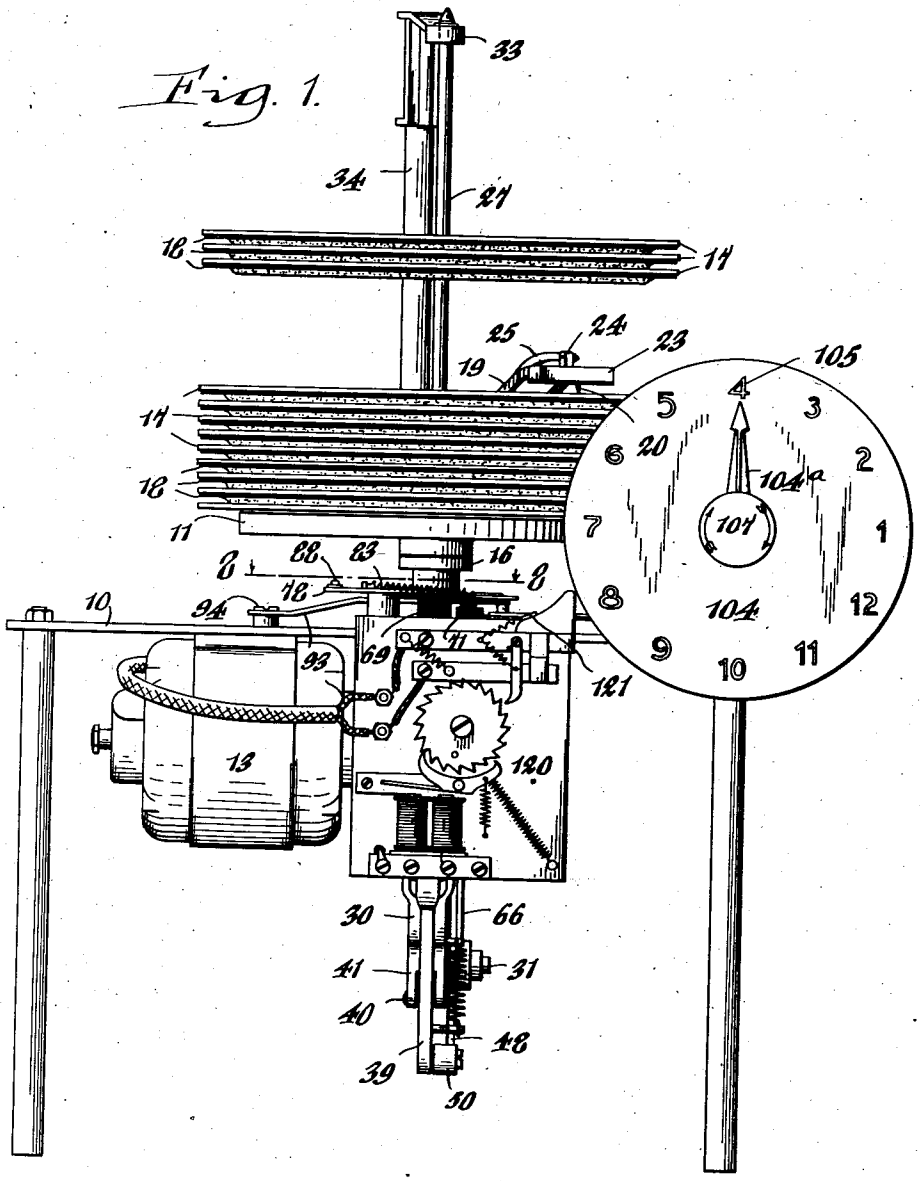
Oct. 11, 1938. J. R. MITCHELL 2,132,993

AUTOMATIC PHONOGRAPH

Filed Aug. 24, 1936 7 Sheets-Sheet 1

Fig. 1.



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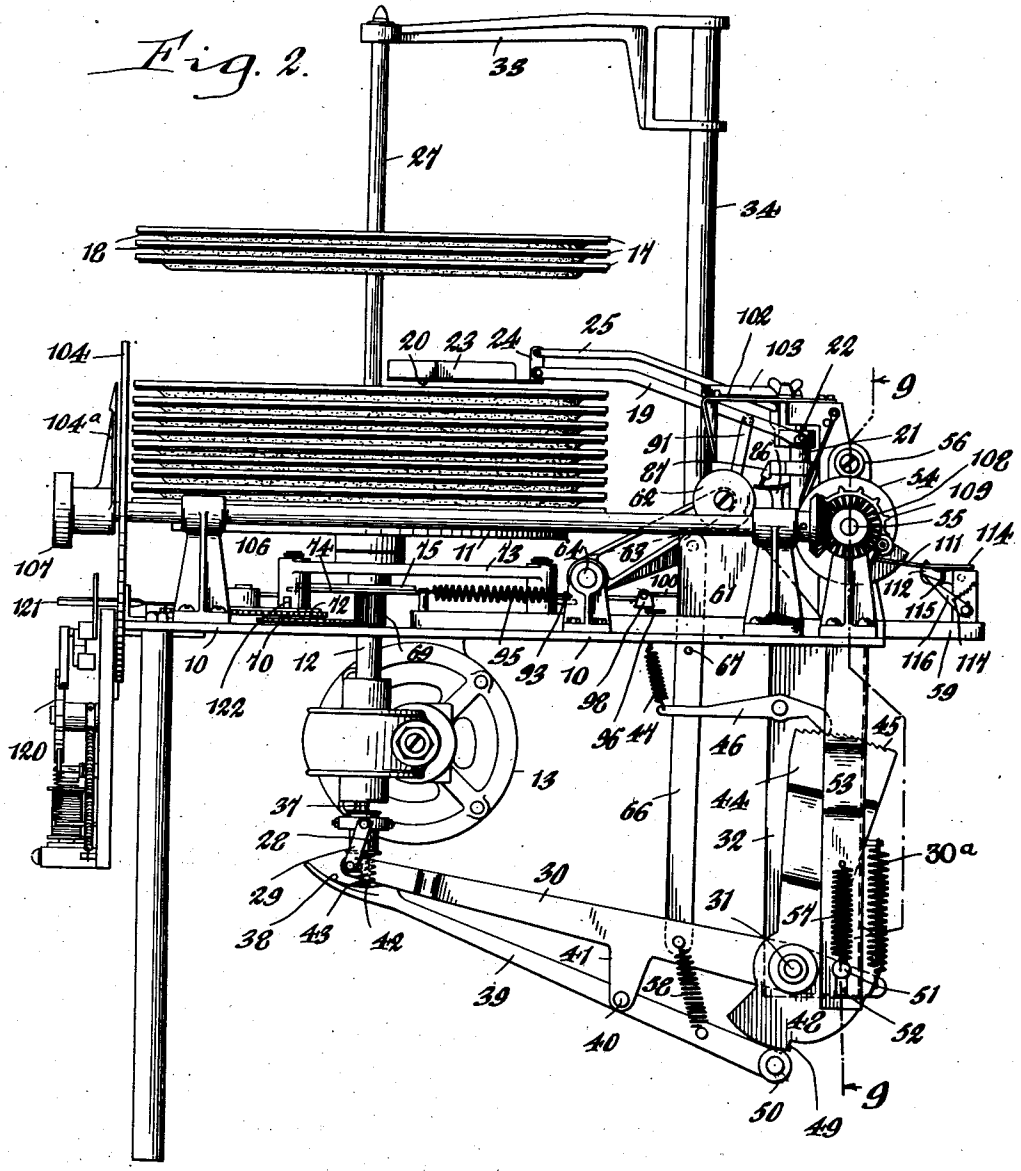
Attorney

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AUTOMATIC PHONOGRAPH

Filed Aug. 24, 1936 7 Sheets-Sheet 2

Fig. 2.



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AUTOMATIC PHONOGRAPH

Filed Aug. 24, 1936 7 Sheets-Sheet 3

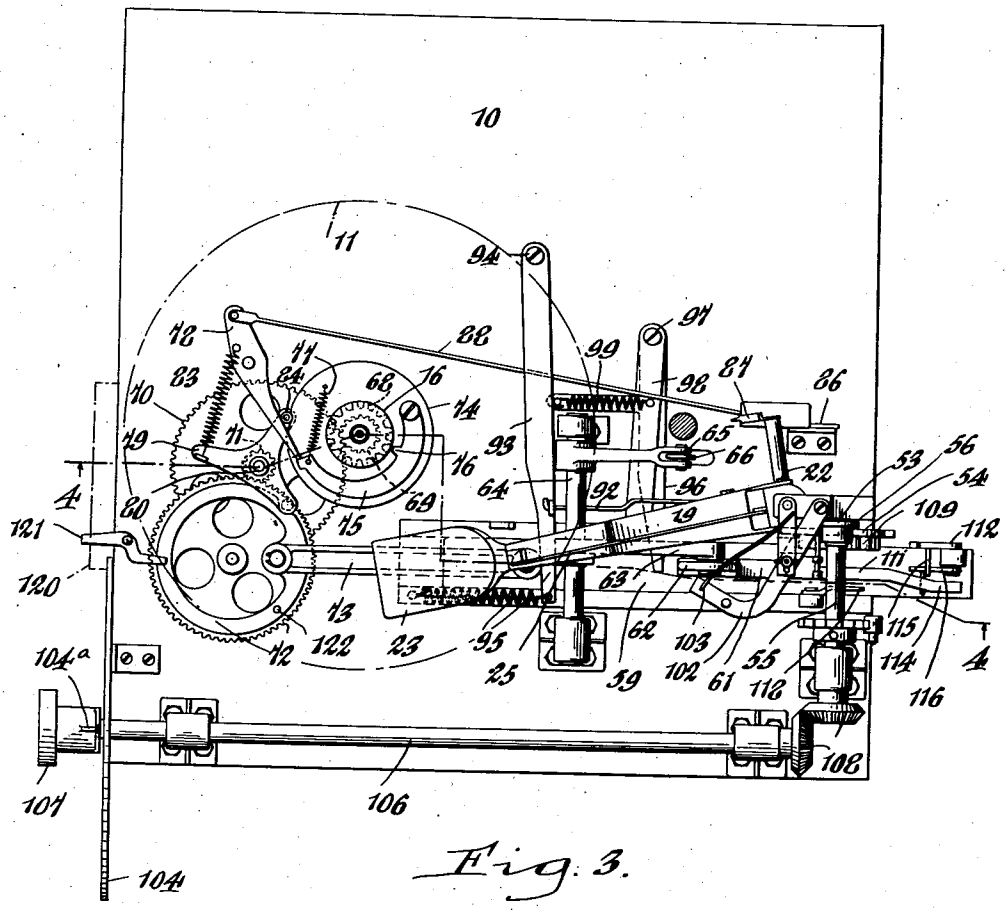


Fig. 3.

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AUTOMATIC PHONOGRAPH

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Fig. 4.

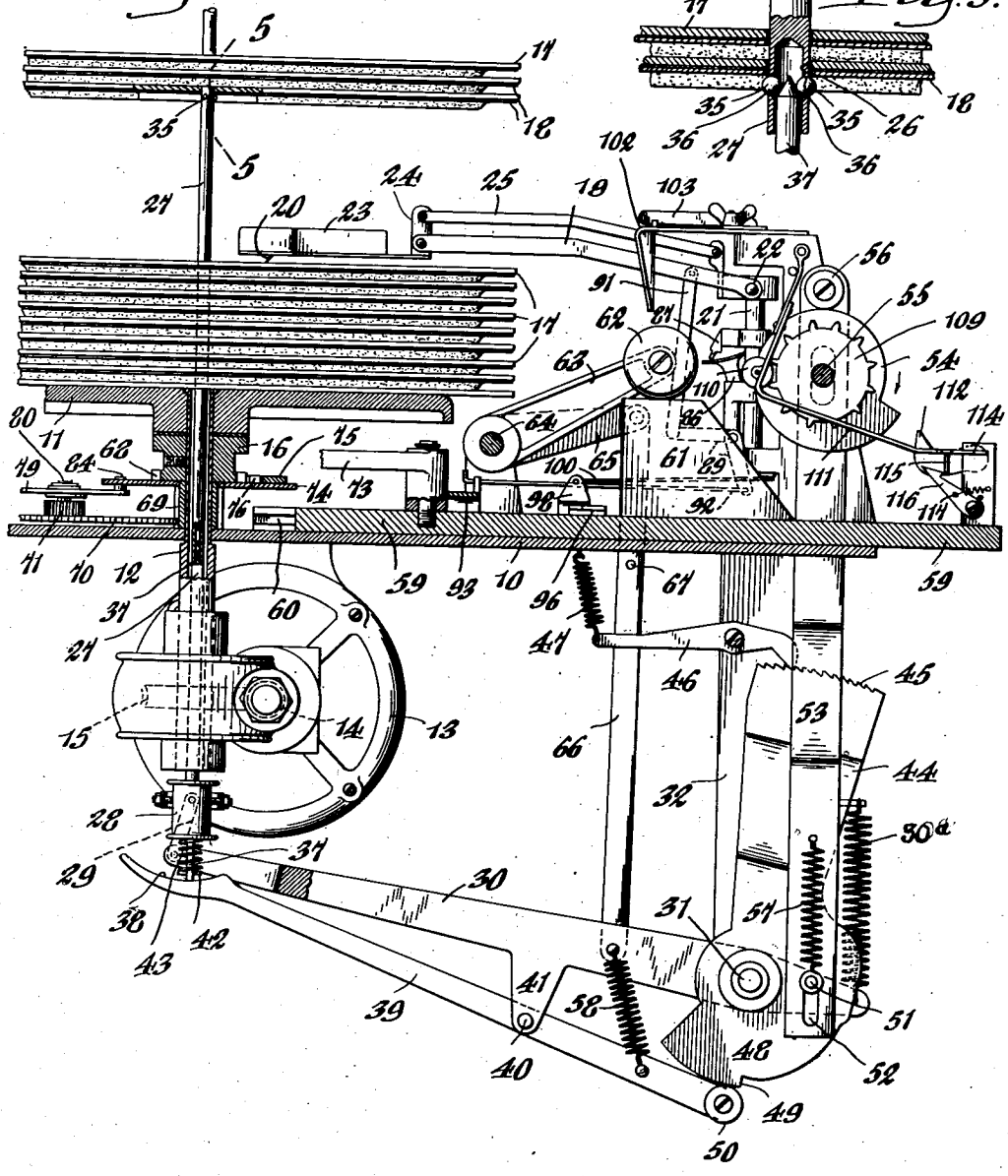


Fig. 5.

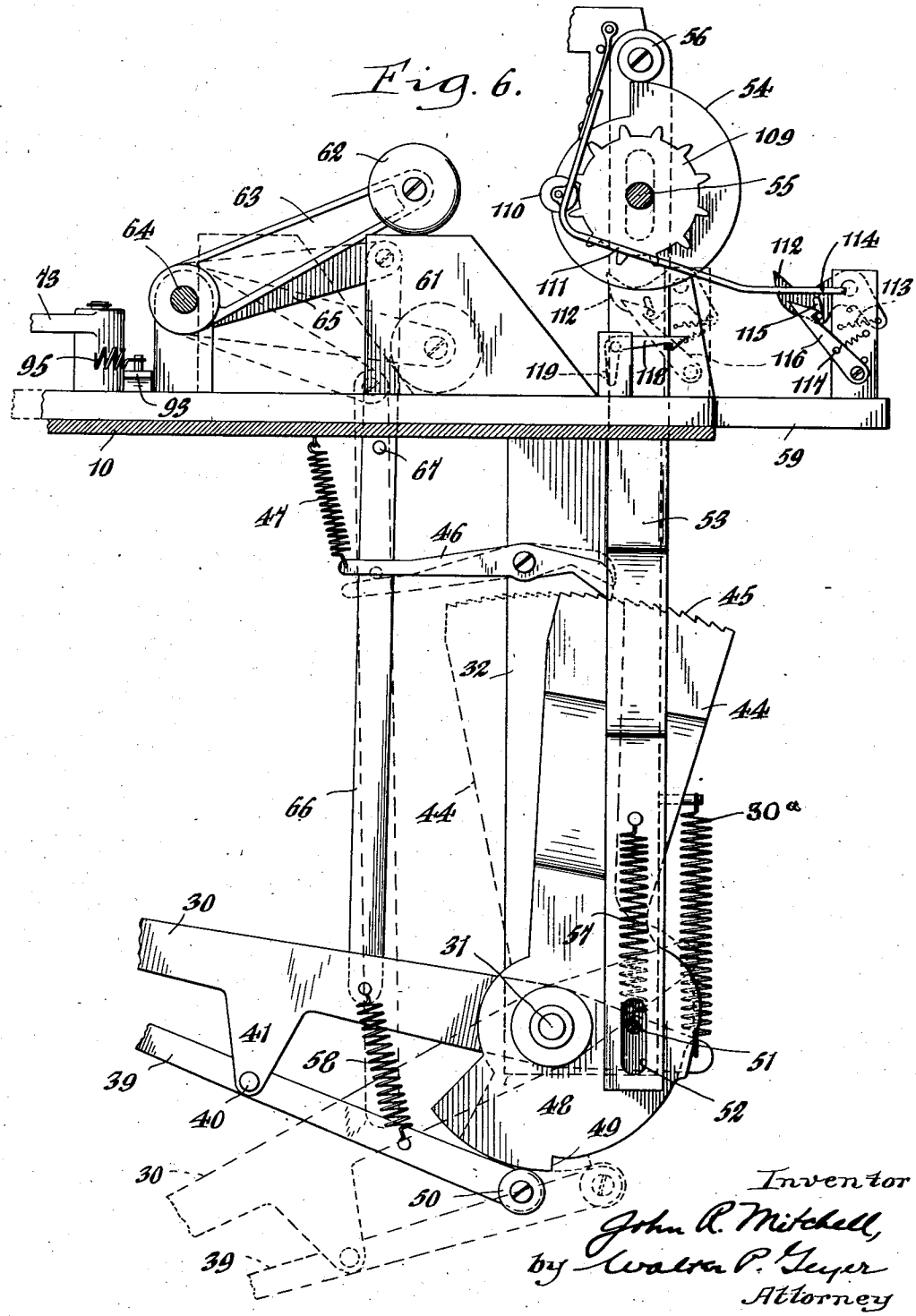
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AUTOMATIC PHONOGRAPH

Filed Aug. 24, 1936 7 Sheets-Sheet 5

Fig. 6.



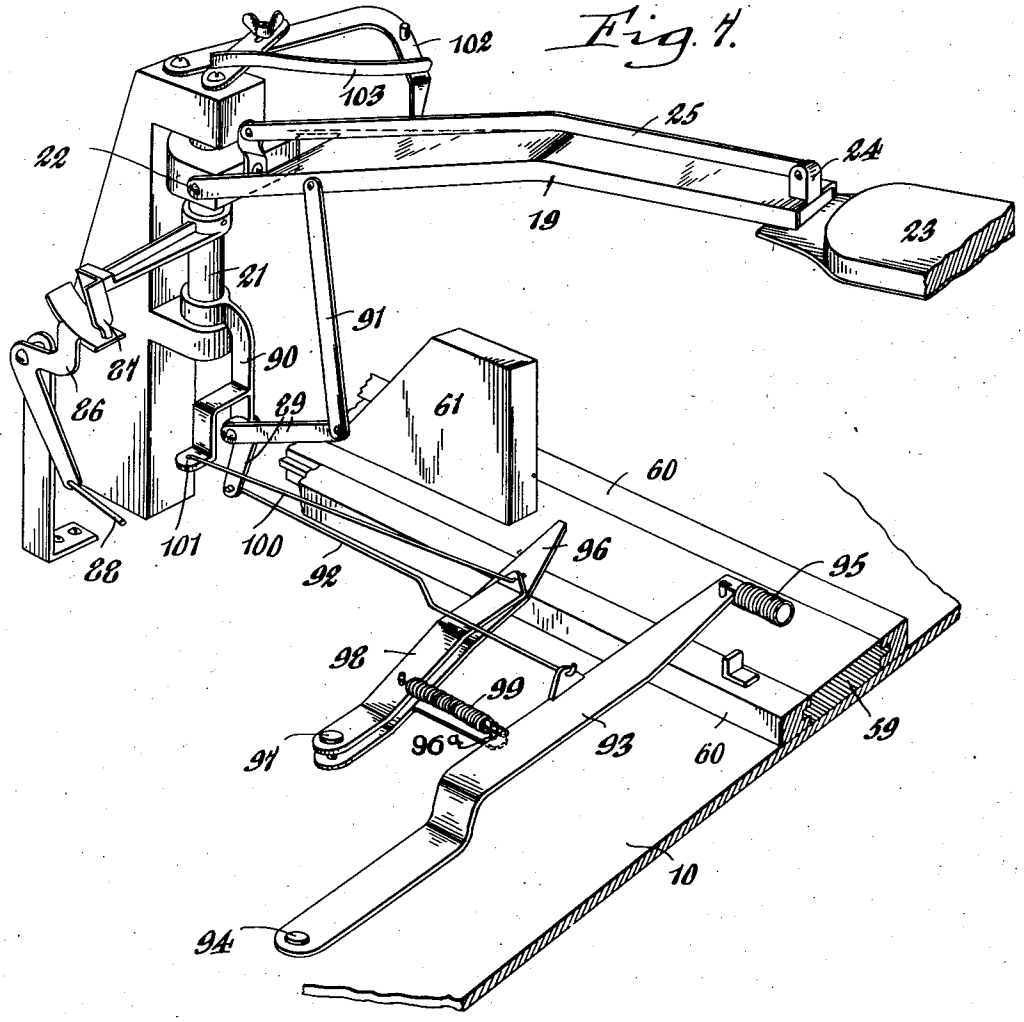
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AUTOMATIC PHONOGRAPH

Filed Aug. 24, 1936 7 Sheets-Sheet 6

Fig. 7.



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Oct. 11, 1938. J. R. MITCHELL 2,132,993

AUTOMATIC PHONOGRAPH

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Fig. 8.

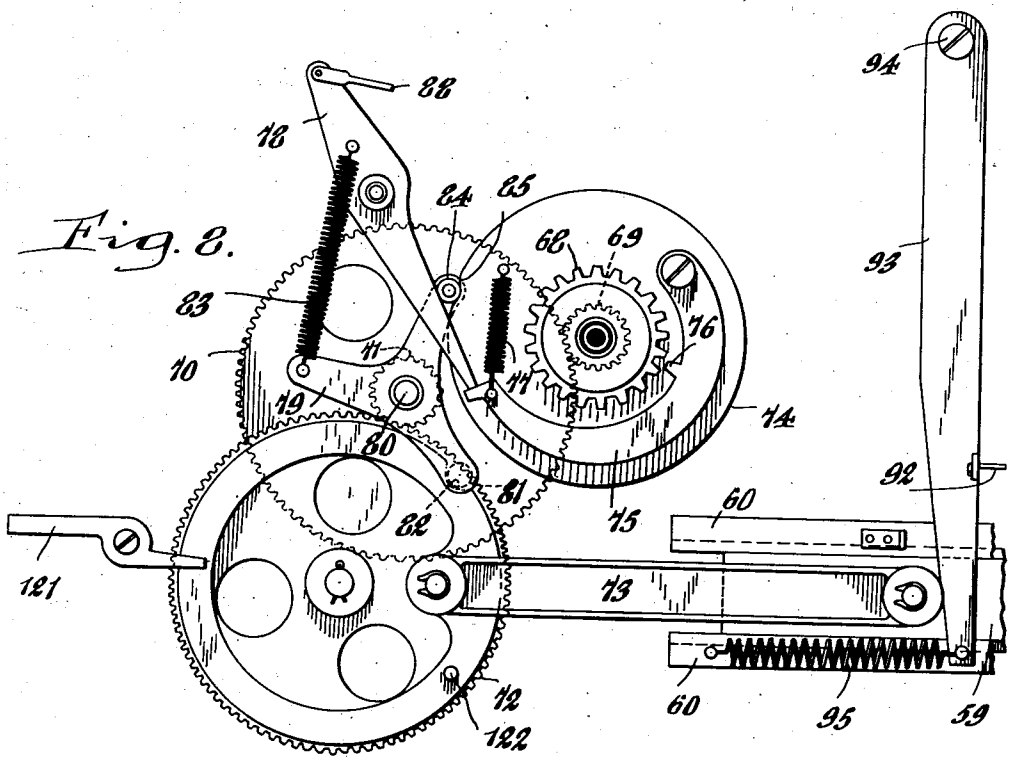
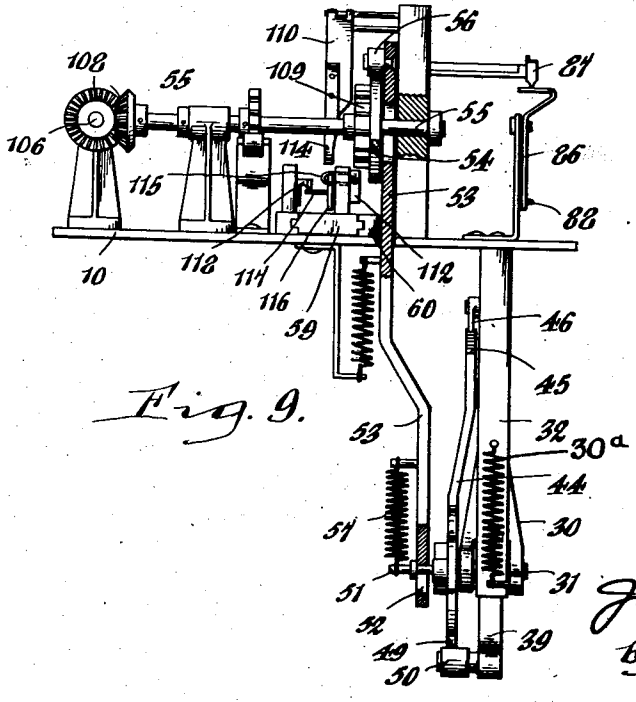


Fig. 9.



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Patented Oct. 11, 1938

2,132,993

UNITED STATES PATENT OFFICE

2,132,993

AUTOMATIC PHONOGRAPH

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

Application August 24, 1936, Serial No. 97,498

20 Claims. (Cl. 274—10)

This invention relates to certain new and useful improvements in automatic phonographs designed to selectively play a plurality of records.

It has for one of its objects to provide a selective phonograph of the type wherein the records are supported in a stack on the turntable and simple, compact and efficient mechanism is provided for automatically controlling the selective playing of the records.

Another object of the invention is the provision of effective means disposed axially of the turntable-spindle for selectively engaging the inner portions of the records to thereby split and elevate those records of the stack above the one selected for play to provide an operating clearance space for the tone arm.

A further object is to provide simple and positive means for governing the operating movements of the tone arm to and from its record-playing position.

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 phonograph embodying my invention. Figure 2 is a side elevation thereof. Figure 3 is a top plan view of the same. Figure 4 is an enlarged vertical transverse section taken substantially in the plane of line 4—4, Figure 3. Figure 5 is an enlarged fragmentary vertical section taken on line 5—5, Figure 4. Figure 6 is an enlarged fragmentary sectional elevation similar to Figure 4. Figure 7 is a perspective view of the tone arm and parts associated therewith for governing its horizontal and vertically-swinging movements. Figure 8 is an enlarged horizontal section taken on line 8—8, Figure 1. Figure 9 is an enlarged vertical section taken substantially in the plane of line 9—9, Figure 2.

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

Referring now to the drawings, 10 indicates a supporting platform upon which the working parts of the phonograph are mounted and housed with a suitable cabinet not shown. The turntable 11 is loosely mounted on the upper end of a hollow driving shaft or sleeve 12 which is driven from an electric motor 13 by a worm 14 and a worm wheel 15. Adjacent its upper end this hollow shaft has a collar 16 fixed thereon and the hub portion of the turntable frictionally engages this collar, whereby the turntable is revolved therewith. The turntable is adapted to support a plurality of records 17 disposed in superposed relation thereon in the form of a stack and separated from one another by intervening division plates 18 which serve to individually support each record and prevent warping thereof as well as marring or injury to the grooved playing surface. The tone arm 19 is capable of swinging horizontally toward and from the axis of the turntable as well as vertically to bring its needle 20 into and out of engagement with the records. For this purpose, the tone arm is attached to an upright rock shaft 21 to swing horizontally and is pivoted at 22 to the upper end thereof to swing vertically in a range such that its needle can assume any playing elevation corresponding to the various elevations of the records in the stack and in order to maintain the needle at its proper playing angle at such elevations, the sound box 23 is pivoted to an arm 24 to which a link 25 parallel to the tone arm is connected.

The records are normally supported on the turntable and when it is desired to play a given record, elevating means are provided for splitting the stack vertically above the record selected to provide an operating clearance space for the tone arm. This elevating means is so designed and constructed as to selectively interlock with that record or its supporting plate 18, immediately above the record selected, and about the usual center opening of the record or the corresponding alining openings 26 of the supporting plate. Hereafter, while reference will be made to the elevating means interlocking with the record plate, it is to be understood that the description will equally apply directly to the records in the event that the division plates 18 are not used in conjunction with the records. To this end, an axially-shiftable elevating spindle 27 is provided which extends upwardly through the hollow drive shaft 12 and through the stack of records and which is provided at its lower end with a collar 28 connected by pivoted links 29 to the bifurcated free end of a vertically-swinging actuating lever 30 pivoted at 31 to a depending support 32 attached to the platform 10. A spring 30a is connected to the free end of the lever 30 and tends to constantly urge this lever and the spindle 27 to a lowered position. The upper end of this spindle, when projected upwardly, to support the split stack above the selected record is guided in a radial bracket 33 attached to an upright post 34. For most of its length the spindle 27 is hollow and adjacent the upper end of its hollowed portion it is pro-

vided with coupling or latch elements 35 which extend through openings 36 in the spindle wall and are projectable to and from a position to form a supporting shoulder on which the record plate 18 is adapted to rest during the operation of splitting the record stack. As shown in Figure 5, these coupling elements may be in the form of balls which are projectable at predetermined times to and from a record-supporting position by a vertically-adjustable selective control member or rod 37 which is guided in the spindle 27 and extends downwardly below the same and abuts at its lower end on an arcuate bearing face 38 applied to the outer end of a vertically-swinging lever 39 disposed below and movable with the spindle-actuating lever 30 and pivoted intermediate its ends at 40 to a lug 41 depending from said lever 30, as shown in Figure 4. Applied to the projected lower end of the selective controlled rod 37 and bearing at one end against the collar 28 and its other end against a pin or shoulder 42 on said rod, is a coil spring 43 which is compressed when the selective control rod is shifted upwardly to project the latch balls 35 outwardly preparatory to elevating that portion of the stack above the selected record and which, when the elevated stack portion has been lowered onto the turntable, acts on the rod to force it downwardly, to release it from the balls, there being a relative displacement between the lever 39 and the lever 30 during the compressing and expanding movements of the spring. The upper end of the selective control rod 37 is preferably tapered or pointed and the balls are shifted into and out of their projected position by contact with that tapered end.

Means are provided and rendered operative during the upwardly-swinging movement of the spindle-actuating lever 30 for actuating the selective control rod 37 and projecting the coupling or latch elements 35 into coupling engagement with that record immediately above the one selected for play to thereby split the stack at that point and provide an operating clearance space for the tone arm. To this end the projecting movements of the control rod-actuating lever 39 are controlled by an adjustable selector lever 44 pivoted on the lever-pivot 31 to move independently thereof and provided at its upper end with a series of ratchet teeth 45 which correspond in number to the records in the stack and with one or another of which a pawl 46 engages for latching this lever in a given selective position. A spring 47 applied to this pawl normally urges it into engagement with the toothed end of the lever 44. At its lowe end the latter is provided with an arcuate stepped portion 48 forming a radially-disposed shoulder 49 which is adapted to assume different radial positions in accordance with the pre-setting of this selective lever and with which a roller 50 on the rod-actuating lever 39 is adapted to engage for actuating said lever in a direction to force the control rod 37 upwardly and project the latch-balls 35 into supporting engagement with that record immediately above the one preselected for play. Projecting from the hub portion of the selector lever 44 is a pin 51 engaging a longitudinal slot 52 in the lower end of a selector bar 53 actuated for vertically reciprocating movement by a selector cam 54 on a horizontal shaft 55 journaled in bearings applied to the platform 10, said bar having a roller 56 at its upper end which engages the cam and having a spring 57 which tends constantly to force the bar downwardly and maintain the roller in peripheral contact with the cam, all as shown in Figure 4. This spring is connected to the selector lever pin 51 and serves the further function of rocking the lever 44 in a direction to position its radial shoulder 49 at a given predetermined selective position to control the selector rod 37. As the selector shaft 55 is turned to move the cam 54, it correspondingly shifts the selector bar 53 to its proper elevation and simultaneously moves the upper end of its slot 52 away from the selector lever-pin 51 a distance corresponding to that which will, at a predetermined time when the pawl 46 is released from the toothed edge of said lever, cause the latter to be rocked in a direction to set its shoulder 49 at that radial position to subsequently couple the control rod 37 in supporting engagement with the record above the one selected for play. A spring 58 acting on the arm of the rod-actuating lever 39 tends to maintain its roller 50 in peripheral contact with the stepped portion of the selector lever 44.

The means for actuating the vertically-swinging levers 30 and 39 for in turn governing the elevating spindle 27 and the selective control rod 37, respectively, are preferably constructed as follows:—

The numeral 59 indicates a horizontally-reciprocating bar guided in suitable ways 60 applied to the platform 10 and having an upright cam 61 thereon with which a roller 62 applied to the free end of a crank arm 63 is adapted to engage. This crank arm is mounted on a rock shaft 64 journaled in suitable bearings applied to the platform and also mounted on this shaft is a second arm 65 connected by a depending link 66 with the lever 30. Applied to this link is a pin 67 which at a predetermined time during the lowering movement of the associated arm and lever mechanism is adapted to contact the pawl 46 and release it from the selector lever 44. The means for actuating the reciprocating bar 59 consists of clutch-controlled gear means driven from the drive sleeve 12. Mounted on this sleeve is a gear 68 which is adapted to be releasably clutched to a train of gears 69, 70, 71 and 72, the latter having a connecting rod or pitman 73 which is connected to the reciprocating bar. The clutch may consist of a disk 74 loosely mounted on the sleeve 12 and to which the gear 69 is attached, and mounted on this disk is a pivoted pawl 75 having a tooth 76 adapted to interlock with one or another of the teeth of the driving gear 68, so that when the clutch pawl is engaged motion will be transmitted to the clutch disk 74 and the train of gears connected therewith. A spring 77 applied to the pawl serves to constantly urge it to its clutched position, while a trip lever 78 serves at a predetermined time to either engage the clutch-pawl to hold it in its disengaged position or to swing clear of the same and allow the spring 77 to swing the pawl to its clutching position. The tripping of this lever 78 to its clutch-engaging position is automatically controlled by the tone arm at the end of its record play position in the manner to be hereinafter described. When the clutch pawl is engaged to effect the record-changing operations, the gear 72 makes one complete revolution causing the bar 59 to reciprocate in one direction and then the other to accordingly lower the elevated portion of the stack onto the turntable and then accordingly

elevate that portion of the stack above the record selected for play. The trip lever is normally held in engagement with the clutch pawl 75 to hold the latter in its released position during the playing of a record by means of a latch lever 79 pivoted at 80 and having a roller 81 on one arm thereof adapted to engage the peripheral flange of the gear 72 during the rotation of such gear and to normally engage a recess 82 in such flange, a spring 83 urging such lever in a direction to maintain the roller 81 in contact with the gear flange. Another arm of this lever has a roller 84 rising therefrom which bears at one side against the periphery of the clutch disk 74 and at its other side against the opposing edge of the trip lever 78, as shown in Figures 3 and 8. The periphery of the clutch disk has an indented portion or notch 85 with which said roller 84 is adapted to engage in the position of parts shown in such figures, and wherein such pin, upon the movement of the trip lever 78 to its released position, is forced out of its disk-engaging notch by the then rotating clutch disk, and the roller 81 is accordingly moved out of its gear notch 82, and the lever 79 is held in that position by the peripheral flange of the gear 72, during which time motion is transmitted to the latter to operate the record-change mechanism.

When the tone arm 19 reaches the end of playing a selected record, a rock lever 86 is adapted to be rocked downwardly by a trip arm 87 borne by the tone arm rock shaft 21, said lever being connected by a link 88 with the trip lever 78 to swing the latter to its released position and allow the clutch pawl 75 to be engaged thereby transmitting motion to the reciprocating bar 59. The moment the reciprocating bar is actuated, a mechanism is brought into play for elevating the tone arm clear of the record and then outwardly to a position clear of the record stack. For this purpose a two-armed vertically-swinging rock lever 89 is fulcrumed on a bracket 90 applied to the tone arm shaft 21, one arm being connected by a link 91 to the tone arm and the other being connected by a link 92 to a horizontally-swinging lever 93 fulcrumed at 94 and having a spring 95 connected therewith for swinging it in a direction to rock the lever to in turn elevate the tone arm. In the at rest position of the record changing mechanism, that end of the pitman 73 connected to the reciprocating bar 59 abuts the lever 93 so that the moment the clutch pawl 75 is engaged, the pitman recedes from this lever and the spring 95 swings the lever in a direction to elevate the tone arm. When the pitman is moved in the opposite direction during the cycle of operations of the changing of records, it abuts the lever 93, swinging it in a direction to lower the tone arm into playing engagement with the selected record, said spring 95 being strained during this time and cushioning the downward movement of the tone arm into playing engagement with the record.

For the purpose of swinging the tone arm outwardly after its being elevated upon the completion of the playing of the record, an actuating T-shaped lever 96 is provided which is pivoted at 97 and whose free end is disposed in the path of movement of the upright face of the elevating cam 61. Also pivoted at 97 and overlying the T-shaped lever is a second lever 98 connected with the latter by a coil spring 99 which, in its compressed or neutralized state constitutes a link and serves to permit of a joint swinging of the lever 98 with the lever 96 at a predetermined time to rock the tone arm shaft in a direction to swing the tone arm in or out and also permits a relative movement of these levers to allow for a certain amount of lost motion during the actuation of these parts by the cam 61. The lever 98 is connected by a link 100 with a projection 101 on the tone arm shaft bracket 90, so that when the lever 96 is actuated by the cam 61 there will be a period of lost motion relative to the lever 98 and then the latter will be actuated jointly with the former to cause the tone arm shaft to be rocked in a direction to swing the tone arm outwardly. After the record change mechanism has been in motion to select a record and split the stack by elevating that portion thereof above the record selected, the tone arm is swung inwardly to bring its needle 20 into position for registration with the sound groove when the tone arm is lowered. This inward swinging movement of the tone arm is effected by the cooperating action of the levers 96, 98 during the lowering of the tone arm through the medium of the pitman 73 abutting the lever 93 to actuate it. For this purpose the T-shaped lever 96 has a projection 96a thereon with which the opposing edge of the lever 93 abuts, so that when the latter is actuated to lower the tone arm, it simultaneously acts to swing the lever 96 and thence its companion spring-connected lever 98 to in turn rock the tone arm inwardly to playing position over the sound groove of the record. If desired, a support 102 may be provided for assisting in holding the tone arm in its elevated outwardly swung position, and a flat spring 103 may be employed for cushioning that movement and for aiding in restoring the tone arm inwardly to its play position.

Means are provided for manually selecting at the will of the user a particular record desired for play. For this purpose a dial 104 is provided which is conveniently located on the cabinet of the machine and which has designations 105 consisting of numbers or the like corresponding to the records in the stack. Cooperating with this dial is a movable pointer 104a fixed on a rotatable shaft 106 having an actuating knob 107 at its other end and which is connected by gears 108 with the selector shaft 55. By thus turning the actuating knob 107 the selector shaft cam 54 is accordingly moved to a given selective position. Applied to the face of this cam is a notched wheel 109 with which a roller 110 of an escapement arm 111 is adapted to engage for latching the cam in a set selective position.

In the event that no records are manually selected at the dial, means are provided for automatically playing the records in succession so long as the circuit of the motor 13 is closed. To this end the outer end of the reciprocating bar 59 is provided with a pawl 112 which is normally held in its projected position by a spring 113 or in a position where it will engage the notched wheel 109 of the cam 54 during the forward movement of said bar and turn the cam wheel one notch and thereby set the cam in position to play the next successive record. On the return or backward movement of the reciprocating bar 59, the pawl 112 merely idles over the toothed wheel. During the manual selection of a record from the dial it is necessary to move the pawl 112 to a retracted position where it will not disturb the notched wheel 109 on the forward movement of the reciprocating bar. This retraction of the pawl is accomplished by the escapement arm 111 associated with the manual selective mechanism, and

for this purpose the tail 114, when the toothed wheel rocks the arm out of one notch and into the other during the manual selection, encounters a projection 115 on the pawl and moves the pawl to its retracted position where it is held by a spring-pressed latching pawl 116. The latching pawl 116 has a pin 117 projecting therefrom which is adapted, during the forward stroke of the reciprocating bar 59, to encounter a pawl 118 which is free to move upwardly and is held against movement below a given horizontal position by a stop pin 119. When the pawl-pin 117 encounters the pawl 118 it becomes latched thereto during the final forward stroke of the reciprocating bar, and when the latter is moved rearwardly said pin 110, because of being latched to the pawl 118, causes the pawl 116 to be rocked in a direction to release it from the projection 115 of the pawl 112, allowing its spring 113 to restore it to its projected or elevated position where it will upon the forward stroke of the bar 59 encounter the notched wheel 109 and move the selector shaft one notched position to play the next record. This cycle of operations continues as long as the motor circuit is closed to continuously play the stack of records.

If desired, the motor circuit may be coin-controlled, and for this purpose there is shown in Figure 1 a coin-control mechanism, indicated at 120, of usual construction, the deposit of a coin acting to close the circuit to start the motor, and a trip lever 121 actuated by a pin 122 on the driven gear 72 acting to open the circuit after a record has been played, the tone arm restored to its outwardly-swung elevated position, and the elevated portion of the stack returned to its initial position.

Briefly, the operation is as follows:

In the non-playing position of the parts, the records are disposed in stack-like fashion on the turntable and levers 30 and 39 together with the turntable spindle and selective control rod 37 are in their lowered position as seen in fragmentary fashion by dotted lines in Figure 6. In this lowered position the roller 50 of the lever 39 is contacting with the inner arcuate portion of the adjoining lower end of the selector lever 44. Likewise, in this position of the parts, the roller-bearing arm 63 and the depending link 66 associated therewith is in the lowered position, as seen by dotted lines in Figure 6, with the cam 61 disposed to the left of the roller 62 viewing Figure 6. It will also be noticed in this figure that the pawl 46 at this time is released from the selector lever 44, having been moved to that position by the pin 67 during the lowering movement of the link 66. During the lowering of the elevated portion of the stack, the roller 50 of the lever 39 rides off the high portion of the selector lever 44, that is, off the shoulder 49 and simultaneously effects a smart downward stroke of the selector rod 37 relative to the spindle 27 to release the coupling elements 35 from supporting engagement with the lowermost record of the elevated portion of the stack.

When one desires to play a given record, he chooses that record at the dial, which operates through the shaft 106 and the gears 108 to revolve and rotate the shaft 55 and thereby set the selector bar 53 at a given elevation corresponding to the selection made. During this movement of the selector bar, the selector lever 44 is correspondingly rocked a distance to correspondingly effect the setting of that selector lever in relation to the roller 50 of the lever 39 to, at a predetermined time in the cycle of selecting operation, effect the automatic upward displacement of the selector rod 37 by reason of such roller riding over the shoulder 49 and imparting a smart displacement of the lever 39 in a direction to project the coupling elements 35 beneath that record of the stack immediately above the one selected for play. This movement takes place during the elevating movement imparted to the lever 63 and associated parts and the final stroke of such elevating movement effects the elevation of the split portion of the stack to a position to provide an operating clearance for the tone arm. In selecting a record at the dial, if the displacement of the selector bar 53 is upwardly, the upper end of the slot moves away from the selector lever pin 51, and the spring 57 connected thereto urges the lever in a direction to properly effect its setting. On the other hand, should a downward displacement be imparted to the selector bar 53, then the upper end of its slot 52 abuts the pin 51 and rocks the lever 44 accordingly in the reverse direction to properly effect its setting the record desired. In these presetting operations the shoulder 49 of the selector lever is moved closer to or farther from the lever-roller 50 so as to have these parts in proper set relation to assure the splitting of the stack during the upward travel of the spindle 27 and selector rod 37 at the desired point.

After making a selection and upon the deposit of a coin, the motor 13 is started and the selecting cycle is performed in the manner just described.

I claim as my invention:—

1. In an automatic phonograph, a tone arm, a turntable adapted to support a stack of records, an axially-shiftable spindle rising above the same and with which the record-openings engage, means for elevating said spindle, means applied to said spindle and selectively projectable to and from a position in supporting engagement with one or another of the records about the opening thereof at a predetermined time in the axial movement of the spindle, and means engageable with said projectable record-supporting means for controlling the same at predetermined times during the axial movements of the spindle to selectively split the stack above the record selected for play and to restore the record stack after play.

2. In an automatic phonograph, a tone arm, a turntable adapted to support a stack of records, an axially-shiftable spindle rising above the same and with which the record-openings engage, means for elevating said spindle, means applied to said spindle for selective, releasable engagement with one or another of the records at a predetermined time in the elevation of the spindle for separating the record-stack above a selected record to expose the same for playing engagement with the tone arm, and means operatively connected to said spindle-means for selectively controlling the engagement and release of such means at a predetermined time during the elevating and lowering movements of the spindle, respectively.

3. In an automatic phonograph, a tone arm, a turntable adapted to support a stack of records, an axially-shiftable spindle rising above the same and with which the record-openings engage, means for elevating said spindle, means applied to said spindle and displaceable relatively thereto for selective, releasable engagement with one or another of the records at a predetermined

time in the spindle movement for separating the record-stack above a selected record to expose the same for playing engagement with the tone arm, a selective mechanism, and means governed by said selector mechanism for controlling said releasable record-engaging means at a predetermined time in the elevational movement of the spindle.

4. In an automatic phonograph, a tone arm, a turntable adapted to support a stack of records, an axially-shiftable spindle rising above the same and with which the record-openings engage, means applied to and displaceable relatively to said spindle for selective, releasable engagement with one or another of the records about its opening and at a predetermined time in the spindle movement for separating the record-stack above a selected record to expose the same for playing engagement with the tone arm, means for raising and lowering said spindle, and means for selectively controlling said releasable record-engaging means at a predetermined time during the raising and lowering movements of the spindle to selectively split the stack above the record selected for play and to restore the record-stack after play.

5. In an automatic phonograph, a tone arm, a turntable adapted to support a stack of records, an axially-shiftable spindle rising above the same and with which the record-openings engage, means applied to said spindle and displaceable relatively thereto into and out of supporting engagement with one or another of the records, means for raising and lowering said spindle, means for selectively controlling said releasable record-engaging means at a predetermined time during the raising and lowering movements of the spindle to selectively split the stack above the record selected for play and to restore the record-stack after play, respectively, and clutch-controlled drive means for actuating said foregoing means including an electric motor and a tone arm actuate trip mechanism for governing the clutch of said drive means.

6. In an automatic phonograph, a tone arm, a turntable adapted to support a stack of records, an axially-shiftable spindle extending through the record-stack, selective record-engaging means applied to said spindle for releasable engagement with one or another of the records about their openings for supporting and elevating those records at a predetermined time in the spindle movement above a record selected for play to provide an overhead operating clearance for the tone arm, a vertically-swinging lever connected to said spindle to raise and lower the same, a selective mechanism, and means operatively connected to said lever and said selective mechanism and rendered operative during the raising and lowering movements of the spindle for selectively controlling said record-engaging means to split the stack and expose a selected record for play and to restore the elevated portion of the stack after play.

7. In an automotic phonograph, a tone arm, a turntable adapted to support a stack of records, an axially-shiftable spindle extending through the record-stack, laterally-displaceable, record-engaging means applied to said spindle for releasable engagement with one or another of the records about their openings for supporting and elevating those records at a predetermined time in the spindle movement above a record selected for play to provide an overhead operating clearance for the tone arm, a vertically-swinging lever connected to said spindle to raise and lower the same, means applied to and movable relatively to the spindle in cooperative relation with the record-engaging means controlling the lateral displacement of said record-engaging means into and out of supporting engagement with a record, and means on said lever and in operative engagement with the controlling means of said record-engaging means for selectively governing the latter to bring the same at a predetermined time into supporting engagement with a record on the up-stroke of the spindle and to release the same therefrom at a predetermined time on the down-stroke of the spindle.

8. In an automatic phonograph, a tone arm, a turntable adapted to support a stack of records, an axially-shiftable spindle having a hollow portion and extending through the record-stack, said hollow spindle-portion having coupling elements thereon for lateral displacement relative thereto into and out of supporting engagement with a record about its axial opening, adjustable means extending through said spindle for selectively controlling the displacement of said coupling elements, means for effecting the adjustment of said controlling means at a predetermined time in the movement of the spindle, and means for raising and lowering said spindle to split the record-stack above the record selected to provide an operating clearance for the tone arm and for restoring the split portion of the stack to its initial position after play, respectively.

9. In an automatic phonograph, a tone arm, a turntable adapted to support a stack of records, an axially-shiftable spindle having a hollow portion and extending through the record-stack, said hollow spindle-portion having coupling elements thereon for lateral displacement relative thereto into and out of supporting engagement with a record about its axial opening, axially-adjustable means extending through said spindle for selectively controlling said coupling elements, means for raising and lowering said spindle to split the record-stack above the record selected to provide an operating clearance for the tone arm and for restoring the split portion of the stack to its initial position after play, respectively, and means movable with said spindle-raising means and operatively connected with said axially-adjustable means for governing the displacement of said coupling elements at a predetermined time in the movement of said spindle.

10. In an automatic phonograph, a tone arm, a turntable adapted to support a stack of records, an axially-shiftable spindle having a hollow portion and extending through the record-stack, said hollow spindle-portion having coupling elements thereon for lateral displacement relative thereto into and out of supporting engagement with a record about its axial opening, axially-adjustable means extending through said spindle for selectively controlling said coupling elemnts, means for raising and lowering said spindle to split the record-stack above the record selected to provide an operating clearance for the tone arm and for restoring the split portion of the stack to its initial position after play, respectively, means movable with said spindle-raising means and operatively connected with said axially-adjustable means for governing the displacement of said coupling elements at a predetermined time in the movement of the spindle, and an adjustable selector element cooperating with the governing means of said coupling element controlling means for predetermining the movements thereof to displace the

coupling elements into and out of supporting engagement with that record above the one selected for play.

11. In an automatic phonograph, a tone arm, a turntable adapted to support a stack of records, a vertically-reciprocable spindle extending through the record-stack and having laterally-displaceable coupling means thereon selectively engageable with one or another of the records about its opening for supporting the same on the spindle to effect the splitting of the stack above the one selected for play upon the up-stroke of the spindle and to provide an operating clearance space for the tone arm, said spindle elevating the split portion of the stack on its upstroke and lowering the same on its downstroke, an adjustable selector mechanism for controlling the engagement of the record-coupling means with that record above the one selected for play, and an operative connection between said coupling means and said selector mechanism for governing the displacement of the coupling means at a predetermined time in the movement of said spindle.

12. In an automatic phonograph, a tone arm, a turntable adapted to support a stack of records, a vertically-reciprocable hollow spindle extending through the record-stack and having laterally displaceable coupling means thereon selectively engageable with one or another of the records about its opening and in supporting engagement therewith to effect the splitting of the stack above the one selected for play during the up-stroke of said spindle and to provide an operating clearance space for the tone arm, said spindle elevating the split portion of the stack on its upstroke and lowering the same on its downstroke, an axially-shiftable control rod extending through said spindle and engageable at its upper end with and controlling the actuation of said coupling means into and out of supporting engagement with a record, a vertically-swinging lever for reciprocating said spindle, a second lever movable with said first-named lever and engaging the lower end of said control rod to cause the latter to move simultaneously with the spindle, and an adjustable selector element disposed for engagement with said second lever to selectively govern the coupling movements of the control rod relative to the spindle at a predetermined time in the vertical movement of the latter in accordance with the record selected.

13. In an automatic phonograph, a tone arm, a turntable adapted to support a stack of records, a vertically-reciprocable hollow spindle extending through the record-stack and having laterally displaceable coupling means thereon selectively engageable with one or another of the records about its opening and in supporting engagement therewith to effect the splitting of the stack above the one selected for play during the up-stroke of said spindle to provide an operating clearance space for the tone arm, a control rod extending through said spindle for operative engagement with and for controlling the actuation of said coupling means into and out of supporting engagement with a record, means for reciprocating said spindle, means operatively connected to said spindle-reciprocating means and to said control rod for effecting a reciprocal movement of the control rod simultaneously with the spindle, adjustable selector means operatively connected to said control rod means for selectively effecting a supplementary movement of the control rod relative to the spindle at a predetermined time in the movement of the spindle to effect the actuation of the record-coupling means into and out of supporting engagement with a record during the up and down strokes of said spindle, respectively, and means for actuating the foregoing spindle and control rod reciprocating means.

14. In an automatic selective phonograph, the combination with a turntable adapted to support a stack of records and means for splitting the stack at a point above a record selected for play including a vertically-reciprocating spindle having selectively controlled coupling means thereon for supporting engagement with a record about its center opening, of a selector mechanism for controlling said coupling means to effect the splitting of the stack above the record selected for play comprising an adjustable selector member movable to a plurality of positions corresponding to the number of records in the stack, means for controlling the movement of said selector member to a position corresponding to the record selected, and means disposed in operative engagement between said selector-member and said coupling means for controlling the latter to an operative record-supporting position at a predetermined time in the movement of said spindle.

15. In an automatic selective phonograph, the combination with a turntable adapted to support a stack of records and means for splitting the stack at a point above a record selected for play including a vertically-reciprocating spindle having selectively controlled coupling means thereon for supporting engagement with a record about its center opening, of a selector mechanism for controlling said coupling means to effect the splitting of the stack above the record selected for play comprising an adjustable selector member movable to a plurality of positions corresponding to the number of records in the stack, means for controlling the movement of the selector member to successive positions for successively playing the records if none are pre-selected, and means disposed in operative engagement between said selector member and said coupling means for controlling the latter to an operative record-supporting position at a predetermined time in the movement of said spindle.

16. In an automatic selective phonograph, the combination with a turntable adapted to support a stack of records and means for splitting the stack at a point above a record selected for play including a vertically-reciprocating spindle having selectively controlled coupling means thereon for supporting engagement with a record about its center opening, of a selector mechanism for controlling said coupling means to effect the splitting of the stack above the record selected for play comprising an adjustable selector member movable to a plurality of positions corresponding to the number of records in the stack, means disposed in operative engagement between said selector member and said coupling means for controlling the latter to an operative record-supporting position at a predetermined time in the spindle movement, and means for adjusting said selector member for playing a given record including a shaft having a selector cam thereon, means for actuating said shaft to position its cam for a given selection, and a selector bar in operative engagement at one end with the selector cam and having a connection at its other end with said selector member to govern its corresponding selective position.

17. In an automatic selective phonograph, the combination with a turntable adapted to support a stack of records and means for splitting the

stack at a point above a record selected for play including a vertically-reciprocating spindle having selectively controlled coupling means thereon for supporting engagement with a record about its center opening, of a selector mechanism for controlling said coupling means to effect the splitting of the stack above the record selected for play comprising an adjustable selector member movable to a plurality of positions corresponding to the number of records in the stack, a vertically-swinging lever for actuating said spindle to split the stack at the record selected and to restore the elevated portion thereof to its initial position after playing the selected record, a second lever pivoted intermediate its ends to said vertically-swinging lever to move bodily therewith and including a part in operative engagement with the record-coupling means and actuated by one arm of such second lever for controlling said coupling means, the other arm of said second lever engaging the adjustable selector member, the latter having its lever-engaging portion shaped to impart a thrust to said second lever at a predetermined time in the reciprocal spindle movement to selectively control said coupling means, and means for controlling the movement of said selector member to a position corresponding to the record selected.

18. In an automatic selective phonograph, the combination with a turntable adapted to support a stack of records and means for splitting the stack at a point above a record selected for play including a vertically-reciprocating spindle having selectively controlled coupling means thereon for supporting engagement with a record about its center opening, of a selector mechanism for controlling said coupling means to effect the splitting of the stack above the record selected for play comprising an adjustable selector member movable to a plurality of positions corresponding to the number of records in the stack, a vertically-swinging lever for actuating said spindle to split the stack at the record selected and to restore the elevated portion thereof to its initial position after playing the selected record, means applied to said lever and in operative engagement with said selector member and said coupling means for controlling the latter at a predetermined time in the spindle movement to effect the splitting of the stack, a drive means, means actuated thereby at predetermined times for elevating said spindle to raise and lower the split portion of the stack, a self-adjustable, vertically-swinging tone arm to play the records at their respective elevations in the stack, means actuated simultaneously with the movement of said spindle-elevating means for swinging the tone arm upwardly and outwardly clear of the split stack after the playing of a selected record and for restoring the tone arm to playing position after the stack has been split again to play the next record, a clutch associated with said drive means, and a trip mechanism operatively connected with said clutch and controlled by said tone arm for governing the drive means to control the selection and playing of the records.

19. In an automatic selective phonograph, the combination with a turntable adapted to support a stack of records and means for splitting the stack at a point above a record selected for play including a vertically-reciprocating spindle having selectively controlled coupling means thereon for supporting engagement with a record about its center opening, of a selector mechanism for controlling said coupling means to effect the splitting of the stack above the record selected for play comprising an adjustable selector member movable to a plurality of positions corresponding to the number of records in the stack, means disposed in operative engagement between said selector member and said coupling means for controlling the latter at a predetermined time in the spindle movement, and means for adjusting said selector member to successively play the records in the stack including a shaft having a selector cam and a toothed wheel thereon, a reciprocatory actuating member, an operative connection between said reciprocatory member and said spindle for controlling the vertically-reciprocating movement of the latter, and a pawl on said reciprocatory member engageable with said toothed wheel for turning said selector cam a fraction of a revolution to bring the next record into play.

20. In an automatic phonograph, a tone arm pivoted to swing horizontally and vertically to and from a record play position, a turntable adapted to support a stack of records, an axially-shiftable, partially-hollow spindle rising above the same and on which the records are guided for selective adjustment relative to the turntable, selective record-engaging means applied to said spindle and including laterally-displaceable latch elements, a vertically adjustable control member for said elements guided in the hollow-portion of the spindle, said latch elements being engageable, in their operative projected position, with the records about their openings for supporting them on the spindle and elevating those records above a selected record for play to provide an overhead operating clearance for the tone arm, an electric motor including a shaft driven thereby for rotating the turntable, a driven member, a clutch interposed between said shaft and said driven member for intermittently driving the latter, vertically-swinging lever means operatively connected to said record-engaging spindle and to said adjustable latch control member for effecting the selection of the record to be played and the splitting of the record-stack above that selected record, elevating cam-controlled means operatively connected to said driven member for actuating said lever means to elevate the latch control member and to raise and lower the record-stack, selector means at a predetermined time in the spindle movement for governing said lever means to correspondingly control the adjustment of the latch control member to select a given record for play, a trip mechanism operatively connected to and controlled by said tone arm for controlling said clutch, lever means operatively connected to said driven member for swinging the tone arm vertically to bring it into and out of engagement with a selected record, means connecting said elevating cam-controlled means with said tone arm for swinging the latter horizontally into and out of its play position, and manually-actuated means operatively connected to said selector means for controlling the selection of a desired record for play.

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