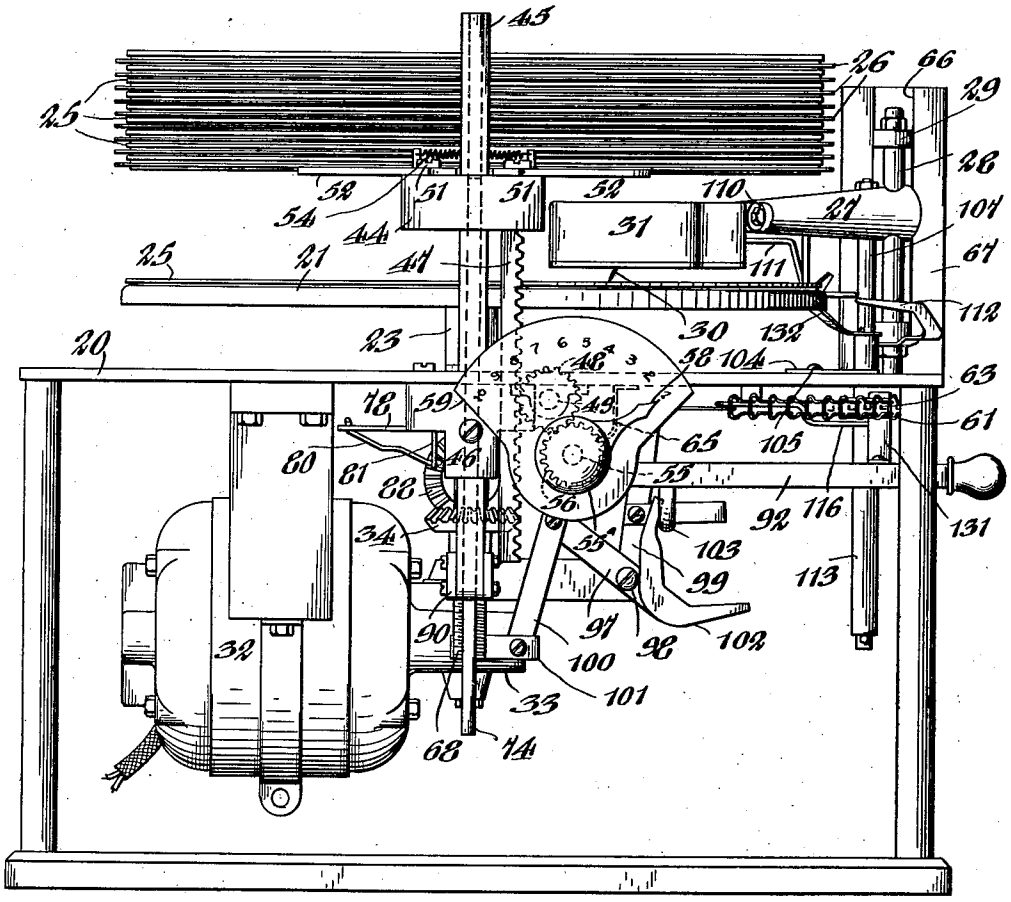
Oct. 26, 1937. J. R. MITCHELL 2,097,288

AUTOMATIC PHONOGRAPH

Filed April 5, 1935 6 Sheets-Sheet 1

Fig. 1.



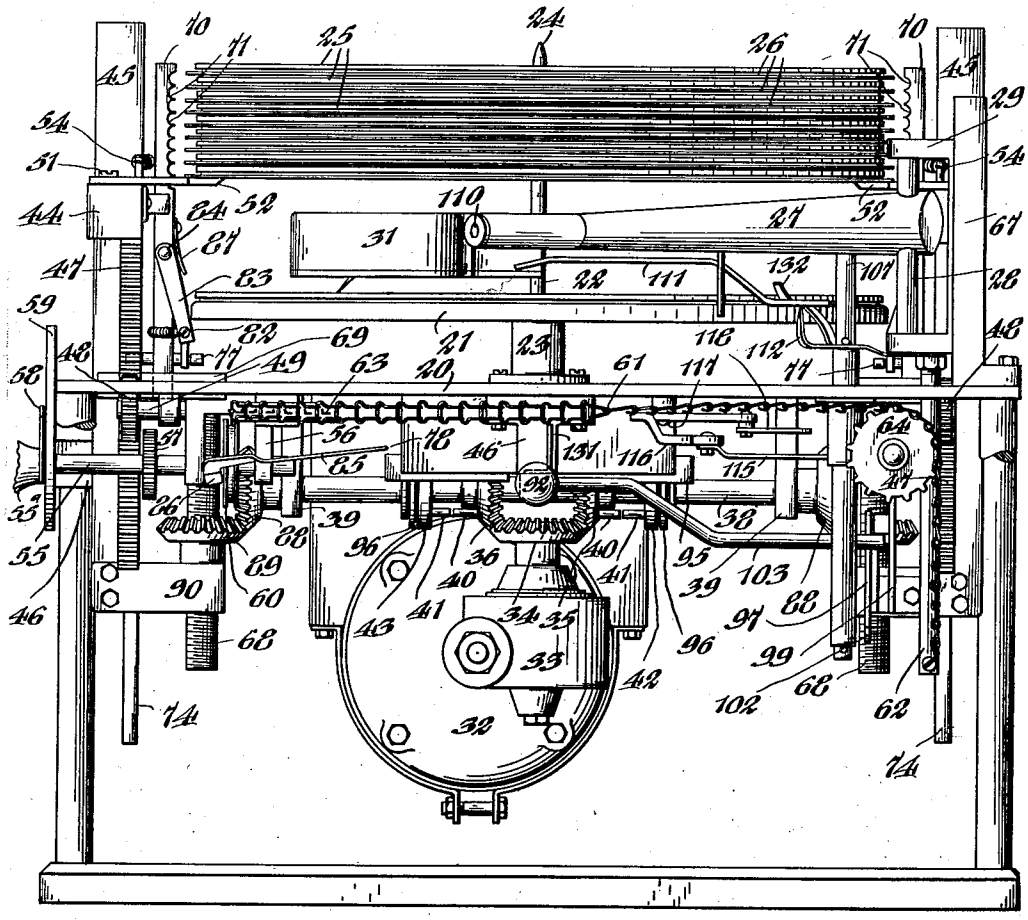
Inventor,
John R. Mitchell,
by Walter P. Layer
Attorney.

Oct. 26, 1937. J. R. MITCHELL 2,097,288

AUTOMATIC PHONOGRAPH

Filed April 5, 1935 6 Sheets-Sheet 2

Fig. 2.



Inventor;
John R. Mitchell,
by Walter P. Geyer
Attorney.

Oct. 26, 1937. J. R. MITCHELL 2,097,288

AUTOMATIC PHONOGRAPH

Filed April 5, 1935 6 Sheets-Sheet 3

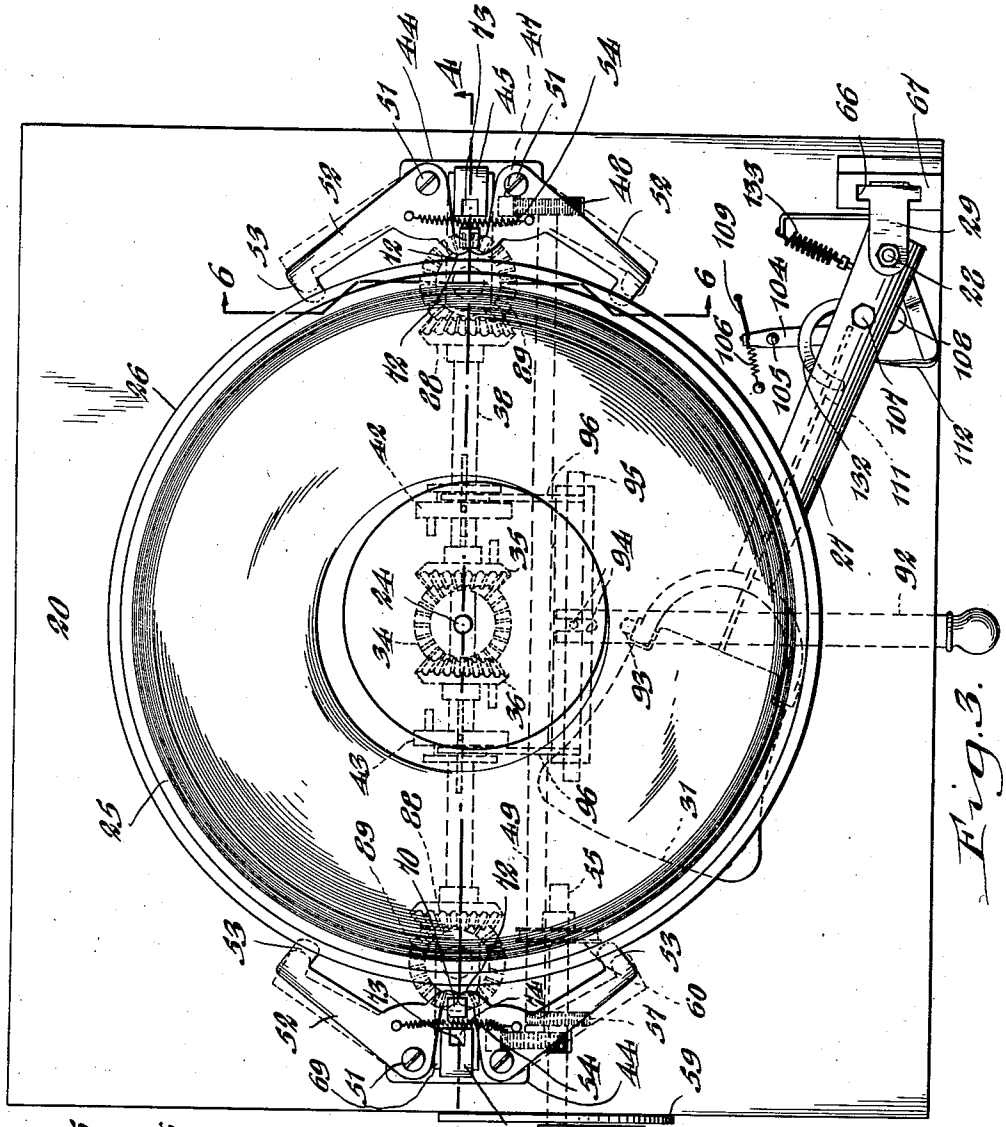


Fig. 3.

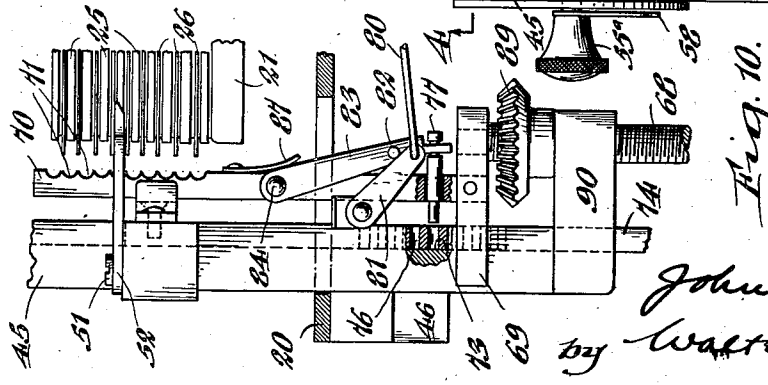


Fig. 10.

Inventor,
John R. Mitchell,
by Walter P. Geyer
Attorney.

Oct. 26, 1937. J. R. MITCHELL 2,097,288

AUTOMATIC PHONOGRAPH

Filed April 5, 1935 6 Sheets-Sheet 4

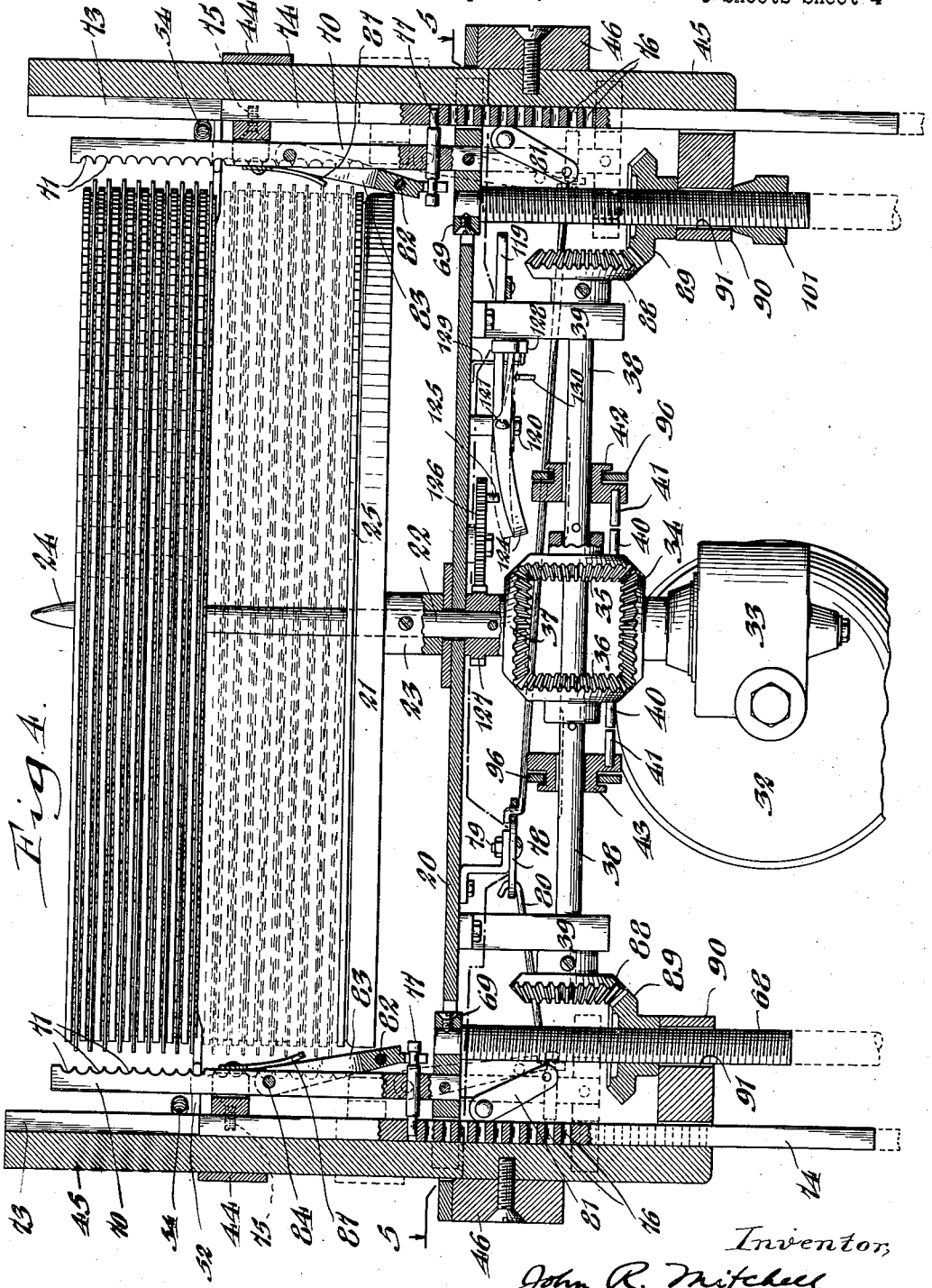


Fig. 4.

Inventor,
John R. Mitchell,
by Walter P. Leyer
Attorney.

Oct. 26, 1937. J. R. MITCHELL 2,097,288

AUTOMATIC PHONOGRAPH

Filed April 5, 1935 6 Sheets-Sheet 5

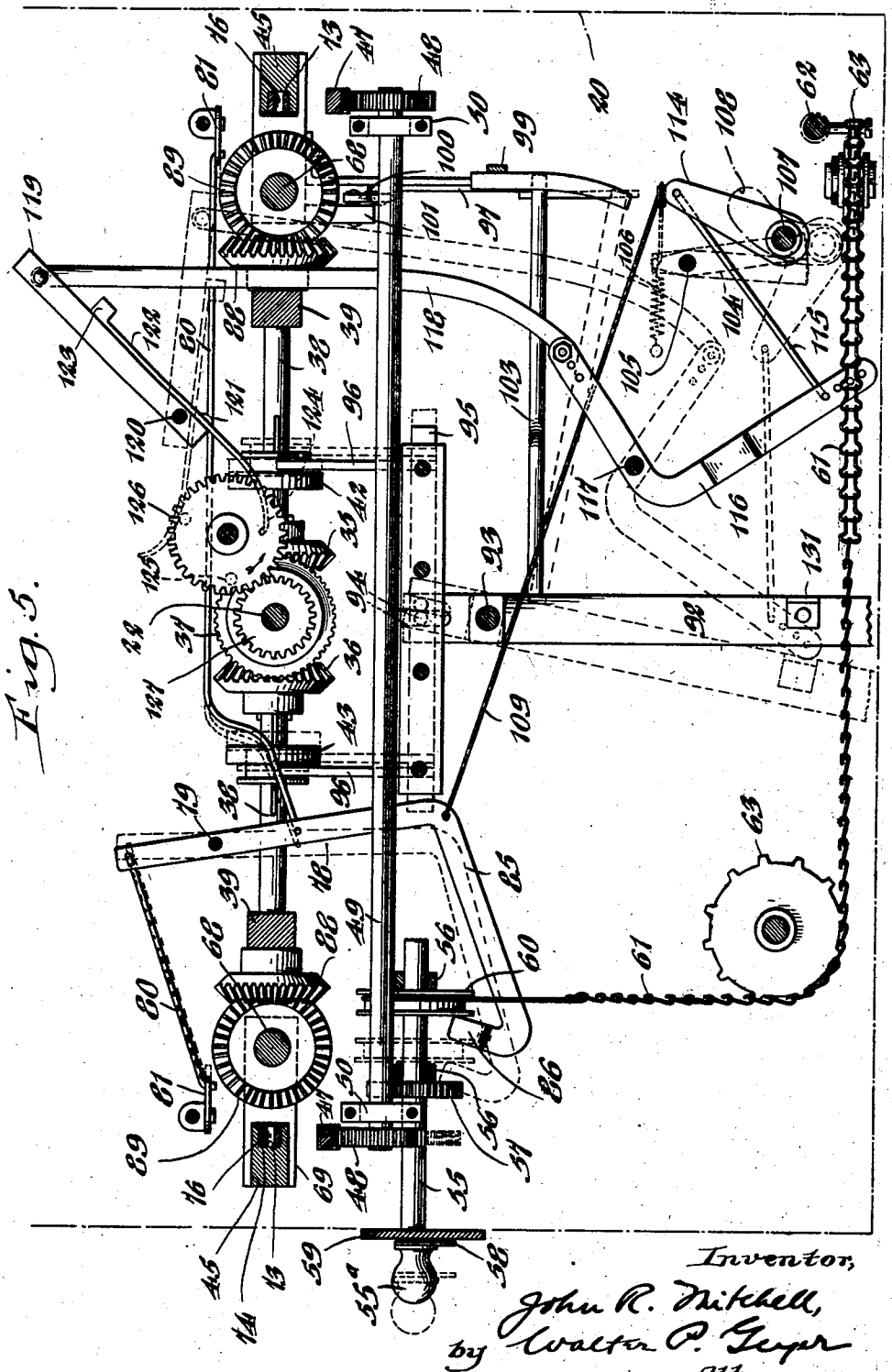


Fig. 5.

Inventor,
John R. Mitchell,
by Walter P. Geyer
Attorney.

Oct. 26, 1937. J. R. MITCHELL 2,097,288

AUTOMATIC PHONOGRAPH

Filed April 5, 1935 6 Sheets-Sheet 6

Fig. 6.

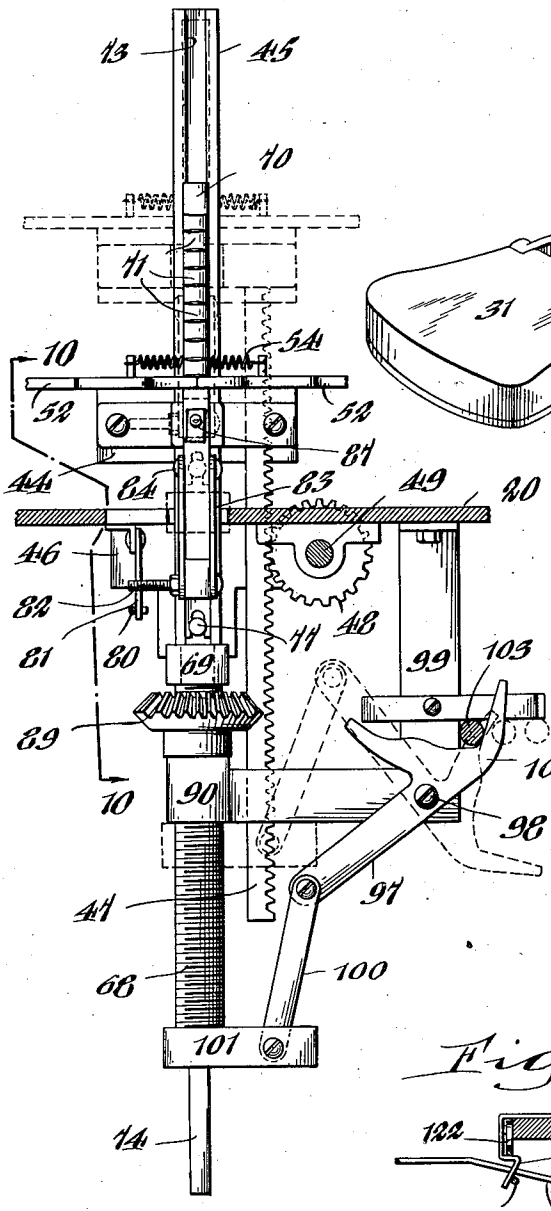


Fig. 7.

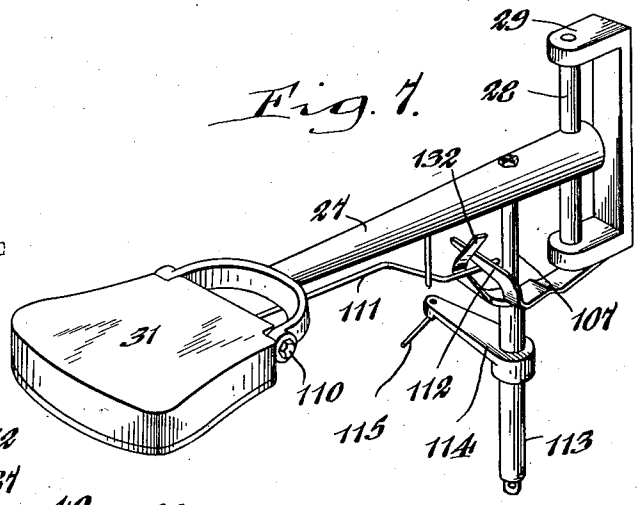


Fig. 8.

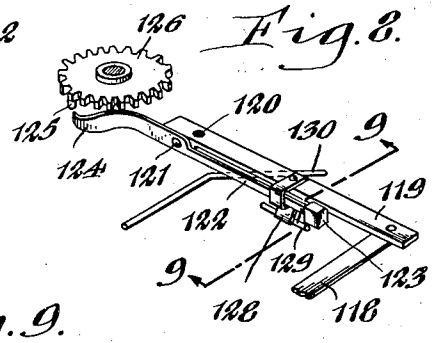
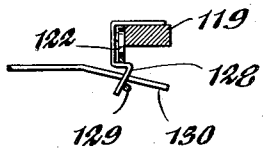


Fig. 9.



Inventor,
John R. Mitchell,
by Walter P. Geyer
Attorney.

Patented Oct. 26, 1937 2,097,288

UNITED STATES PATENT OFFICE

2,097,288

AUTOMATIC PHONOGRAPH

John R. Mitchell, Dallas, Tex., assignor, by mesne assignments, to The Rudolph Wurlitzer Company, Cincinnati, Ohio, a corporation of Ohio

Application April 5, 1935, Serial No. 14,886

20 Claims. (Cl. 274—10)

This invention relates generally to phonographs and more particularly to an automatic phonograph designed to selectively play a plurality of records.

One of the objects of the invention is to provide an automatic selective phonograph which is so designed and constructed as to automatically expose one of a plurality of records in an alined stack to a playing position by splitting or separating the stack above the record selected and effecting the elevation of those records in the stack above a pre-selected record and which is provided with an automatically-adjustable tone-arm movable in the space between the split portions of the stack for operative engagement with the selected record.

Another object of the invention is the provision of simple, compact, efficient and reliable means for effecting the separation of the stack to play the selected record, in conjunction with control means for initiating the automatic return of the tone arm to its inoperative position and the lowering of the elevated records of the stack to their normal position preparatory to the selection of another record.

A further object is the provision of simple and effective means for governing the vertical adjustment of the tone arm to a playing position in line with the record selected.

Other features of the invention reside in the construction and arrangement of parts hereinafter described and particularly pointed out in the appended claims.

In the accompanying drawings:—

Figure 1 is a front elevation of the automatic selective phonograph embodying my invention, the parts being in playing position and playing No. 1 record. Figure 2 is a side view thereof. Figure 3 is a top plan view of the same. Figure 4 is an enlarged transverse vertical section taken substantially on line 4—4, Figure 3. Figure 5 is a horizontal section taken on line 5—5, Figure 4. Figure 6 is an enlarged fragmentary transverse vertical section taken substantially in the plane of line 6—6, Figure 3. Figure 7 is a perspective view of the tone arm and its associated parts. Figure 8 is a fragmentary perspective view of the trip mechanism for initiating the return of the tone arm to its initial position after playing a record. Figure 9 is a cross section taken on line 9—9, Figure 8. Figure 10 is a fragmentary sectional elevation taken in the plane of line 10—10, Figure 6, and showing the position of the selector mechanism after selecting a record for play.

Similar characters of reference indicate corresponding parts throughout the several views.

In its general organization, this improved phonograph consists of a turntable including an axially-disposed post upon which a stack or plurality of superposed records is supported; a laterally-swinging tone arm adjustable vertically for registration with a pre-selected record of the stack; combined tone-arm elevation and record-selective means operatively connected with the tone arm to adjust it for registration with the record selected and including elevating carriages having retractible supporting fingers or ledges which are movable alongside the stack to a position substantially opposite the selected record and which are adapted to engage beneath and support those records of the stack immediately above the selected record; means for actuating the elevating carriages to split the stack vertically and raising those records above the stack as a unit a sufficient distance to afford an operating or head clearance for the tone arm of the phonograph during the playing of the selected record; means for effecting the automatic return of the tone arm from the end of its playing position to a position outside of the stack preparatory to playing the next record; means actuated at a predetermined time during the return of the tone arm to its initial position for controlling the operation of the elevating carriages to lower the raised portion of the stack to its initial position; and drive means for controlling the actuation of the several parts.

Referring now to the drawings, showing more particularly the chassis of the phonograph, 20 indicates a supporting platform or frame upon which the working parts of the phonograph are mounted and which platform is, in practice, mounted in a cabinet of appropriate design. The turntable 21 is mounted on an upright rotatable shaft 22 journaled in suitable bearings 23, the lower or drive end of the shaft extending below the platform and the upper end of the shaft constituting a pointed post or extension 24 which rises above the turntable and functions as a centering guide for a plurality of records 25. As shown in Figures 1 and 2, these records are arranged in superposed relation in the form of a stack, being supported directly upon the turntable when the phonograph is inoperative, with their customary center openings engaging the post, and being capable of sliding axially of the post during the selection of a desired record to be played. The records are preferably arranged with spacer or partition-plates 26 interleaved be-

tween them. These plates are somewhat larger in diameter than the record to thereby produce intervening peripheral clearance spaces between the respective plates to allow for the insertion and engagement of the elevating means with that plate immediately above the pre-selected record and then effect the splitting or separation of the stack at that point to expose the selected record with sufficient head clearance to receive the customary tone arm 27 in operative engagement with that record. This tone arm is pivoted at 28 on a vertically adjustable yoke 29 to swing laterally over the turntable after a record has been selected and it embodies the usual stylus 30 and reproducer 31.

Suspended from the platform 20 is an electric motor 32 operatively connected to the turntable 21 for turning it and preferably including suitable reduction gearing disposed within the housing 33 and having its driven gear 34 connected to companion opposing pinions 35, 36 which in turn mesh with a gear 37 fixed on the lower end of the turntable shaft 22. The pinions 35, 36 are loosely mounted on a horizontal shaft 38 journaled in bearing blocks 39 depending from the platform 20, said shaft constituting the drive shaft for actuating the record-elevating or carriage means and the pinions acting as clutch elements having clutch-pins 40 thereon engageable with companion pins 41 on corresponding shiftable clutch collars 42, 43 feathered on the shaft 38, whereby the latter is selectively rotated in one direction or the other for raising or lowering the record-elevating means. The turntable runs constantly during such time as the motor-circuit is closed.

Disposed at diametrically opposite sides of the turntable and alongside the stack of records borne thereby are the elevating means or carriages for governing the selection of a given record and the subsequent elevation of that portion of the stack of records above the one which has been pre-selected. Each of these carriages preferably consists of a vertically-shiftable cross-head 44 guided on an upright post 45 which extends above and below the platform 20 and which is bolted or otherwise secured to a bracket 46 depending from such support. This post may terminate at its upper end at a point substantially in horizontal alinement with the tapered end of the turntable shaft extension 24. Depending from this cross-head is a rack 47 which meshes with a companion gear 48 fixed on the adjoining end of a horizontal shaft 49 journaled in suitable bearings 50 mounted on the underside of the platform 20. Pivoted at 51 to the cross-head at opposite sides of its guide post 45 for horizontal movement into and out of the spaces between the records are record-engaging fingers or supports 52 which terminate at their free ends in lugs 53 disposed substantially radially of the turntable and which are preferably beveled so as to freely enter the spaces between adjoining record-plates 26 during the act of pre-selecting a record. A spring 54 is connected to these fingers inwardly of their pivots and tends constantly to exert a slight tension on them in a direction toward the turntable.

The means for actuating the carriage cross-heads 44 to selectively position the record-engaging fingers 52 at a predetermined elevation relative to the stack of records, consists of a manually-actuated selector-shaft 55 journaled in suitable bearings 56 and free to slide axially thereof into and out of selective position, and a gear 57 fixed on said shaft and adapted to mesh with the companion rack-actuating gear 48 when the selector-shaft is pulled outwardly to the position shown by dotted lines in Figure 5. The front end of this shaft is provided with an actuating handle or knob 55a and also carries a pointer 58 arranged to traverse a record-indicating dial 59. The face of this dial is provided with identifying characters, such as numerals, which correspond to the records in the stack. Upon turning the selector-shaft in one direction or the other to register its pointer with a desired record, the cross-heads 44 are accordingly raised or lowered to bring their fingers 52 to the corresponding elevation for effecting the separation of the stack above the selected record. The selector-shaft 55 also controls, simultaneously with the movement of bringing the record-engaging fingers to the predetermined elevation for selecting a given record, the movement of the tone arm 27 to a corresponding elevation for playing contact with that selected record. To this end, the selector-shaft has a pulley 60 thereon and connected at one end to this pulley is a flexible connection 61, which as shown in the drawings, may be in the form of a combination cable and sprocket chain construction, the opposite end of this connection being fastened to a depending post 62 carried by the vertically-shiftable tone arm carrying yoke 29. This flexible connection is guided from the pulley to the yoke-post 62 around horizontal and vertical sprocket wheels 63 and 64, respectively, whereby upon turning the selector-shaft to a position to select a desired record, motion is transmitted to the cable and sprocket chain 61 to in turn elevate the tone arm to an elevation corresponding to that of the selected record. Upon the completion of these pre-selecting operations which are effected manually by the user or operator, the selector-shaft is pushed inwardly to its original position released from the rack-engaging pinion 48 and is held against turning in such position by a fixed pawl 65 which engages the selector-shaft gear 57 and which latches the pulley 60 against turning and holds the tone arm in its elevated position for registration with and playing the selected record. As shown in Figures 1 and 3, the tone arm yoke is guided in an upright channel 66 formed in the guide bracket 67 mounted on the top side of the platform 20.

The means for jointly actuating the elevating carriages to effect the raising of those records of the stack above the record selected and to thereby provide a head clearance for the movement of the tone arm during the playing of the selected record, consists of upright screws 68 fixed at their upper ends in corresponding brackets or yokes 69 guided for vertical movement on the opposite side faces of the companion posts 45. Rising from these brackets between the turntable and the posts 45 are bars 70 which are adapted to move alongside the stack in accordance with the raising and lowering movements of the elevating screws and which are provided in their upper portions with a vertical row of notches or teeth 71 with which the toothed ends 72 of the companion record-engaging fingers 52 are adapted to engage for controlling the projection of those fingers into and out of the spaces between the records. Guided in a vertical groove 73 in each post 45 is a bar 74 connected by a screw 75 with the cross-head 44 and provided with a vertical row of perforations 76 with one or another of which

a latch pin or dog 77 normally engages for coupling the cross-head carrying bar 74 with the screw-actuated bar 70. During the operation of selecting a record it is necessary that the latch pins 77 of the respective carriage mechanisms be released from the companion perforated bars 74 so as to permit the movement of the cross-heads 44 with their racks 47 independent of the brackets 69, elevating screws 68 and notched bars 70 connected therewith. This is accomplished during the act of shifting the selector-shaft 55 to its outward selective-engaging position and specifically through the medium of a horizontally-swinging rock lever 78 pivoted intermediate its ends at 79 to the underside of the platform 20 and having the arms thereof connected by links 80 with companion vertically-swinging levers 81 pivoted to the underside of the platform and adapted to engage tappets 82 carried by vertically-swinging arms 83 pivoted at their upper ends at 84 to the corresponding bars 70 and connected at their lower free ends to the companion coupling pins 77. One of the arms of the rock lever 78 has a laterally-bent extension 85 terminating in a projection 86 normally abutting against the outer face of the pulley 60. By this construction, when the selector-shaft is pulled outwardly to pre-select a desired record, the pulley 60 acts to rock the lever 78 in a direction to throw the levers 81 inwardly or toward each other against the tappets 82 and accordingly swing the levers 83 in a like direction to withdraw their coupling pins 77 from the corresponding bars 74. When the selector-shaft is pushed inwardly after the pre-selection has been made by turning said shaft to elevate the cross-heads 44 and bring the record-supporting fingers 52 to a predetermined point immediately above the record selected, the rock lever 78 is free to return to its initial position and restore the coupling pins 77 with the corresponding alined perforations in the respective bars 74 to couple or interlock the latter with the companion notched bars 70, springs 87 associated with the levers 83 urging the several parts to their initial positions. As seen in Figure 4, the edges of the bar-notches 71, over which the inner ends of the supporting fingers 52 ride during the act of selecting a given record, are preferably rounded so that said finger-ends are free to travel in a ratchet-like fashion over the notches and alternately control the projection and retraction of the finger-lugs 53 into the spaces between the records and outwardly thereof to clear the peripheries of the record-spacer-plates 26, respectively, during the elevating movements of the cross-heads 44.

The screws 68 of the respective carriages are raised and lowered to correspondingly move that portion of the stack of records above the selected record to an elevated spaced position relative thereto for playing, and to return them in contiguous relation with the lower portion of the stack after the selected record has been played. To this end the driving shaft 38 is provided at its opposite ends with bevel gears 88 which mesh with corresponding gears 89 which are internally threaded and are applied to the companion screws 68, the gears 89 functioning as actuating nuts for the screws and being held against axial displacement between their companion bevel gears 88 and abutment flanges 90 provided at the lower ends of the guide posts 45, the screws extending through corresponding openings 91 in said flanges, as shown in Figure 4. The shaft 38 is turned in one direction or the other to actuate the screws 68 up or down through the medium of the shiftable clutch collars 42, 43, the collar 42 when coupled with the gear 35 causing the shaft to turn in a direction to raise the screws and the coupling of the clutch-collar 43 with the gear 36 causing the shaft to turn in the opposite direction to lower the screws. The clutch collars 42, 43 are selectively shiftable through the medium of a clutch-control lever 92 pivoted at 93 to swing horizontally beneath the platform 20 and connected by a pin and slot 94 with a laterally-shiftable bar 95 connected by yokes 96 with the respective clutch collars. In its normal neutral position, during which time a selected record is being played, the clutch lever 92 assumes the position shown in Figure 3 and the full line position seen in Figure 5, with both clutch collars in their released position so that the drive from the motor is only to the turntable shaft 22. This clutch lever is shifted manually by the operator to the right, to engage the clutch collar 42, when it is desired to raise the screws 68 to split the record-stack for playing the selected record, and after a pre-selection has been made.

When that portion of the stack above the selected record has been elevated to a predetermined position to provide clearance therebelow for the movement of the tone arm 27 across the record, automatic means are provided for arresting such movement by disengaging the clutch collar 42 and at the completion of the playing of the record to engage the companion clutch collar 43 to lower the elevated portion of the stack to its initial position preparatory to selecting the next record. To this end, one of the elevating screws 68 governs a trip mechanism to shift the clutch lever 92 to neutral position, this trip mechanism being shown in Figure 6 and preferably consisting of a vertically-swinging rock lever 97 pivoted at 98 to a bracket 99 depending from the platform 20 and having one of its arms connected to a link 100 pivoted to a lug 101 carried by the adjoining screw 68. The other arm of the rock lever is in the form of a double-ended tappet 102 which is adapted to encounter a lateral projection 103 on the clutch lever, so that in response to the screw travelling upwardly when raising the record-stack, one of such tappet ends approaches said projection and ultimately shifts the clutch lever from its engaged position, shown by full lines in Figure 6, to its released position seen by dotted lines in said figure, at which time the moving stack is brought to rest and so held during the playing of the selected record. The dotted circle at the extreme right of Figure 6 indicates the position the clutch lever projection 103 assumes when the clutch lever 92 is in position to lower the elevated stack.

The tone arm 27 is so mounted that when the clearance space above the selected record has been provided in the manner just described, it will swing inwardly by gravity over the record to be played and when its stylus 30 is over the outer end of the record groove, the reproducer 31 is so mounted as to drop by gravity and bring its stylus in contact with the record groove. When the machine is at rest or not playing, the tone arm is held to one side of the record stack by a releasable stop arm 104 pivoted at 105 to the platform 20 adjacent the pivoted end of the tone arm and having a spring 106 connected thereto for constantly urging it into the path of a rod 107 depending from the inner end of the tone arm and extending through an arcuate slot 108 in said

support. This stop arm is adapted to be released from engagement with the tone arm rod 107 during the act of selecting a record and to thereby allow the tone arm to swing inwardly by gravity against the periphery of the stack of records. To this end, the stop arm 104 is joined by a flexible connection 109 with the rock lever 78 which, as previously described, is actuated during the reciprocation of the selector-shaft 55. Thus, when the selector-shaft is pulled outwardly to bring its gear 56 into mesh with the companion rack-engaging gear 48 for elevating the record-engaging fingers to a predetermined height in accordance with the record to be selected, the lever 78 is rocked in a direction to exert a pull on the flexible connection 109 to shift the stop arm out of abutting engagement at its end with the tone arm rod 107.

The reproducer 31 is fulcrumed at its rear end on a horizontal pivot 110 at the free end of the tone arm 27 to swing into and out of engagement with a record and projecting rearwardly from this reproducer is a latch bar 111 which engages at its rear or free end beneath a hook-like member 112 fixed on the tone arm yoke 29 for releasably holding the reproducer in its elevated position. This hook-like member is of a predetermined length so that when the tone arm swings inwardly to play a selected record its latch bar 111 will, when it reaches the free end of the hook-like member, slip from under such member due to the force of gravity exerted by the pivotal mounting of the reproducer 31 and allow the tone arm to drop downwardly and bring its stylus 30 into contact with the record groove.

The means for effecting the automatic return of the tone arm 27 from the end of its playing position to a position outside of the stack preparatory to being released for playing the next selected record, and for automatically engaging the clutch collar 43 to effect the lowering of the elevated portion of the record-stack to its initial position, is preferably constructed as follows:—

Mounted on the depending post 107 of the tone arm to turn relatively thereto but move therewith during its elevating movement is a sleeve 113 having a radial arm 114 projecting therefrom connected by a link 115 with the outer arm of a horizontally-swinging bell-crank lever 116 pivoted at 117 to the underside of the platform 20, the other or inner arm of the bell crank lever being connected by a link 118 with a horizontally-swinging rock lever 119 pivoted at 120 to the underside of the platform adjacent the turntable shaft 22, as shown in Figure 5. Pivoted intermediate its ends at 121 to the lever 119 to swing vertically is a normally latched tappet 122 whose outer end is weighted, as indicated at 123, and whose inner end 124 is movable to a projected position into the path of a trip pin 125 applied to a driven gear 126 in constant mesh with a driving gear 127 fixed on the turntable shaft 22. The tappet lever 122 is normally held in its latched position by a displaceable catch 128 also applied to the rock lever 119, shown in Figures 8 and 9, and the displacement of this catch at a predetermined point in the movement of said rock lever is effected by a stationary abutment 129 disposed in its path of travel. Upon being released from its catch, the tappet by reason of its weighted end is swung about its pivot to bring its inner end 124 into the path of the revolving gear-pin 125, which causes the rock-lever 119 to swing from the full line to the dotted line position seen in Figure 5, and its respective connections to promptly return the tone arm to its initial position at one side of the turntable. During the initial portion of this return movement, the released tappet encounters a restoring cam member 130 which acts to swing the same to its latched position with the catch 128.

Simultaneously with this return movement, and adjacent the end of its stroke, the outer arm of the bell-crank lever 116 encounters a projection 131 on the clutch lever 92 and shifts the same in a direction to engage its clutch collar 43 with the companion gear 36. This effects the rotation of the shaft 38 in a reverse direction to accordingly lower the record-supporting carriages 44 and the records carried thereby to their initial position in readiness for selecting the next record.

Means are provided for automatically swinging or lifting the reproducer 31 to bring its stylus 30 from contact with the record after playing, and this is likewise accomplished by the mechanism which governs the return of the tone arm to its initial position. This lifting of the reproducer takes place during the forward part of the return stroke of the tone arm and is preferably effected by a cam member 132 applied to the upper end of the post-sleeve 113 and overhanging the free end of the reproducer latch bar 111. By this construction, the moment the gear-actuated rock lever 119 is shifted to swing the tone arm outwardly, the sleeve-arm 114 is promptly turned and imparts a smart thrust to the cam member 132 to depress the free end of the latch bar 111 and raise the reproducer to bring its stylus clear of the record and at the same time direct such free end of the latch bar beneath the hook-like member 112 to retain the reproducer in such elevated position until such time as another record is selected for play.

Instead of mounting the tone arm 27 in such a manner as to have the force of gravity swing it inwardly over the record selected for play, a spring 133 may be provided to accomplish the same end.

In practice, this phonograph may be used with or without a coin control mechanism.

The operation of this machine is as follows:—

Assume the parts to be in the position shown by dotted lines in Figure 5 with the stack of records supported upon the turntable 21; also assume the motor 32 to be running and the clutch collars 42, 43 in their released position with the clutch lever in the corresponding neutral position shown in Figure 3 and by full lines in Figure 5; and the tone arm 27 to be in its latched position at one side of the turntable with the stop arm 104 abutting the tone arm rod 107, as depicted by dotted lines in Figure 5 and by full lines in Figure 7.

To select a record, the operator grasps the knob 55a and pulls the selector-shaft 55 outwardly from latched engagement with the pawl 65 (shown by dotted lines in Figure 1) to bring its gear 57 into mesh with the rack-actuating gear 48. Simultaneously with the pull of the selector-shaft, the rock lever 78 is shifted from the full line to the dotted line position shown in Figure 5 to accordingly release the tone arm from the stop arm 104 and to likewise retract the coupling pins 77 from the perforated bars 74, so as to uncouple the latter from the companion elevating screws 68 and associated parts and permit of the independent movement of the cross heads 44 and their record-engaging supports 52 in response to the movements of the racks 47 actu-

ated by the turning of the selector shaft 55. The selector-shaft knob is then turned in a direction to bring its pointer 58 in register with a given number on the dial 59 corresponding to the record desired to be played, the turning of the selector shaft to such position simultaneously elevating the carriages 44, with the record supports 52 ratcheting over the notched bars 70 to alternately retract and project said supports into and out of the spaces between the intervening record plates 26, to an elevation opposite that of the record selected. Coincident with this elevating movement, the tone arm 27 is correspondingly elevated through the medium of the pulley 60 and flexible connection 61 to a position where it will register with the selected record when in readiness for play. After thus pre-selecting a record for play, the operator pushes the selector-shaft inwardly to its initial position in engagement with the latching pawl 65. Coincident with this return of the selector-shaft, the coupling pins 77 are returned to coupling engagement with the companion perforated bars 74, whereby the notched bars 71 and associated parts are again coupled with the perforated bars so that these several elements of the elevating carriage are connected as a unit.

Having thus selected the record desired for playing, the operator now shifts the clutch lever 92 to the right, viewing Figure 2, to bring the clutch collar 42 into engagement with the companion gear 35 to cause the elevation of the screws 68 and record-supports 52 to the position shown by full lines in Figures 1, 2 and 4, whereby a head clearance over the selected record is provided for the playing engagement of the tone arm with the selected record. The stoppage of the upper split portion of the record stack at a predetermined elevation is automatically effected by the engagement of the lever 97 with the clutch lever projection 103 which results in the clutch lever 92 being shifted to its neutral position, or from full line to the dotted line position shown in Figure 6. The moment the overhead clearance is provided, the tone arm swings laterally by gravity or under the action of the spring 133 over the selected record, and when in this position the latch bar 111 of the reproducer 31 is released from engagement with the hook-like member or keeper 112 to enable the reproducer to drop by gravity to bring its stylus 30 into engagement with the playing groove of the record.

When the playing of the record is completed, the trip mechanism, including the tappet 122 and associated parts, is actuated from the leverage connections 114, 115, 116, 118 and 119 through the medium of the swinging of the tone arm inwardly over the record to ultimately effect the lifting of the reproducer from the record by the action of the cam member 132 in depressing the latch bar 111 beneath the keeper 112, and to effect the automatic shifting of the clutch lever 92 from the full line to the dotted line position shown in Figure 5 to engage the clutch collar 43 and actuate the screws 68 to lower the elevated portion of the record-stack to its initial position over the record just played. Upon the return of the tone arm 27 to its initial position, the stop arm 104 shifts behind the tone arm rod 107 to latch the tone arm against swinging inwardly. The lowering of the elevated portion of the stack to its initial position is automatically arrested by the bifurcated end 102 of the screw-actuated lever 97 encountering the clutch lever projection 103 and shifting the clutch lever to its initial position shown by full lines in Figure 5, or from the right-hand dotted line position to the medial dotted line position seen in Figure 6. The parts are now in their respective positions for effecting the selection of another record.

I claim as my invention:—

1. In an automatic phonograph, a turntable for supporting a stack of records to be reproduced while supported thereon, and selectively controlled elevating means movable generally parallel to the turntable-axis and having elements thereon engageable with one or another of the records for splitting the stack axially to expose a pre-selected record for play and for supporting those records in the stack, above the selected record, in spaced relation to such record.

2. In an automatic phonograph, a turntable for supporting a stack of records to be reproduced while supported thereon, record-engaging elevating means movable generally parallel to the turntable-axis for splitting the stack axially at a point above a pre-selected record to expose the latter for play and for supporting that portion of the stack above the selected record during playing, and record-selected means for predetermining the position of said elevating means in accordance with the record selected.

3. In an automatic phonograph, a turntable for supporting a stack of records to be reproduced while supported thereon, a tone arm mounted for elevational adjustment relative to the turntable for selective playing engagement with one or another of the records, means for effecting such adjustment in accordance with a record selected for play, and selective record-engaging means for supporting and elevating those records above a record selected for play to provide an overhead clearance space therefor and expose the selected record for playing engagement with the tone arm.

4. In an automatic phonograph, a turntable adapted to support a plurality of superposed records thereon, selective record-engaging means for supporting and elevating those records above a record selected for play to provide an overhead clearance space therefor, and a sound-reproducing unit movable in said space in playing engagement with the selected record.

5. In an automatic phonograph, a turntable, a stack of records disposed axially of the turntable and adapted to be supported as a unit or in part on said turntable when playing a record, adjustable means for selective supporting engagement with those records in the stack above the record selected, and means for actuating said adjustable means as a unit after a record selection is made for splitting the stack of records to expose the selected record for play.

6. In an automatic phonograph, a turntable adapted to support a plurality of superposed records thereon, means for supporting and elevating those records above a record selected for play to provide an overhead clearance space therefor, selector means for predetermining the position of said elevating means in accordance with the record selected, and a sound reproducing unit movable in the space provided over the selected record for playing engagement therewith.

7. In an automatic phonograph, a turntable adapted to support a plurality of superposed records thereon, a sound-reproducing unit adjustable vertically for selective playing engagement with one or another of said records, means selectively movable to an elevation corresponding to a selected record for supporting engagement with

the records surmounting the pre-selected one, and means for elevating said selective supporting means to provide a clearance space over the record selected for the operative engagement of the sound-reproducing unit with such record.

8. In an automatic phonograph, a turntable, a stack of records disposed on the turntable for axial displacement relative thereto, pre-selection means for governing the axial displacement of the records at the junction of the record selected and for releasably supporting that portion of the stack above the selected record, the record selected and any below it being supported on the turntable, and means for raising and lowering said pre-selection means to accordingly shift the upper portion of the stack to and from a position to expose the selected record for playing.

9. In an automatic phonograph, a turntable, a stack of records disposed on the turntable for axial displacement relative thereto, pre-selection means for governing the axial displaceemnt of the records at the junction of the record selected and for releasably supporting that portion of the stack above the selected record, means for raising and lowering said pre-selection means to accordingly shift the upper portion of the stack to and from a position to expose the selected record for playing, a tone arm engageable with the selected record, and means governed by the tone arm for initiating the lowering of the pre-selection means at the completion of the playing of the record.

10. In an automatic phonograph, a turntable adapted to support a stack of records thereon, a vertically-reciprocating carriage having record-engaging supports thereon, selecting means for actuating said carriage to pre-set its record-supports at an elevation immediately above the record selected and in supporting engagement with the records above it, a tone arm movable at a predetermined time into and out of operative engagement with a pre-selected record, and means for elevating the carriage to bring the stack of records supported thereby to a position clear of the selected record to admit the tone arm therebelow for operative engagement with such record.

11. In an automatic phonograph, a turntable adapted to support a stack of records for relative axial displacement to expose a selected record in the stack for play, a tone arm arranged for operative engagement with the selected record, pre-selection means for governing the axial displacement of the records at the junction of the record selected and for releasably supporting that portion of the stack above the selected record, means for elevating said pre-selection means to raise such upper portion of the stack to a predetermined elevation above the record selected, clutch-controlled means for actuating said elevating means, and means governed by said tone arm for automatically rendering the clutch-controlled means operative to lower the elevated portion of the stack to its initial position.

12. In an automatic phonograph, a turntable adapted to support a stack of records for relative axial displacement to expose a selected record in the stack for play, a tone arm arranged for operative engagement with the selected record, pre-selection means for governing the axial displacement of the records at the junction of the record selected and for releasably supporting that portion of the stack above the selected record, means for elevating said pre-selection means to raise such upper portion of the stack to a predetermined elevation above the record selected, clutch-controlled means for actuating said elevating means, means for automatically effecting the return of the tone arm to its initial position after the playing of a record, and means initiated by such return movement of the tone arm for automatically rendering the clutch-controlled means operative to lower the elevated portion of the stack to its initial position.

13. In an automatic phonograph, a turntable adapted to support a plurality of superposed records, a vertically adjustable tone arm, vertically-adjustable, record-selective means disposed for releasable supporting engagement with those records above the one selected, operator-actuated means for simultaneously actuating said tone arm and said selective means to an elevation for playing a given record selected, and power-actuated means for elevating said record-selective means to a predetermined position to provide an overhead clearance over the selected record for the operative engagement of the tone arm therewith.

14. In an automatic phonograph, a turntable having a guide post rising axially therefrom, a plurality of superposed records mounted on the turntable in guiding engagement with its post, means disposed adjacent the periphery of said turntable and adjustable vertically to a plurality of selective elevations to engage one or another of the records, and means for actuating said record-engaging means to raise and lower the records sustained thereby to and from a position spaced axially from the next adjoining record therebelow to expose it for play.

15. In an automatic phonograph, a turntable, a stack of records mounted thereon for axial selective movement to expose one or another of the records for play, means for splitting the stack axially at a point immediately over the record desired to be played, selector means for pre-setting said stack-splitting means at an elevation corresponding to the selected record, a tone arm adjustable vertically to a plurality of selective elevations to engage one or another of the records, and means for operatively connecting said tone arm with said selector means for simultaneously pre-setting the tone arm at an elevation to play the record selected.

16. In an automatic phonograph, a turntable, a plurality of superposed records disposed axially over the turntable and having intervening plates therebetween of somewhat larger diameter than the records, and selectively controlled means engageable beneath one or another of said plates for supporting and elevating those records and intervening plates above the selected record to an elevation for exposing the latter for play.

17. In an automatic phonograph, a turntable, a stack of records mounted thereon for axial selective movement to expose one or another of the records for play, vertically-reciprocating carriage means adjoining the periphery of the turntable and having record-engaging supports thereon, manually-controlled selector means for actuating said carriage means to record-selecting position, power-driven means including a control element for elevating said carriage means with the records supported thereby to a position clear of the selected record and for returning the same to initial stack position after the playing of the selected record, a vertically adjustable tone arm operatively connected to said selector means for actuation thereby to an elevation for engagement with the record selected, automatic

means governed by the carriage means for actuating the control element of said power-driven means to a released position to arrest the reciprocating movements of said carriage means, means for effecting the automatic return of the tone arm to its initial position upon the completion of playing the selected record, means actuated by said tone-arm-returning means for actuating the control element of the power driven means to an engaged position to lower the elevated portion of the stack to its initial position, and means governed by said selector means for releasably retaining the tone arm in its inoperative position.

18. In an automatic phonograph, a turntable adapted to support a stack of records thereon, vertically-reciprocating carriages disposed at diametrically opposite sides of the turntable and each having relatively shiftable record-engaging supports thereon projectable between the marginal edges of a pair of adjoining records to sustain the upper record of the pair and any records surmounting it, manually selective means operatively connected to said shiftable record-engaging supports for moving them to an elevation substantially in line with the record selected and in sustaining engagement with those records of the stack above the selected record, means for releasably coupling the shiftable supports with their companion carriages to reciprocate in unison therewith, elevating means for raising the carriages to bring the records supported thereby in vertically spaced relation to the selected record during the playing thereof and to lower the same after the playing of the record is completed, a laterally-swinging tone arm adjustably mounted to assume varying elevations in accordance with the record selected, means operatively connected to said selective means for effecting the elevation of the tone arm simultaneously with that of said record-engaging supports, clutch-controlled drive means for actuating said carriage-elevating means to raise and lower the records surmounting the selected record of the stack, a clutch-actuating lever manually shiftable to a position to effect the raising of the carriage, means for automatically shifting said clutch lever to a neutral position when the carriage reaches a predetermined elevation, means for automatically swinging the tone arm to its initial position after the selected record is played, and means connected with said clutch lever and governed by said tone-arm-swinging means for automatically shifting the clutch lever to a position to effect the lowering of the carriage and the records supported thereby to their initial position.

19. In an automatic phonograph, a turntable, a tone arm having a reproducer hinged thereto for movement into and out of engagement with a record, a latch bar projecting from said reproducer, means engageable with the latch bar for holding the reproducer in an elevated position when in non-playing position, said means being borne by the tone arm and being released from said latch bar when the tone arm is swung to a position for engaging the record, and automatic means for effecting the reengagement of said means with the latch bar to raise the reproducer to its elevated position upon the completion of the playing of the record, said automatic means including a part actuated in response to the outward swinging of the tone arm to engage and depress the latch bar to elevate the reproducer and direct said bar beneath said means for holding the reproducer in an elevated position.

20. In an automatic phonograph, a turntable, a laterally-swinging tone arm having a reproducer hinged thereto for movement into and out of engagement with a record, a latch bar projecting from the reproducer, a fixed keeper with which said latch bar normally engages for retaining the reproducer in its raised position and from which it is released for playing a record, and automatically-actuated rotatable cam-like means applied to the tone arm and engageable with said latch bar at a predetermined time in the return movement of the tone arm for moving the latch bar into engagement with the keeper for restoring and retaining the reproducer to and in its raised position upon the completion of playing of the record.

JOHN R. MITCHELL.