

April 21, 1942.

B. R. CARSON

2,280,685

PHONOGRAPH

Filed Dec. 17, 1938

4 Sheets-Sheet 1

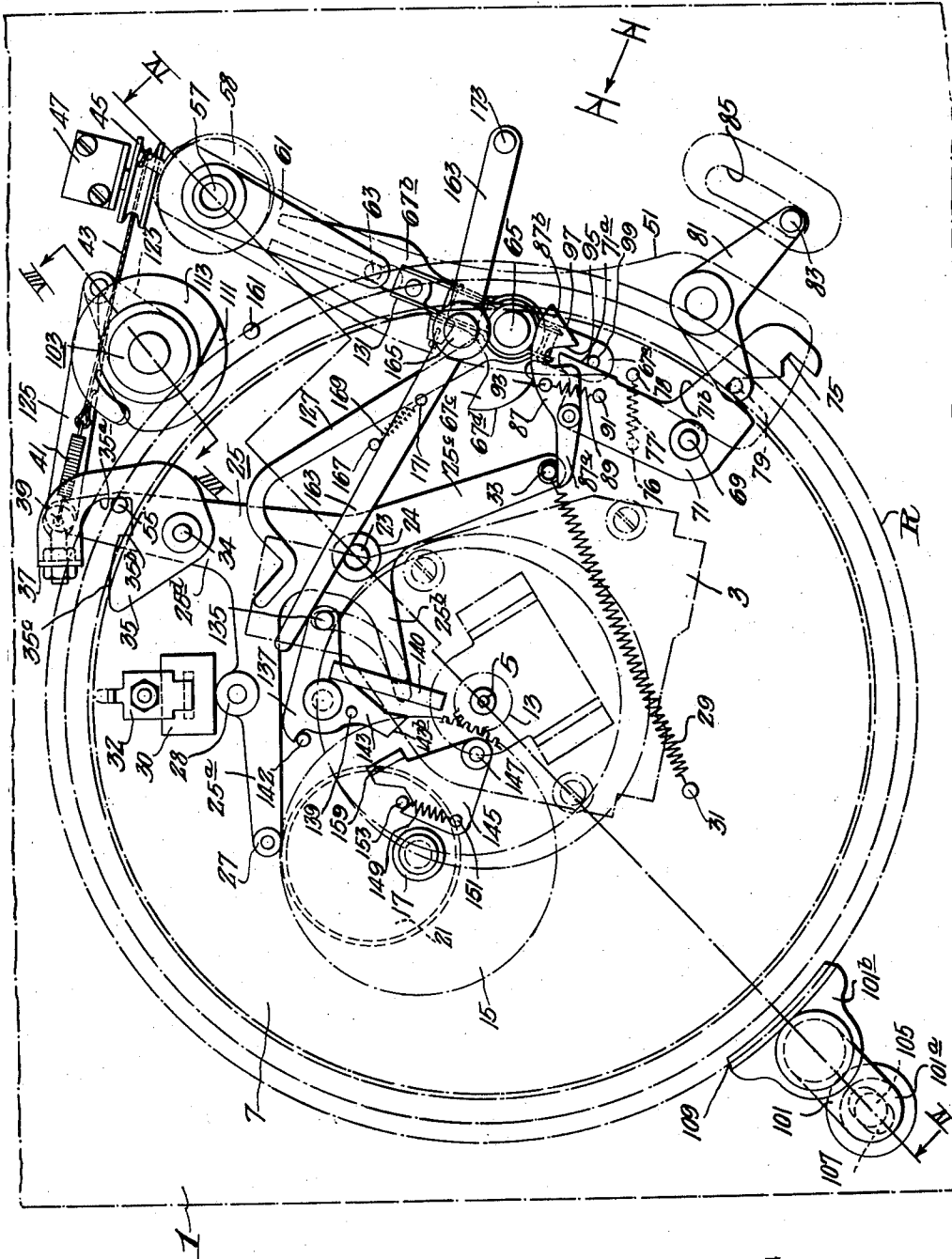


Fig. 1.

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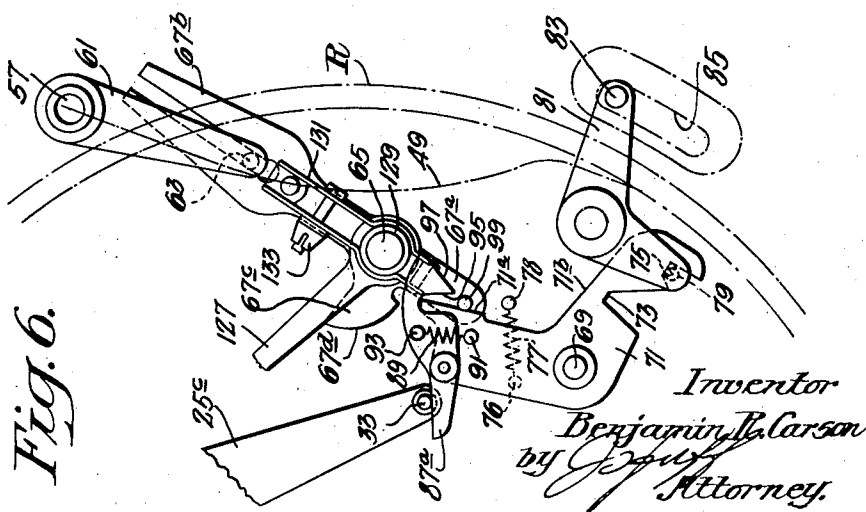
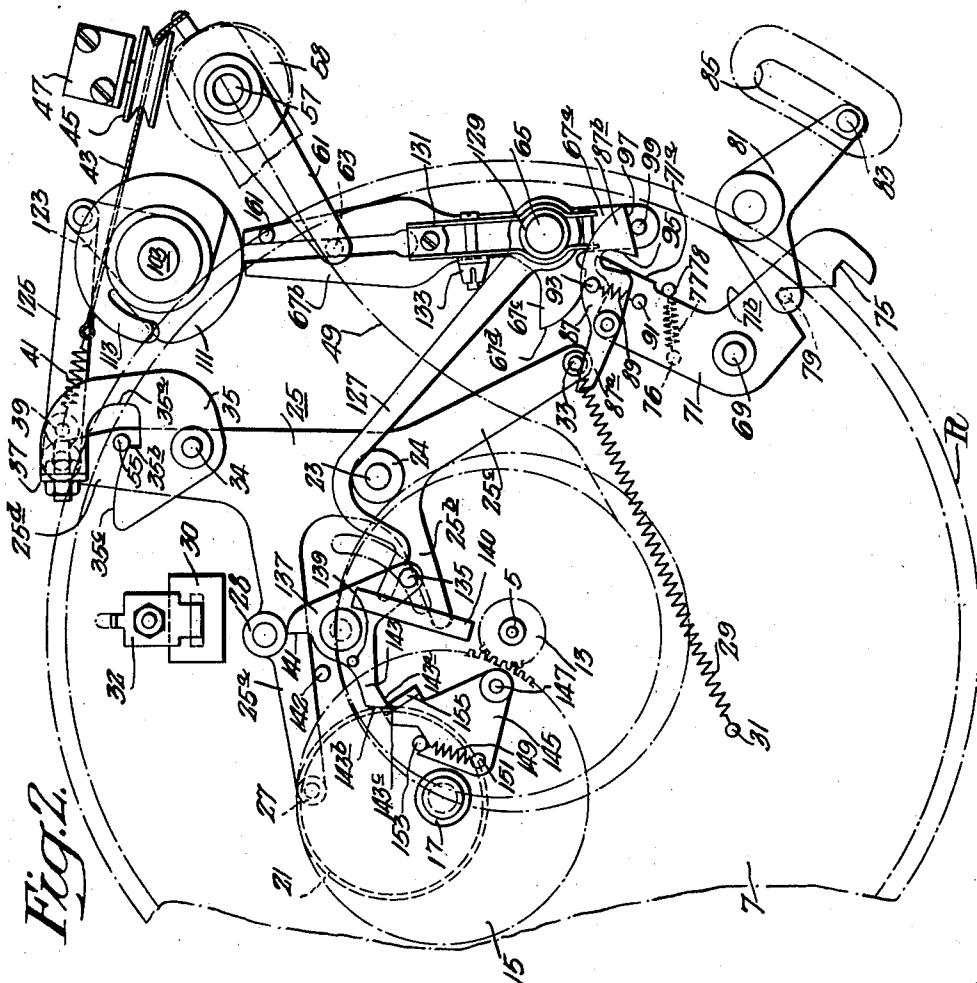
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4 Sheets-Sheet 2



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*Fig. 5.*

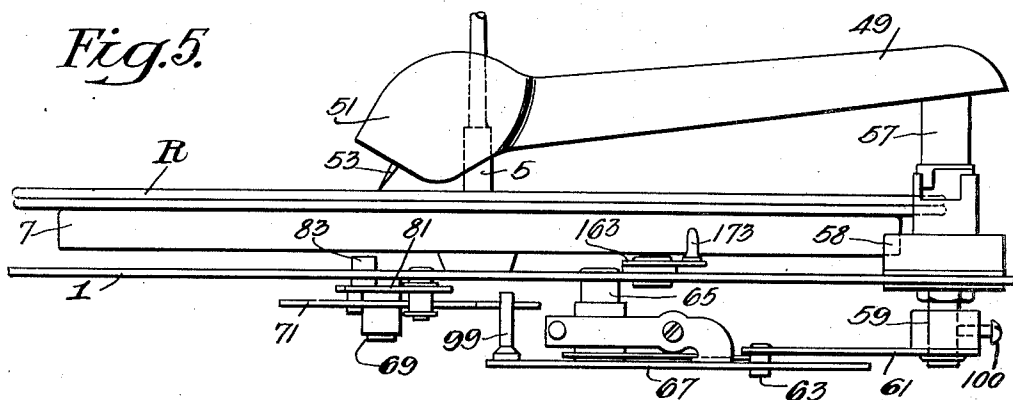
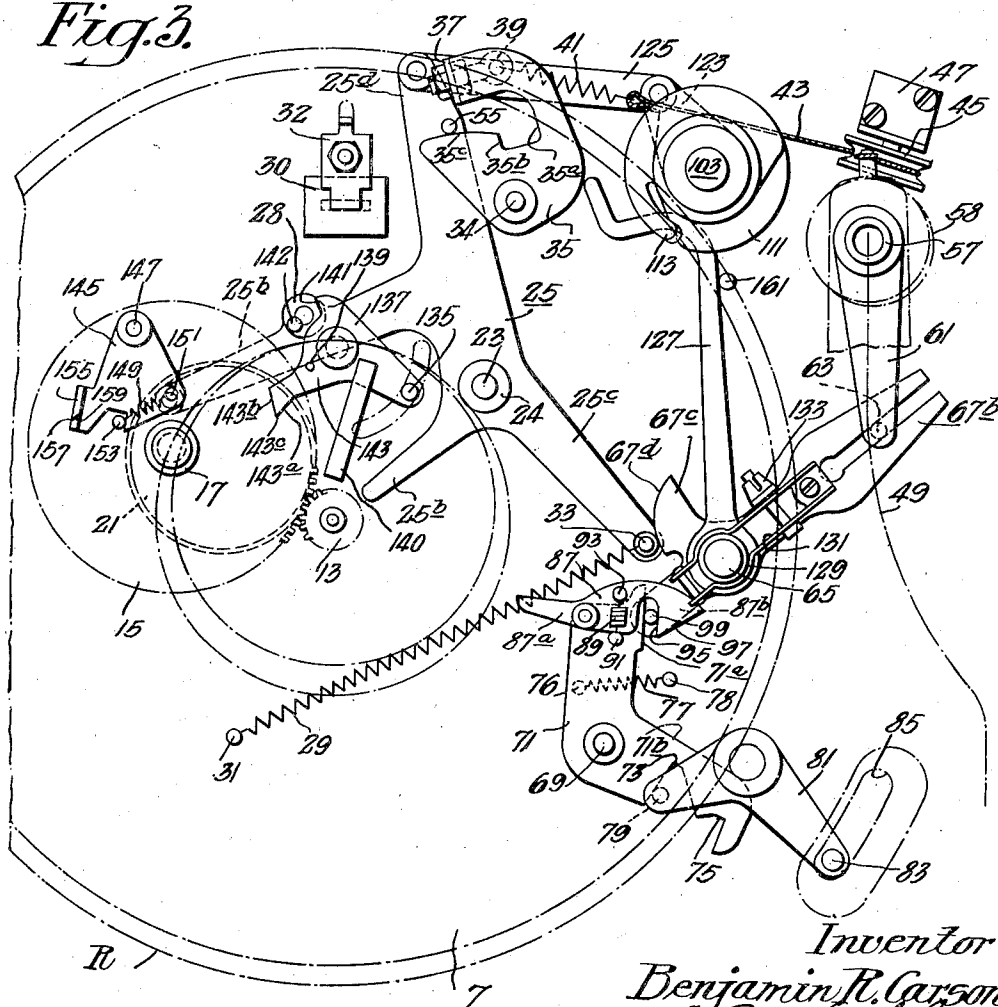


*Fig. 3.*



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**April 21, 1942.**

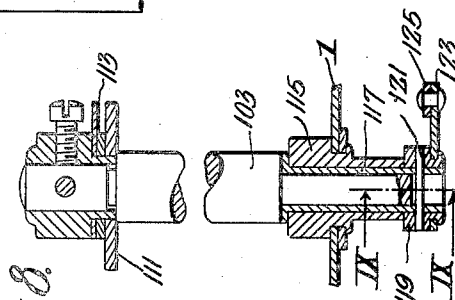
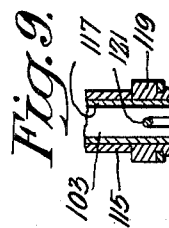
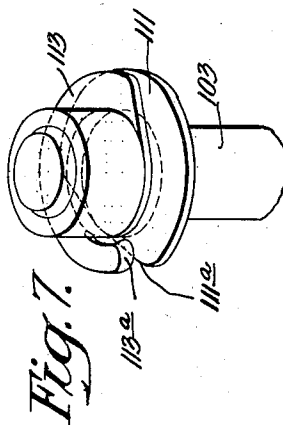
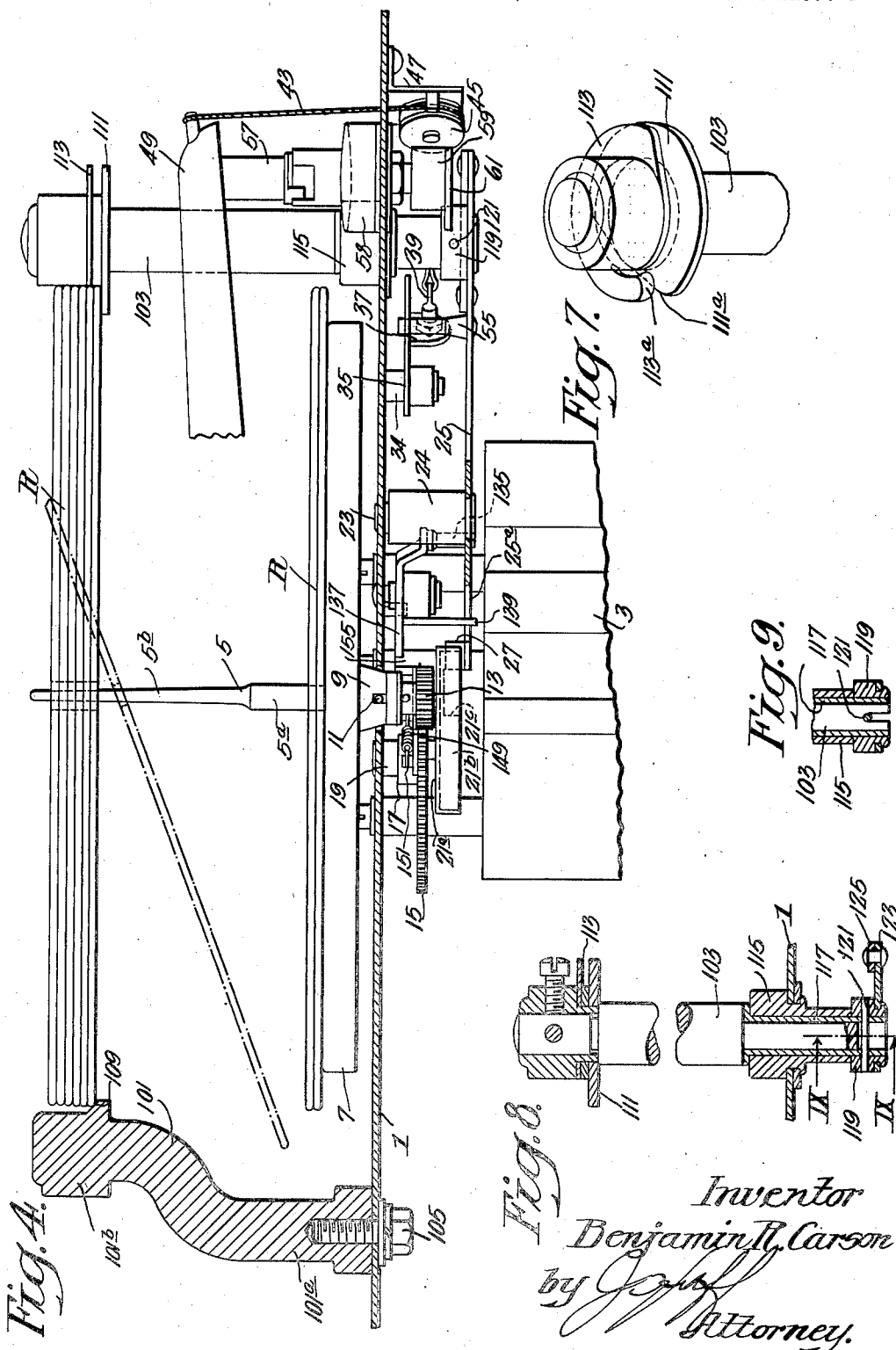
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**2,280,685**

PHONOGRAPH

Filed Dec. 17, 1938

4 Sheets-Sheet 4



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## UNITED STATES PATENT OFFICE

2,280,685

## PHONOGRAPH

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Application December 17, 1938, Serial No. 246,299

3 Claims. (Cl. 274—10)

This invention relates to phonographs, and more particularly to an automatic phonograph of the type wherein a plurality of records are supported above the turntable to be successively lowered onto the turntable for playing.

The primary object of my present invention is to provide an improved phonograph of the type specified which may be operated either automatically, to reproduce a plurality of records in succession without interruption and without attention on the part of the user after having once been set into operation, or which may, at will, be operated manually to reproduce a single record at a time.

More particularly, it is an object of my present invention to provide an improved automatic phonograph as aforesaid which will incorporate simplified record supporting and record releasing structure.

Another object of my present invention is to provide an improved phonograph of the type specified, which, while adapted to play records of a predetermined size automatically, will also play records of a larger size manually.

Still another object of my present invention is to provide an improved phonograph as aforesaid which can very easily be changed from an automatically operable machine to a manually operable machine, and vice versa.

A further object of my present invention is to provide an improved phonograph of the type described which, when operated automatically, will transfer but one record at a time from the stack to the turntable.

Still a further object of my present invention is to provide an improved phonograph of this type which, when operated automatically and once set into operation, will continue to operate indefinitely, or as long as power is supplied thereto, and with a minimum time interval between the end of playing of one record and the commencement of playing of the next record.

An additional object of my present invention is to provide an improved phonograph of the type set forth which is compact and may be housed in a cabinet within a very small space.

It is also an object of my present invention to provide an improved phonograph as aforesaid which is extremely accurate and efficient in operation, which comprises a minimum number of parts, and which is relatively inexpensive to manufacture.

According to one form of my present invention, I provide a pair of record supporting posts at diametrically opposite points relative to the turn-

table, the posts extending upwardly from a suitable supporting plate a distance sufficient to support a stack of 10 inch records at a point elevated with respect to the turntable, and the upper end of the turntable spindle extending through the center holes of the stacked records. One of the record supporting posts is stationary on the supporting plate and has a ledge thereon which is inclined downwardly toward the other record supporting post, the lowermost record of the stack resting on said ledge and being biased thereby toward the second record supporting post. The latter record supporting post is rotatably mounted on the supporting plate for rotation bodily relative to the record stack, and it is provided with a record supporting shelf which has a portion thereof cut away and past which the lowermost record of the stack can drop when the post has been rotated sufficiently. A separating cam overlies the cut away portion of the record supporting shelf on the rotatable post and is spaced from said shelf a distance slightly greater than the thickness of a record. The record supporting shelf and the separating cam are so arranged on the rotatable post that, when the post is rotated in a predetermined direction, the separating cam wedges its way in between the lowermost record of the stack and the next lowest record and, together with the inclined ledge on the stationary post, supports the remaining records of the stack while the lowermost one is released to drop onto the turntable by gravity.

The stationary post is provided with a bend therein along its length and is so mounted on the supporting plate that its lowermost, or base, portion is at a greater radial distance from the turntable than is its uppermost, or record supporting, portion. The rotatable post is also removably mounted on the supporting plate. When it is desired to play a 12 inch record, the rotatable post is removed from its operating position and, because of the greater radial distance of the lower portion of the stationary post from the turntable, the 12 inch record can be readily accommodated upon the turntable. Locating means for the pickup arm is provided to insure location of the needle at the starting point of either a 10 inch or a 12 inch record, and a suitable index device is provided to set the locating means for proper location of the needle, depending upon which size record is to be played.

A plurality of records are stacked on the record supporting posts over the turntable and concentrically therewith when they are threaded on the spindle, a record first being placed upon the

turntable. The pickup arm may then be placed manually in the starting groove of the record on the turntable and that record played. When the needle reaches the spiral terminal groove, which is of much greater pitch than the music groove, a suitable tripping mechanism is caused to operate whereby the pickup arm is raised from the record and swung clear of the turntable. Immediately thereafter, the lowermost record of the stack is released by the rotatable record post to permit it to fall onto the record previously played, after which the pickup arm is swung inwardly and lowered onto the starting groove of the new record. After the entire repertoire of records has been played, the automatic cycle continues and the last record is repeated, whereby an audible signal is provided to indicate the completion of the repertoire. A reject device is also provided to permit rejection of any record that it is not desired to have played.

The novel features that I consider characteristic of my invention are set forth with particularity in the appended claims. The invention itself, however, both as to its organization and method of operation, together with additional objects and advantages thereof, will best be understood from the following description of a specific embodiment, when read in connection with the accompanying drawings in which

Figure 1 is a plan view of my improved phonograph set to play 10 inch records and with the parts in the position at the beginning of playing of a record,

Figure 2 is a similar view, but showing the position of the parts just after the record changing portion of the automatic cycle has been initiated,

Figure 3 is a similar view showing the position of the parts just after a new record has been released onto the turntable,

Figure 4 is a partly sectional and partly elevational view taken along the line IV—IV of Fig. 1,

Figure 5 is a side elevation looking in the direction of the arrow V—V of Fig. 1,

Figure 6 is a fragmentary view similar to Fig. 1, but showing the parts adjusted to play 12 inch records,

Figure 7 is a fragmentary perspective view of the movable record post,

Figure 8 is a sectional view of the movable record post taken on the line VIII—VIII of Fig. 1, and

Figure 9 is a fragmentary sectional view taken on the line IX—IX of Fig. 8.

Referring more particularly to the drawings, wherein similar reference characters indicate corresponding parts throughout, I have shown a supporting plate or a motor board 1 supporting a motor 3 which drives a spindle 5 having a cylindrical portion 5a of substantially the same diameter as the center openings in conventional records and terminating therebeyond in an elongated, gradually tapering portion 5b the upper end of which has a diameter considerably smaller than the portion 5a. The spindle 5 supports a turntable 7 which is driven through its hub 9 from a cross pin 11 extending through the spindle 5, and it extends up from the plate 1 to a point above the uppermost of a stack of records R supported at a point elevated with respect to the turntable 7 onto which the records are successively transferred for playing, the spindle portion 5a having a height equal at least to the total thickness of the maximum number of records which can be supported above the turntable.

Fixed to the spindle or motor shaft 5 is a gear 13 which continuously drives a gear 15, the latter gear acting as a control device for effecting operation of the parts to carry out a cycle of automatic operations. The gear 15 is staked to a sleeve 17 mounted for rotation on a stub shaft 19 fixed to the motor board 1, and it supports a cam member 21 on the under side thereof. The cam member 21 is also mounted on the sleeve 17 and is in the form of a cylindrical cup-shaped member having a flat face 21a slightly spaced from the bottom face of the gear 15 by a suitable washer and a downwardly extending peripheral flange 21b which is broken away at 21c for a purpose hereinafter described, the control cam 21 being locked to the gear 15 so that both will rotate in unison and so that the depending flange 21b will function as a cam relative to the axis of rotation of the control gear 15.

Pivoted at 23 to the underside of the motor board or supporting plate 1 through a sleeve 24 to which it is staked or otherwise suitably secured is an actuating member 25 comprising a lever having a pair of lateral extensions 25a and 25b and a pair of oppositely extending arms 25c and 25d. A roller 27 is mounted on the extension 25a for cooperation, as a cam follower, with the inner surface of the flange 21b whereby the cam member 21 is adapted to impart rotation to the actuating lever 25 in a counter-clockwise direction about its pivot 23. Return of the lever 25 to its normal position is effected by a coil spring 29 having one end thereof connected to a pin 31 which is fixed to the underside of the supporting plate 1 and the other end thereof connected to a pin 33 which extends upwardly from the end of the lever arm 25c, the spring 29 insuring contact between the follower 27 and the flange 21b during movement of the actuating lever 25 and its associated parts. A rubber block 30 carried by a bracket 32 which is adjustably mounted on the plate 1 serves as a stop device for limiting the clockwise movement of the lever 25 in response to the spring 29 when a roller 28 on the lever 25 engages the block 30, as shown in Fig. 1. Being preferably made of soft rubber, the block 30 also acts as a damping member or shock absorber for absorbing mechanical shock of the lever 25.

Pivoted at 34 to the under side of the motor board 1 is a substantially C-shaped cable lever 35 having a downwardly offset portion 37 apertured for the reception of an adjustable eye bolt 39 to which one end of a coil spring 41 is secured. A cable 43, having one end thereof secured to the other end of the coil spring 41, passes around a guide roller or pulley 45 mounted on a bracket 47 and through an opening in the motor board 1, being secured at its other end to a pickup arm or the like support 49 having a sound reproducing instrumentality 51 carrying a reproducing stylus 53.

The cable lever 35 is provided with two substantially parallel inner side portions 35a and 35b, the latter terminating in a cam edge 35c. Upstanding from the arm 25d of the actuating lever 25 is a pin 55 which, during reproduction of a record, occupies a position between the side portions 35a and 35b. As soon, however, as the lever 25 begins its initial counter-clockwise rotation under the influence of means hereinafter described, the pin 55 engages the side portion 35b and rotates the cable lever 35 in a counter-clockwise direction. This first causes the lever 35 to take up the tension on the spring 41 and the slack in the cable 43, and then to exert a pull

on the pickup arm 49 to raise the pickup 51 above the played record, the pickup arm 49 being held in raised position as the pin 55 rides over the cam edge 35c upon continued movement of the actuating lever 25 in response to the cam flange 21b.

The pickup arm 49 is pivotally mounted on a supporting post 57 which is carried in a bushing 58 mounted on the supporting plate 1 and extends through the bushing 59 below the plate 1, the bushing 58 and post 57 being inclined from the vertical about 3° toward the turntable 7. Secured to the lower end of the post 57 is a collar 59 (Fig. 4) from which extends an arm 61 having a downwardly extending pin 63 thereon. Pivotally mounted on the underside of the plate 1 on a pin 65 is a trip lever 67 having oppositely extending arms 67a and 67b, the latter of which is forked for the reception of the pin 63, and a laterally extending arm 67c formed with a cam edge 67d. Immediately after the pickup 51 has been raised from the played record as above described, continued movement of the actuating lever 25 in a counter-clockwise direction under influence of the cam flange 21b brings the pin 33 into engagement with the cam edge 67d and causes the lever 67 to rotate clockwise, thereby turning the arm 61 and its associated pickup arm 49 counterclockwise to a position clear of the turntable and record stack, as shown in Fig. 3, the pickup arm 49 being retained in elevated position all this time.

Pivotally mounted on a post 69 on the underside of the plate 1 is a pickup arm locating lever 71 for determining the starting position of the needle 53 when the pickup arm 49 is subsequently returned and lowered onto the next succeeding record for playing. One arm of the lever 71 is formed with two notches 73 and 75, the former for determining the 10'' starting position and the latter for determining the 12'' starting position. A coil spring 77, connected at one end to a pin 76 on the lever 71 and at its other end to a pin 78 on the plate 1, constantly biases the lever 71 in a clockwise direction for engagement of either of the notches 73 or 75 with a downwardly extending pin 79 on an index lever 81 which is pivotally mounted on the underside of the plate 1 and has an operating handle 83 extending up through a slot 85 in the plate 1.

A detent lever 87 having arms 87a and 87b is pivotally mounted on the locating lever 71 and is also constantly biased in a clockwise direction by a coil spring 89 which has one end thereof connected to a pin 91 on the locating lever 71 and its other end connected to a pin 93 on the detent lever 87. The arm 87b is provided with a U-shaped notch 95 and an adjacent cam edge 97, and the notch 95 is so located thereon that, when the detent lever 87 is in the position shown in Fig. 3, the right-hand edge of the notch 95 (as viewed) is spaced from the edge portion 71a of the lever 71 a distance just sufficient to accommodate an upstanding pin 99 on the trip lever arm 67a.

Normally, that is, during playing of a record, the pin 33 on the actuating lever 25 is in engagement with the detent lever arm 87a to hold it in the position shown in Fig. 1. After the needle has entered the record terminal groove and the actuating lever 25 begins its counter-clockwise movement, the pin 33 gradually recedes from the detent lever arm 87a and the spring 89 tends to pull the detent lever 87 into the position shown in Fig. 3. However, the spring 89 cannot pull the

detent lever 87 into this position at first because, at this time, the pin 99 is in the path of the cam edge 97, as shown in Fig. 2, and is engaged by the cam edge 97. Upon continued movement of the actuating lever 25 in a counter-clockwise direction, the pin 33 eventually engages the cam edge 67d and, riding thereon, forces the trip lever 67 around in a clockwise direction which, in turn, rotates the arm 61 and its associated pickup arm 49 in a counter-clockwise direction clear of the turntable, as previously described. During this clockwise movement of the trip lever 67, the pin 99 passes the cam edge 97, which permits the spring 89 to pull the detent lever 87 into the position shown in Fig. 3 and thus lock the pin 99 between the edge 71a of the locating lever 71 and the right-hand edge of the U-notch 95 on the detent lever 87.

After the cam follower 27 on the actuating lever 25 has reached the high point on the cam flange 21b, the actuating lever 25 begins its return, or clockwise, movement under the influence of the spring 29. This causes the pin 33 to ride back along the cam edge 67d and to eventually recede therefrom, and as soon as this takes place, the coil spring 77 causes the locating lever 71 to rotate in a clockwise direction. In turn, the edge 71a of the locating lever 71 acts on the pin 99 to rotate the trip lever 67 in a counter-clockwise direction to thereby return the pickup arm 49 to a position over the new record. The starting point of the needle 53 is determined when, for 10'' records, the notch 73 has engaged the pin 79, so that the rotating lever 71 cannot rotate further in a clockwise direction and therefore stops rotating the lever 67, the arm 61 and the pick-up arm 49. Eventually, the spring 29 pulls the actuating lever 25 back to a position such that the pin 33 engages the arm 87a of the detent lever 87, thereby turning the lever 87 about its pivot in a counter-clockwise direction and thus freeing the pin 99 from between the edge 71a and the cooperating side of the U-notch 95, so that the pickup is then free to continue its movement across the record. During all this time, the pin 55 has been riding on the cam edge 35c of the cable lever 35, and just after the pin 99 has been freed, the pin 55 rides back down along the edge 35b of the cable lever and back to its normal, or rest, position, whereupon the pickup arm is lowered onto the new record in correct starting position. The inclination of the post 57 toward the turntable 7 as above described insures the needle 53 sliding into the starting groove of the new record.

For a 12'' record, the index lever 81 is moved to the position shown in Fig. 6. The action in locating the pickup at the proper starting point on a 12'' record is similar to that previously described for a 10'' record. Inasmuch as the notch 75 is farther from the edge 71b of the locating lever 71 than is the notch 73, it will be obvious that, when the index lever 81 is in the position shown in Fig. 6, the spring 77 will not be able to pull the lever 71 through as great an angle in a clockwise direction as it does when the pin 79 is in the path of the notch 73. Accordingly, it follows that the lever edge 71a will not push the trip lever 67 as far around in a counter-clockwise direction, and therefore the arm 61 and the pickup arm 49 will not be moved inwardly toward the turntable as great a distance as for the 10'' record. Adjustment of the parts for correct starting position on either size record may be made by loosening the screw 100 which holds

the collar 59 secured to the post 57 and turning the collar one way or the other to thereby adjust the trip lever 67 and its pin 99 relative to the locating lever 71.

The records R are stacked above the turntable upon a pair of supporting posts 101 and 103 located at diametrically opposite points with respect to the turntable 7. The post 101 is preferably fixed to the supporting plate 1, although it may also be made adjustable relative to the turntable in a radial direction by means of a bolt 105 slidably received in an elongated slot 107 in the plate 1 (Figs. 1 and 4), if desired. In any event, once its position is determined, it remains stationary in this position. The post 101 is provided with a ledge 109 on which the edge of the lowermost record of the stack rests and which is inclined downwardly toward the rotatable post 103 so that at least the lowermost record of the stack is biased laterally thereby with respect to the turntable, that is, toward the post 103, the clearance between the upper end of the spindle 5b and the central hole in the record permitting the record to slide over toward the post 103. The stationary post 101 has a bend therein along its length, as clearly shown in Fig. 4, and is so located on the plate 1 that the lower, or base, portion 101a thereof is at a greater radial distance from the turntable 7 than is its upper end 101b for a purpose to be presently set forth.

The movable post 103 is provided with a record supporting shelf 111 upon which a marginal portion of the lowermost record of the stack rests and which is on about the same level above the turntable 7 as the portion of the ledge 109 which supports the lowermost record, so that the stack of records is supported in substantially horizontal position. The shelf 111 does not extend all the way around the post 103, but is cut away at 111a. Spaced above the shelf 111 a distance only slightly greater than the thickness of a record R is a shelf member 113 which also does not extend entirely around the post 103 and is formed with a cam edge or wedge 113a, the wedge 113a partially overlapping the shelf 111 and the member 113 being superposed over the cut away portion 111a and partially around the shelf 111 as clearly shown in Fig. 7.

Normally, the lowermost record of the stack rests upon the inclined ledge 109 and upon that portion of the shelf 111 which is shown in the foreground in Fig. 7. When, at the proper point in the automatic cycle, the post 103 is caused to rotate in a counter-clockwise direction as viewed in Figs. 1, 2, 3 and 7, the wedge 113a forces its way in between the lowermost record of the stack and the next lowermost record. Rotation of the post 103 continues until the cut away portion 111a has been brought to a position adjacent the edge of the lowermost record, whereby that record becomes free to slip past the shelf 111, the remaining records of the stack then being supported by the shelf member 113. When the lowermost record has been freed from the shelf 111, the inclined edge 109 cams its opposite edge downwardly, so that this record becomes free to slide down along the spindle 5 and onto the turntable, the tapered portion 5b of the spindle gradually centering the record in its descent so that it will be properly threaded on the cylindrical portion 5a of the spindle 5 by the time it has reached the turntable.

Release of the lowermost record of the stack takes place in the cycle immediately after the pickup arm 49 has been moved to the position

shown in Fig. 3 in the manner heretofore described. Thereafter, the post 103 is given a reverse, or clockwise, rotation whereupon the shelf member 113 is removed from under the then lowermost record of the stack, permitting the stack to drop down slightly onto the shelf 111 for further support thereby in cooperation with the inclined ledge 109.

Staked or otherwise suitably secured to the motor plate 1 is a sleeve 115 (Figs. 4 and 8) which rotatably carries a bushing 117 having a collar 119 force fit thereon at its lower end beyond the sleeve 115. Approximately the lower half of the post 103 is reduced to fit into the bushing 117 and its lower extremity is slotted to receive a cross pin 121, whereby the post 103 is locked to the bushing 117 and the collar 119 for rotation therewith as a unit. The lower end of the collar 119 is staked to an arm 123 which is connected to the lever arm 25d by means of a connecting link 125, the latter being pivotally connected to both the arm 25d and the arm 123. It will be obvious that, when the actuating lever 25 partakes of counter-clockwise movement in response to the cam flange 21b, it effects counter-clockwise movement of the rotary post 103 through the connecting link 125 to release the lowermost record of the stack in the manner above described. Similarly, when return, or clockwise, movement of the actuating lever 25 is effected under the influence of the spring 29, the lever 25 will act upon the connecting link 125 to effect return, or clockwise, movement of the rotary post 103 to its initial position.

For the purpose of initiating a cycle of automatic operations as previously described, a lever 127 is pivotally mounted on the pivot pin 65 through its hub 129, the lever 127 being supported by the trip lever 67 and being frictionally coupled to the trip lever 67 by means of a friction clutch spring 131. The spring member 131 is fixed to the lever 67 and comprises a pair of substantially parallel arms which embrace the hub 129 to frictionally grip the same, the frictional force applied by the clutch spring 131 to the hub 129 being adjustable by means of a nut and bolt assembly 133 so that the lever 127 will retain any angular position with respect to the trip lever 67 in which it may be temporarily set.

The free end of the lever 127 extends into the path of movement of a downwardly extending pin 135 on a cycle initiating pawl 137 pivoted to the underside of the motor plate 1 and restrained against free movement by a leaf spring 140. The pawl 137 is also provided with a second pin 139 extending down into the path of movement of the branch or extension 25a of the actuating lever 25, a shoulder 141 on the pawl 137 being adapted to abut against a fixed pin 142 on the plate 1 to limit the counter-clockwise rotation of the pawl 137, and a forwardly extending arm 143 terminating in a pair of angularly disposed faces 143a and 143b that meet to form a knife edge 143c, as most clearly shown in Fig. 3.

Cooperating with the pawl 137 is a tripping member 145 pivoted at 147 on the upper face of the gear 15 eccentrically thereto and constantly urged in a clockwise direction by a spring 149 which connects a pin 151 on the tripping member 145 and a second pin 153 on the gear 15. The tripping member 145 is provided with an upwardly extending trip 155 which terminates in a second knife edge 157 adapted to cooperate with either the face 143a or the face 143b, depending upon whether the knife edge 157 slips by the

knife edge 143 on the right or the left thereof, as viewed in Figs. 1, 2 and 3.

When the pickup 51 is deposited on a record for playing, the lever 127 has a predetermined angular relation to the lever 67 such that movement of the pickup arm 49 across the record will cause the free end of the lever 127 to engage the pin 135 on the pawl 137. As the pickup arm 49 moves across the record, the pin 63 will impart counter-clockwise rotation to the trip lever 67 which, in turn, imparts counter-clockwise rotation to the lever 127 by reason of the frictional coupling therebetween. In its turn, the lever 127 will impart clockwise rotation to the cycle initiating pawl 137 tending to bring the knife edge 143c into line with the knife edge 157 as the tripping member 145 rotates with the continuously rotating gear 15. During the time that the needle 53 is in engagement with the sound groove of a record, its forward advance across the record for each revolution thereof is so slight that the pickup arm 49 causes the lever 127 to advance the pawl 137 a distance insufficient to dispose its knife edge 143c in the path of the knife edge 157. The knife edge 157 will, therefore, pass to the left of the knife edge 143c, as viewed in Fig. 1, and the outer face of the trip 155 will, by engagement with the face 143b, cam the pawl 137 back slightly in a counter-clockwise direction, this being permitted by the lever 127 since it is only frictionally coupled to the trip lever 67. Thus, the predetermined angle between the levers 127 and 67 is gradually reduced.

The foregoing action takes place continuously until the needle 53 enters the terminal groove of the record, whereupon the pickup arm is advanced a greater distance in one revolution of the record than while the needle was in engagement with the sound groove. The pawl 137 is, therefore, also advanced a greater distance than normally and, in fact, is advanced to a point where the knife edge 157, on the next revolution of the gear 15, passes to the right of the knife edge 143c. When this occurs, the inner, angular face 159 of the trip 155 engages the face 143a of the pawl 137 and imparts a further quick and somewhat sudden clockwise rotation to the pawl 137, whereupon its pin 135 will engage the extension 25b and turn the actuating lever 25 in an initial counter-clockwise direction to initiate a cycle of automatic operations.

As a result of the initial counter-clockwise movement of the lever 25 in response to the pawl 137, the cam follower 27 is caused to enter the broken away portion 21c of the flange 21b whereby the follower 27 is enabled to engage the inner surface of the flange 21b. The parts are, of course, so timed and the broken away portion 21c is of such a length that the portion 21c will be opposite the follower 27 at the time that the pawl 137 imparts initial counter-clockwise movement to the lever 25 to initiate the cycle. Once the cam flange 21b and the follower 27 are in engagement, the automatic cycle will proceed as hereinbefore described to raise the pickup from a played record, swing the pickup arm outwardly clear of the turntable and the stack of records thereabove, permit the then lowermost record of the stack to drop down onto the turntable, return the pickup arm to the appropriate starting position above the record, and thereafter to lower the pickup onto the new record for playing thereof. Meanwhile, as the lever 25 advances in a counter-clockwise direction, the lateral extension 25a thereof engages the pin 139 to return the

pawl 137 to its normal, or starting, position as determined by the shoulder 141 and the pin 142. At the same time, when the pin 33 engages the cam edge 67d to swing the lever 67 in a clockwise direction, the latter carries the lever 127 with it in the same direction. In order, however, that the lever 127 will not follow the lever 67 too far, so that upon playing of the next record it will not fall short of engaging the pin 135 and actuating the pawl 137, the lever 127 is caused to abut against a pin 161 during its return movement, and thus the predetermined angular relation between the levers 67 and 127 is restored.

The apparatus heretofore described is arranged to play only 10 inch records automatically. When it is desired to play 12 inch records, this must be done manually, and the index lever 81 is moved to the position shown in Fig. 6. At the same time, the rotatable record post 103 is removed from the bushing 117. It is then possible to thread a 12 inch record on the spindle 5 by inclining the record downwardly toward the base portion 101a of the stationary record post 101, as shown in dot and dash lines in Fig. 4, this being permitted by reason of the fact that the spindle portion 5b is tapered.

The base portion 101a of the post 101 is spaced sufficiently from the spindle 5 to accommodate a 12 inch record and, since the post 103 has been removed from its operating position, it is clear that there will be sufficient room for the reception of the larger record on the turntable. After a 12 inch record has been played, the cycle of automatic operations above described except, of course, that portion thereof involving the transference of a new record from the stack, will be carried out in precisely the manner heretofore described, and the record on the turntable will be repeated indefinitely.

Whether the machine is used to play 10 inch records or 12 inch records, the particular record on the turntable at any time can be rejected, or its playing discontinued, at will. This is accomplished by means of a reject lever 163 which is pivoted on the motor board 1 on a pin 165 and is constantly biased against a fixed pin 167 on the motor plate 1 by means of a coil spring 169 which connects the pin 167 with a pin 171 on the lever 163. At one end of the lever 163, there is provided an operating handle 173 by means of which the lever 163 may be easily operated. The other end of the reject lever 163 is normally disposed adjacent the pin 135 on the pawl 137, as clearly shown in Fig. 1. When it is desired to reject a record, it is merely necessary to push the reject lever 163 in a counter-clockwise direction against the spring 169, whereupon its inner end engages the pin 135 to rotate the pawl 137 clockwise to a position where the knife edge 157 will strike the face 143a of the pawl 137 and thereby initiate the automatic cycle in the manner heretofore described.

From the foregoing description, it will be apparent to those skilled in the art that I have provided an improved phonograph which is very efficient in operation, which is comprised of a minimum number of parts, and which is so compact that it may be easily housed within a small cabinet. In fact, my improved phonograph occupies so little space that it requires hardly any more room than is necessitated by standard manually operable machines. Moreover, because of the simplicity of the mechanism and the relatively few parts employed in my present invention, there is very little to get out of order and

the necessity for servicing phonographs according to this invention is, therefore, practically dispensed with.

While I have shown and described a certain specific embodiment of my invention, it will be apparent to those skilled in the art that many modifications thereof and changes therein are possible without departing from the spirit thereof. I desire, therefore, that my invention shall not be limited except insofar as is necessitated by the prior art and by the spirit of the appended claims.

I claim as my invention:

1. In an automatic phonograph, the combination of a turntable, and means for supporting a stack of records on each other above and parallel to said turntable for successive transference to said turntable, said means comprising a plurality of supporting posts around said turntable, one of said posts being stationary and another of said posts being movably mounted relative to said first named post, said stationary post having a ledge thereon inclined downwardly toward said turntable and upon which the edge of the lowermost record of said stack is adapted to rest, and said movable post including a record supporting shelf upon which a marginal portion of said lowermost record is adapted to rest, said ledge operating to cam said lowermost record laterally with respect to said turntable when said shelf is removed from under said lowermost record to free said lowermost record from said stack.

2. In an automatic phonograph, the combination of a turntable, and means for supporting a stack of records on each other above and parallel to said turntable for successive transference to said turntable, said means comprising a pair

of supporting posts at diametrically opposite sides of said turntable, one of said posts being stationary and the other of said posts being movable relative to said first named post, said stationary post having a ledge thereon in elevated relation to and inclined downwardly toward said turntable and upon which the edge of the lowermost record of said stack is adapted to rest, and said movable post including a record supporting shelf at substantially the same elevation above said turntable as said ledge and upon which a marginal portion of said lowermost record is adapted to rest, said ledge operating to cam said lowermost record laterally with respect to said turntable when said movable post is moved to withdraw said shelf from under said lowermost record to free said lowermost record from said stack.

3. The invention set forth in claim 2 characterized in that said movable post is rotatably mounted, characterized further by the addition on said movable post of a cam member spaced above said shelf a distance slightly greater than the thickness of a record and normally offset relative to said stack, and characterized further in that said shelf extends around said movable post less than 360° whereby, upon rotation of said movable post in a predetermined direction, said shelf is removed from under said lowermost record to free said record for actuation by said ledge, said cam member being so disposed on said movable post as to enter in between said lowermost record and the next lowest record of said stack prior to release of said lowermost record whereby to support the remainder of said stack of records in cooperation with said ledge.

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