 and the wire 129 to the opposite line wire. It will be noted that both of the switches 123 and 115 are in series in connection with the motor 42. The switch 123 is closed at all times except for a short time during each revolution of the shaft 39. The switch 115 is also closed at all times except when the pin 113 has engaged the arm 114 to break the circuit therethrough.

The rotatable member 117 carrying the projection 116, so operates as to pivot the lever 119 into the dotted line position illustrated in Figure 13 after the playing of the record is complete and the record supporting means is being moved into superimposed position. After the projection 116 has broken the circuit to the motor 42 through the switch 123, the motor 42 can start operation through a circuit extending through the wire 126, the wire 130, the switch 131, the wire 132, the wire 127, the switch 115, and the wire 129 to the other line wire 100. The breaking of the circuit through the switch 123 takes place at the time the turn-table 61 reaches record playing position and the shaft 39 stops during the playing of the record. As the pickup arm 70 reaches the end of the record, however, a finger 133 on the end thereof engages an arm 134 on the switch 131, closing the contact through 129, 115, 127, 132, 130, 126 and the motor 42 which is connected to the opposite side of the line 100. Actuation of the switch 131 thus rotates the shaft 139 until the projection 116 is disengaged from the arm 124.

This cycle continues indefinitely until the pin 113 moves into engagement with the arm 114 of the switch 115 thus breaking the motor circuit until the magnet 106 is energized by closing of the switches 103 or 104 which are coin operated. The lever 119 operates the ratchet 109 as the record supporting means approaches superimposed position until the magnet 106 is again actuated.

The turn-table 53 is actuated by the motor 69. The circuit extends through a wire 135, the switch 121, the wire 136 to the motor 69 and from the motor terminal through the wire 137 to the wire 125 returning to the opposite line wire. It may be seen that the turn table 53 operates only during the time during which the lever 119 is actuated by the wheel 117 to close the switch 121.

In accordance with the patent statutes, I have described the principles of operation of my invention, and while I have endeavored to set forth the best embodiment thereof, I desire to have it understood that this is only illustrative of a means of carrying out my invention, and that obvious changes may be made within the scope of the following claims without departing from the spirit of my invention.

I claim:

1. In a talking machine, a series of superimposed record supporting means, means movably supporting said record supporting means, a carriage movable along the path of movement of said record supporting means, a slug vertically slidably mounted on said carriage, a latch supporting said slug in raised position, means operating said latch to release said slug to permit the same to drop, means adjacent each record supporting means to arrest the dropping of said slug, means selectively operable for actuating any one of said arresting means to arrest said slug adjacent any selected record supporting means, and means cooperable between said slug and said record supporting means upon movement of said carriage to move said selected record supporting means with said carriage.

2. In a talking machine, a series of superimposed record supporting means, means movably supporting said record supporting means, a carriage movable along the path of movement of said record supporting means, a movably mounted slug on said carriage engageable with any one of said record supporting means to move the same, a pivoted lever movably mounted adjacent each of said record supporting means in the path of movement of said slug in one position and out of the path of movement of said slug in another position, each said lever supporting said slug in position to engage and move its respective record supporting means, and means on said slug for moving a lever engaged thereby into said other position.

3. In a talking machine, a series of superimposed record supporting means, means slidably supporting said record supporting means, a pivoted arresting lever pivoted adjacent each record supporting means, a movably mounted selector engageable with any of said record supporting means to move the same and engageable with said arresting levers, each said lever operable to support said selector so that the movement of said selector will move the record supporting means adjacent the arresting lever engaged, and means on said selector for moving said arresting lever engaged out of engaging position as said record supporting means is moved.

4. In a phonograph, a series of superimposed slidably supported record supporting means, a movable carriage movable along a path adjacent the path of said record supporting means, a slug vertically slidable on said carriage, lever means adjacent each record supporting means pivotal into or out of the vertical path of said slug, interacting means on said slug and said record supporting means for causing engagement of the record supporting means adjacent which said slug is supported by one of said lever means to move said record supporting means, and means on each of said levers engageable with said slug upon engagement of said slug with the adjacent record supporting means to move said lever out of the path of said slug.

5. In a phonograph, a series of superimposed movably supported record supporting means, a movable carriage movable along the path of movement of said record supporting means, a slug vertically slidable on said carriage and engageable with any of said record supporting means to move the same with said carriage, arresting means adjacent each record supporting means movable into the downward path of said slug to support said slug for engagement with any of said record supporting means upon move-

ment of said carriage, and means on said arresting means engageable with said slug upon movement of said carriage to move said arresting means out of the downward path of said slug.

6. In an automatic phonograph, a series of superimposed movably mounted record supporting means, a movable carriage movable along the path of movement of said record supporting means, a vertically movable slug on said carriage, a latch holding said slug above the level of said record supporting means, arresting means adjacent each of said record supporting means movable into and out of the downward path of said slug in one position of said carriage, means engaging said latch means when said carriage moves into said one position releasing said slug to permit the same to move downwardly into engagement with the uppermost arresting means in its path, means on said slug engageable with the adjacent record supporting means upon movement of said carriage to move said adjacent record supporting means, means on said slug engaging said arresting means engaged by said slug to move the same out of the path of said slug, means for raising said slug into engagement with said latch, means returning said record supporting means to superimposed position, and said slug releasing means acting to drop said slug into engagement with the next uppermost arresting means in its path.

7. In an automatic phonograph, a series of movably mounted record supporting means, and an arresting means for each of said first named means, means mounting said arresting means so that said arresting means is movable into two extreme positions, a movable carriage, a slidably mounted slug movable in a predetermined path on said carriage and engageable in one position of said carriage with said arresting means in one extreme position of said arresting means, means on said slug engageable with any of said record supporting means to move the same, said arresting means stopping said slug adjacent the record supporting means to be engaged, and means on said arresting means engageable with said slug to move said arresting means into the other extreme position upon movement of said carriage.

8. In an automatic phonograph, a series of superimposed record supporting means, an arresting means adjacent each of said record supporting means movable into two extreme positions, a vertically movable selector means engageable with said arresting means in one extreme position of said arresting means, downward movement of said selector causing engagement thereof with the uppermost arrester in said one extreme position, means moving said selector means horizontally into engagement with the corresponding record supporting means, means raising said vertically movable selector means back into superimposed position, and means on said selector means co-operable with each arresting means engaged to move said arresting means into its other extreme position upon horizontal movement of said selector means, subsequent downward movement of said selector means causing engagement with the next uppermost arresting means.

9. In an automatic phonograph, a plurality of superposed movable record carriers, projectable selector arms corresponding in number to and at substantially the same elevation as the respective carriers, movable means adjustable to a plurality of elevations in line with and

adapted to engage each of said carriers to select the records to be played, means slidably supporting said movable means locking said movable means from rotation, said selector arms when projected controlling and directly governing the position of said movable means to a given elevation, and means guiding said moving means and slidable supporting means in a straight horizontal path to move said carriers.

10. In an automatic phonograph, a plurality of superposed movable record carriers, a turntable, a vertically movable selector means adjacent said record carriers selectively engageable with any of said record carriers, means operatively connected to said selector means for moving said selector means and any of said record carriers engaged thereby into operative relation with said turntable, a plurality of superposed selector arms individually movable into and out of the path of vertical movement of said selector means, each of said selector arms so positioned as to engage and support said selector means in operative relation to a corresponding record carrier, to select the companion record supported thereby for play, and cooperable means on said selector means and said selector arms engageable during movement of said record carriers for returning the engaged selector arm out of the path of vertical movement of said selector means.

11. In an automatic phonograph, a turntable, a plurality of superposed movable record carriers movable from a storage position to a position over said turntable, a movable means for moving said record carriers between said positions, selector means on said movable means engageable with any of said record carriers to move the same with said movable means to a position over said turntable, a plurality of manually projectable selector arms cooperable when projected with said selector means to engage said selector means with a selected record carrier, said selector means and said selector arms having means cooperable upon movement of said movable means to return the engaged selector arm to retracted position, and means operatively connected to said selector arms for manually returning any projected arm or arms to retracted position.

12. In a talking machine, a turntable, a series of superposed parallel bars, a series of superposed record supporting means slidably supported on said bars supporting records on one side of said bars, movable from superposed position to a position in operative relation to said turntable, carriage means on the other side of said bars movable along a path parallel to said bars from a position adjacent said superposed record supporting means to a position adjacent said turntable, means on said record supporting means extending through said bars, and relatively movable means on said carriage selectively engageable with said extending means on any one of said record supporting means to move said one record supporting means with said carriage.

13. In a talking machine, a turntable, a series of superposed parallel bars, a series of superposed record supporting means supporting records on one side of said bars and slidably mounted on said bars from superposed position to a position in operative relation with said turntable, a carriage slidably mounted on the other side of said bars and movable from a position adjacent said superposed record supporting means to a position adjacent said turntable, means reciprocating said carriage, means on said record supporting means

projecting through said bars, and relatively movable means on said carriage selectively engageable with any one of said projecting means on said record supporting means to move the same with said carriage.

14. In a talking machine, a series of superposed record holding means, means projecting from one side only of said record holding means for supporting the same entirely from one side, a pair of parallel laterally spaced bearings on said projecting means, parallel supporting means equal in number to said record holding means slidably engaged in said bearings, an extending portion on each said projecting means projecting beyond said supporting means on the side thereof opposite to said record holding means, a slidable carriage slidable parallel to and adjacent said parallel supporting means on the side of said parallel supporting means opposite to said record holding means, means on said carriage selectively engageable with any of said extending portions, and movable means engageable with said carriage to move the same.

15. In a talking machine, a series of superposed record holding means, means projecting from one side only of said record supporting means to support the same entirely from one side, a series of superposed parallel rods in spaced relation between which said projecting means extend, said rods slidably supporting said projecting means and spacing said record holding means vertically, projecting portions on said projecting means extending beyond said rods on the side thereof opposite to said record supporting means, a longitudinally slidable carriage slidably mounted to move parallel to said rods on the side thereof opposite to said record supporting means, selector means on said carriage selectively engageable with any of said projecting portions to move said carriers longitudinally along said rods, and movable means cooperable with said carriage for slidably operating the same.

16. In a talking machine, a series of superposed record holding means, means projecting from one side only of said record holding means to support the same entirely from one side, a series of superposed spaced parallel rods between which said projecting means extend, said rods slidably supporting said record holding means, bearing means on said projecting means engaging said rods, a projecting portion on each said projecting means projecting beyond said rods on the side thereof opposite to said record holding means, a carriage longitudinally slidable in a path parallel to said rods, selector means on said carriage selectively engageable with any of said projecting portions to slide a selected record holder together with said carriage, and movable means engageable with said carriage to slide the same.

17. In a talking machine, a base, a pair of upright standards on said base, two series of parallel bars connecting said standards, the bars of each series being in superposed spaced relation, a series of superposed record supporting means, means projecting from one side only of said record supporting means, to support the same entirely from one side, said projecting means extending between and beyond said spaced bars of each series and slidably supported thereby, a record selecting means movable in a path parallel to said bars, selectively engageable with any of said projecting means on the portion thereof extending beyond said spaced bars, and movable

means cooperable with said selecting means to slide the same.

18. In a talking machine, a base, a pair of upright standards thereon, two series of parallel rods connecting said standards, the rods of each series being superposed and in vertically spaced relationship, a series of superposed record carriers, means projecting from one side only of said record carriers for supporting the same entirely from one side, said projecting means extending between, and supported slidably by, said rods, a pair of guide rods parallel to said series of rods, a carriage on said guide rods on the side thereof opposite said record carriers, slidable adjacent said series of rods, and selector means on said carriage engageable selectively with said projecting means on any of said record carriers.

19. In a talking machine, a series of superposed record supporting means, means slidably supporting said record supporting means, a pivoted arresting lever pivoted adjacent each record supporting means, a movably mounted selector engageable with any of said record supporting means to move the same and engageable with said arresting levers, each said lever operable to support said selector so that the movement of said selector will move the record supporting means adjacent the lever engaged, means on said selector for moving said arresting lever engaged out of engaging position as said record supporting means is moved, movable means engageable with said arresting levers for moving said levers into engaging position in unison, and cooperable means on said selector and said last named movable means when said selector is in engagement with the lowermost of said record supporting means for moving said levers into engaging position as the lowermost record supporting means is moved.

20. In a phonograph, a series of superposed movably supported record supporting means, a movable carriage movable along the path of movement of said record supporting means, a selector vertically slidable on said carriage and engageable with any of said record supporting means to move the same with said carriage, arresting means adjacent each record supporting means above the lowermost record supporting means movable into the downward path of said selector to support said selector for engagement with any of said record supporting means upon movement of said carriage, means for stopping said selector adjacent said lowermost record supporting means when said arresting means are not in arresting position, means on said arresting means engageable with said selector upon movement of said carriage to move said arresting means out of the downward path of said selector, movable means engageable with all of said arresting means to move the same into arresting position, and cooperable means on said selector and on said last named movable means when said selector is in engagement with said lowermost record carrier to move all of said arresting means into arresting position upon movement of said carriage.

21. In a talking machine, a series of superposed record supporting means, means slidably supporting said record supporting means, an arresting means mounted adjacent each record supporting means, a movably mounted selector engageable with any of said record supporting means to move the same and engageable with said arresting means, each said arresting means operable to support said selector so that the move-

ment of said selector will move the record supporting means adjacent the arresting means engaged, and means on said selector for moving said arresting means engaged out of engaging position as the record supporting means is moved.

22. In a talking machine, a series of superposed record supporting means, means movably supporting said record supporting means, a slidably movable operating carriage movable along a path adjacent the path of said record supporting means, a selector, means on said carriage slidably supporting said selector locking said selector from rotation, means cooperable between said selector and each of said record supporting means to cause movement of any one of said record supporting means by said carriage when said selector engages said one record supporting means, and individually operated means selectively operable for supporting said selector adjacent any of said record supporting means selected to cause engagement of said selector and said selected record supporting means upon movement of said carriage.

23. In a talking machine, a series of superposed record supporting trays, each of said trays having a supporting means projecting to one side thereof, a series of superposed parallel rods adjacent said trays, each one of said rods engaging a corresponding supporting means at a point spaced laterally from said trays to support each of said trays on a substantially horizontal plane projecting to one side of said rods, a pair of rods parallel to said parallel rods, a slidably supported carriage on said pair of rods on the other side of said parallel rods from said trays, and selector means on said carriage selectively engageable with the supporting means on any of said trays to slide the selected tray with said carriage.

24. In an automatic phonograph, a turntable, a plurality of record carriers slidably mounted to slide from a storage position to a position over said turntable, a slidable carriage mounted to slide along a path adjacent the path of said carriers, selector means on said carriage mounted to move between two extreme positions, and engageable with any selected record carrier to connect the same to said carriage to move said carrier therewith to a position over said turntable, a second means on said carriage engageable with the selected record carrier when in position over said turntable to return said record carrier with said carriage to storage position, selector elements individually movable into and out of the path of movement of said selector means when said record carriers are in storage position to select a record or series of records, means moving said selector means to one extreme position on said carriage when a selected record carrier is in position over said turntable, means latching said selector means in said one extreme position while said selected record carrier is in position over said turntable, and means releasing said selector means from said latching means for movement toward its other extreme position when said record carriers are all in storage position.

25. In an automatic phonograph, a turntable, a plurality of superposed movable record carriers individually movable from a storage position to a position in operative relation to said turntable, a series of manually projectable selector arms for predetermining a plurality of records to be played, said arms being adjacent and disposed at elevations substantially corresponding to those of the carriers, a movable se-

lector element engageable with any selector arm in projected position, said projected selector arm supporting said selector element adjacent its corresponding record carrier, movable supporting means for said selector element moving said selector element supported thereby into engagement with the corresponding record carrier, and cooperable means on said selector element and on said record carriers to support said selector element on said record carrier, said movable supporting means moving the record carrier into position in operative relation to said turntable.

26. In an automatic phonograph, a turntable, a plurality of superposed record carriers movable from storage position to a position above said turntable, means including a plurality of manually projectable selector arms for predetermining a plurality of records to be played, said arms being disposed adjacent said record carriers and at elevations substantially corresponding to those of the carriers, selector means adjustable to varying elevations and engageable with said selector arms when projected to be directly controlled to a given elevation by said selector arms, when projected; movable means supporting said selector means for moving said selector means and a record carrier engaged thereby to a position above said turntable, said arms supporting said selector means until said selector means engages the record carrier at a corresponding elevation, and cooperable means on said record carriers and on said selector means engageable upon movement of said movable means to support said selector means during movement of said record carrier to a position above said turntable.

27. In an automatic phonograph, a turntable, a plurality of superposed record carriers individually movable to a position above said turntable, a plurality of superposed projectable selector arms each corresponding to, and positioned adjacent, a record carrier, and spaced similarly to said record carriers, a selector means adjustable to a plurality of elevations in line with, and adapted to engage, each of said carriers to select a record to be played, carrier moving means slidably supporting said selector means, said selector arms when projected being engageable with said selector means and controlling and directly governing said selector means to a given elevation, movable means engageable with said carrier moving means for moving the same, means on said selector means engageable with said selector arms upon movement of said carrier moving means for returning said arms to retracted position, and swingably supported means engageable with the several selector arms for simultaneously moving them into retracted position.

28. In an automatic phonograph, a turntable, a plurality of vertically spaced superposed movable record carriers, superposed projectable selector arms adjacent said carriers each corresponding to one of said record carriers and vertically spaced to correspond with the vertical spacing of said carriers, movable means adjustable to a plurality of elevations in line with and adapted to engage each of said carriers to select the records to be played, means slidably supporting said movable means movable between two extreme positions, said selector arms when projected being engageable with said movable means and controlling and directly governing the position of said movable means to a given elevation, means guiding said movable means and slidably supporting means horizontally to move said carriers to a position above said turntable and back

to superposed position upon movement of said supporting means, movable means engageable with said supporting means for reciprocation of said supporting means, means engageable with said movable means when the carrier engaged thereby is in position above said turntable to move said movable means to one extreme position on said slidably supporting means, means locking said element in said one extreme position, and means releasing said locking means when all said carriers are in superposed position so that said movable means is free to move toward the other extreme position.

29. In an automatic phonograph, a plurality of superposed record carriers, superposed projectable selector arms each corresponding to, and positioned adjacent, one of said record carriers, movable means adjustable to a plurality of elevations in line with and adapted to engage each of said carriers to select the records to be played, means slidably supporting said movable means, said selector arms when projected being engageable with said movable means and controlling and directly governing the position of said movable means to a given elevation, and means guiding said moving means and slidably supporting in a horizontal path, movable means engageable with said supporting means to move said supporting means and a selected carrier, means on said movable means engageable with said selector arms upon movement thereof by said guiding means to retract the selector arms, means engageable with said selector arms to move the same in unison to retracted position, and means operated by said movable means to move said selector arms in unison into projected position.

30. In an automatic phonograph, a series of superposed movable trays, a turntable, means slidably supporting said trays, said trays being movable from superposed position to a position in operative relation to said turntable, a slidably movable carriage, means slidably supporting said carriage, said carriage being movable along the path of said trays from a position adjacent said superposed trays to a position adjacent said turntable, and selector means engageable with any one of said trays to move said one tray with said carriage, means on said carriage slidably supporting said selector means locking said selector from rotation, and movable means engageable with the carriage for moving the same.

31. In an automatic phonograph, a series of slidably superposed trays, a turntable, fixed means slidably supporting said trays, said trays being movable from superposed position to a position in operative relation to said turntable, a slidably movable carriage, fixed means slidably supporting said carriage movable along the path of said trays from a position adjacent said superposed trays to a position adjacent said turntable, selector means on said carriage and movable relative thereto engageable with any one of said trays to move said one tray with said carriage, cooperable means on said selector means and on said superposed trays to support said selector means on said selected tray during movement from superposed position of said trays to position in operative relation to said turntable, and movable means cooperable with said carriage to move the same.

32. In a talking machine, a series of superposed slidably supported record supporting means, a turntable, means slidably supporting said record supporting means, said record supporting means being movable from superposed

position to a position in operative relation to said turntable, a carriage slidably mounted for movement along the path of movement of said record supporting means, from a point adjacent said superposed record supporting means to a point remote therefrom, fixed means slidably supporting said carriage, movable means engageable with said carriage for reciprocating said carriage, means movably mounted on said carriage cooperable between said carriage and said record supporting means to move any one of said record supporting means with said carriage from superposed relation to position in operative relation to said turntable, and cooperable means on said movably mounted means and on said record supporting means to support said movably mounted means on said record supporting means during movement of said supporting means from superposed relation to position in operative relation to said turntable.

33. In a talking machine, a series of superposed record carriers, a carrier supporting means projecting from one side only of each of said carriers, a record supporting means comprising pairs of elongated parallel supporting means, equal in number to said record carriers, individually and slidably supporting said record carrier supporting means, said record carrier supporting means including projecting means extending beyond said elongated supporting means on the side thereof opposite to said record carriers, movable means engageable with said projecting means ex-

tending beyond said elongated supporting means to move said record carriers.

34. In an automatic phonograph, a plurality of superposed movable record carriers, projectable selector arms adjacent said carriers corresponding in number to, and at substantially the same elevation as, the respective carriers above the lowermost carrier, a selector means adjustable to a plurality of elevations in line with, and adapted to engage, each of said carriers to select the records to be played, carriage means slidably supporting said selector means, said selector arms when projected being engageable with said selector means and controlling and directly governing the position of said selector means to a given elevation, means guiding said moving means and slidably supporting means in a horizontal path, movable means engageable with said carriage means to move said carriage means, means cooperable between said selector means and said selector arms to urge said arms into retracted position upon movement of said selector means by said guiding means, movable means engageable with said arms for moving said selector arms in unison into projected position, and means cooperable on said selector arm moving means and said selector means, when said selector means is in engagement with the lowermost record carrier, to move all of said selector arms into projected position upon movement of said guiding means.

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