

May 2, 1950

J. E. STOUT

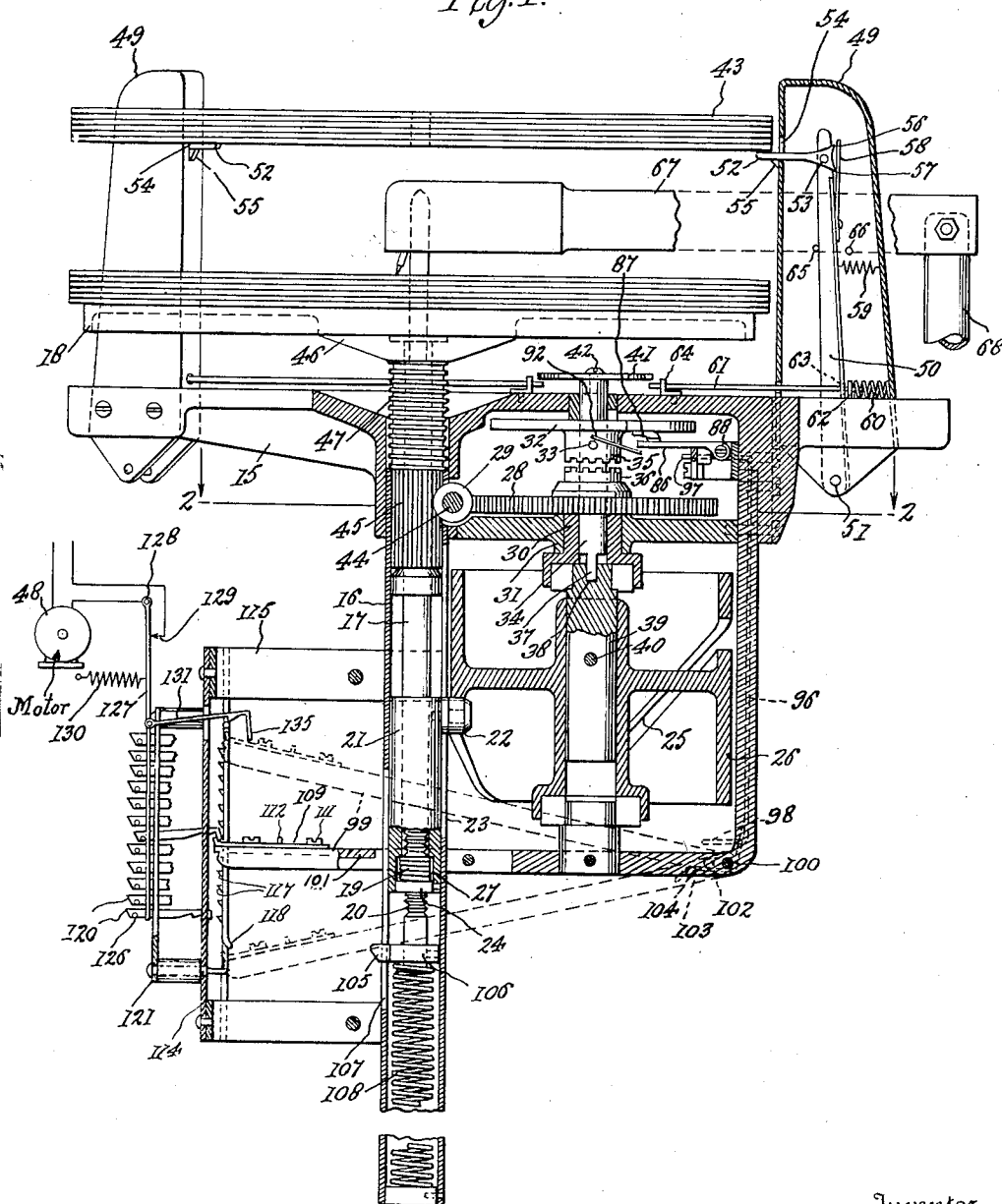
2,506,523

AUTOMATIC PHONOGRAPH

Filed Oct. 10, 1945

4 Sheets-Sheet 1

Fig. 1.



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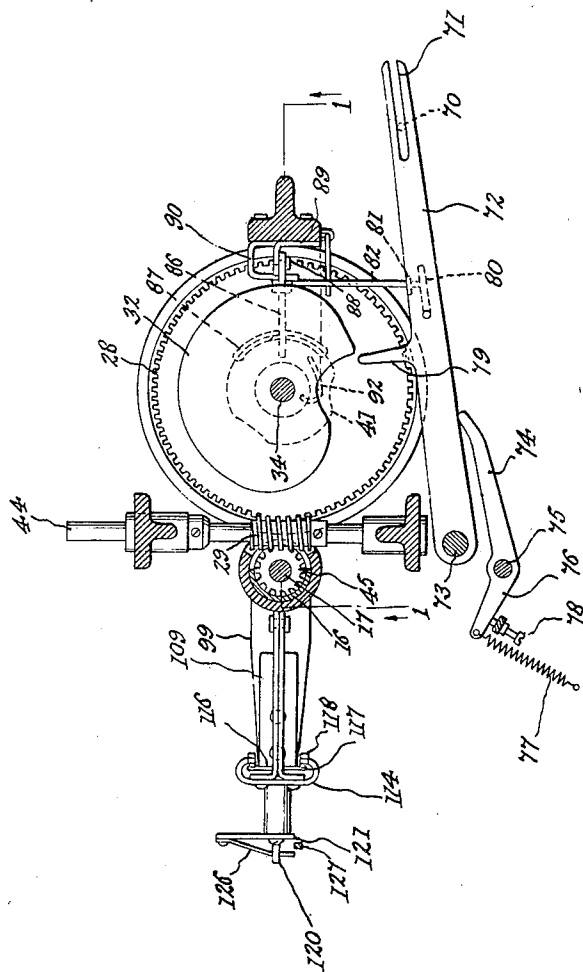
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4 Sheets-Sheet 2



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4 Sheets-Sheet 3

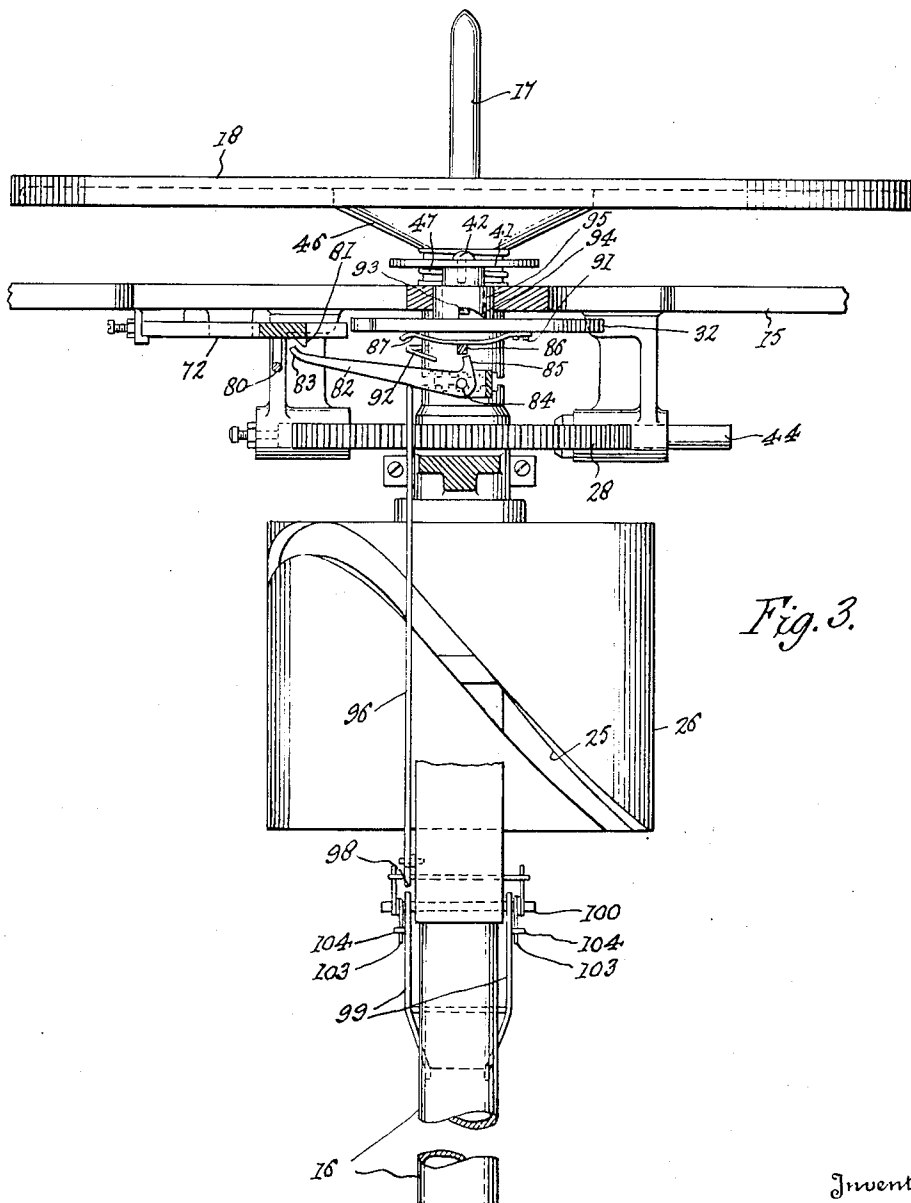


Fig. 3.

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Fig. 4.

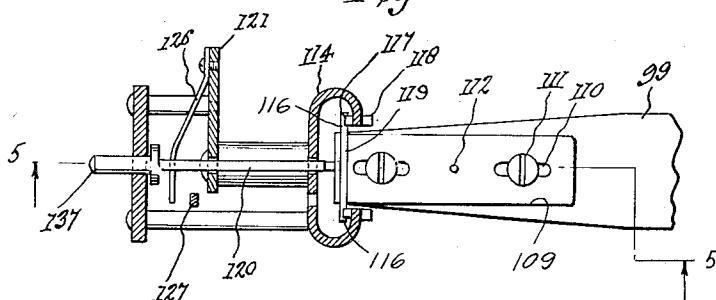
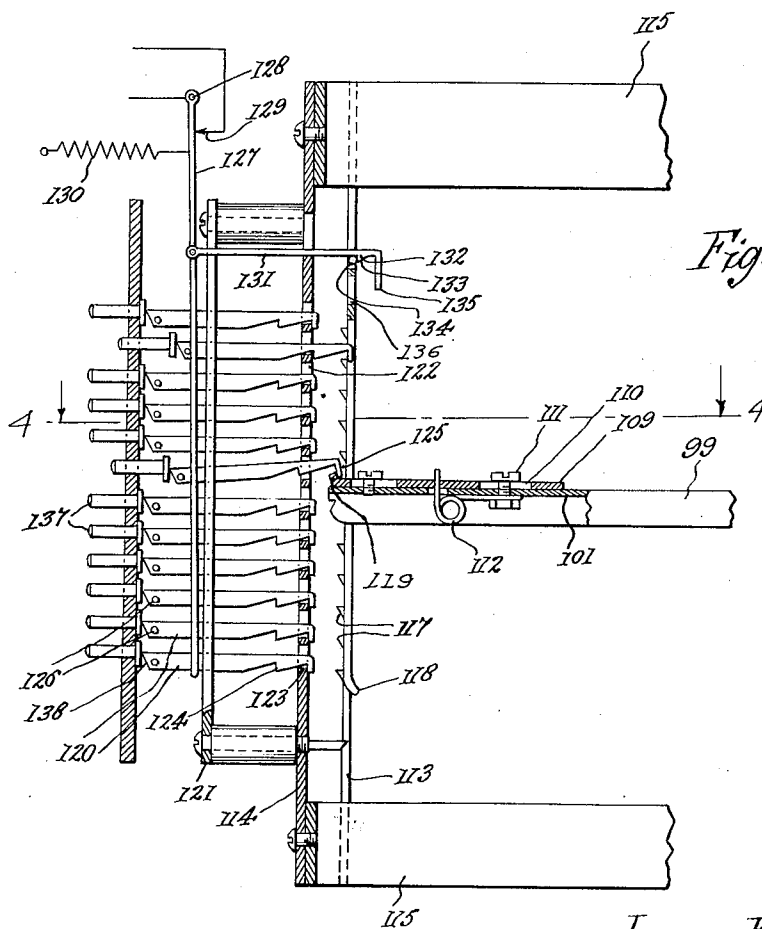


Fig. 5.



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AUTOMATIC PHONOGRAPH

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Application October 10, 1945, Serial No. 621,488

11 Claims. (Cl. 274—10)

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The present invention relates to improvements in automatic phonographs and involves improvements over the mechanism illustrated and described in applicant's prior patent 1,449,252, granted March 20, 1923.

The invention further resides in improvements over the Moore Patents 1,800,803, granted April 14, 1931 and 1,875,641, granted September 6, 1932; over the Bodwell et al. Patent 1,837,608, granted December 22, 1931, and over the Wilcox Patent No. 2,002,236, granted May 21, 1935.

More particularly the invention resides in the provision of means by which any record or records in the magazine stack may be selected and played by simply pressing buttons corresponding to the numbers desired, in which the pressing of the buttons starts the mechanism, with provision for automatically stopping the mechanism when the last selected record is finished.

In a specific aspect the invention consists in constructions, combinations and arrangements herein described and claimed for carrying out the above mentioned objects and purposes with fidelity and in a manner to insure accuracy in the playing of the records selected.

With the foregoing and other objects in view, the invention will be more fully described hereinafter, and will be more particularly pointed out in the claims appended hereto.

In the drawings, wherein like symbols refer to like or corresponding parts throughout the several views,

Figure 1 is a vertical section taken on the line 1—1 in Figure 2 through an automatic phonograph constructed according to the present invention.

Figure 2 is a horizontal section taken on the line 2—2 of Figure 1.

Figure 3 is a side elevation of the cam and clutch mechanism including the clutch tripping mechanism with parts broken away and parts shown in section.

Figure 4 is a top plan view of the selector mechanism taken on the line 4—4 in Figure 5.

Figure 5 is an enlarged vertical longitudinal sectional view of the selector mechanism taken on the line 5—5 in Figure 4.

Referring more particularly to the drawings, 15 designates the frame of the machine and 16 a stationary tube for housing the rotary and vertically-slidable spindle 17 affixed to the turntable 18.

A coil spring 19 is wound tightly about an annularly ridged and grooved section 20 of the spindle 17, such spring 19 being contained in a

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recess 27 in the lower end of a spindle carrier sleeve 21. The recess is closed by a removable collar 24 fastened by set screw in the carrier sleeve 21 for the purpose of installing grip spring 19. This spring is loosely fitted into the recess, annularly, and is carried axially up or down as the case may be by the collar 24 or top wall of the spring recess 27 in the sleeve 21. According to the illustration record No. 6 is in playing position and the spring 19 is relatively in the center of the ridged or corrugated section of spindle 17, there being twelve records shown. A roller 22 projects radially from the sleeve 21 through a vertically-elongated slot 23 in the tube 16 and into a helical track or slot 25 in a cylindrical cam 26.

The sleeve 21 is unconnected with the spindle 17 except through the resilient frictional grip of the coil spring 19; thus as the cylindrical cam 26 rotates and the roller 22 traverses helical track 25 the sleeve 21 is raised and lowered, compelling the entrained coil spring 19 to lift and lower the spindle 17 and turntable 18 therewith. The sleeve 21 is non-rotary due to the entering of roller 22 in slot 23 and helical track 25. The spindle 17 moves up and down vertically but does not rotate.

A cam shaft gear 28 meshes with a driving worm 29. This gear 28 runs idly on its tubular integral stud 30 except when changing records. The gear 28 rests on a frame bearing 31 in which the stud 30 is rotatably journaled.

The tone arm operating cam 32 is fastened as by a pin 33 to shaft 34 and has a radially-toothed hub 35 adapted to engage a similar radially-toothed hub 36 on the gear 28. The shaft 34 projects down through the tubular stud 30 and has a key 37 on its lower end fitting into a slot 38 in the upper end of the shaft 39 to which the cylindrical cam 26 is affixed as by a pin 40. The key 37 and slot 38 impart rotation from gear 28 through clutch 35, 36 when engaged but permit of longitudinal play in the vertical movement of shaft 34 to open and close clutch 35, 36.

Affixed to the top of shaft 34 and by a screw 42 is a record-separating cam 41 which cooperates with means for separating records in the record stack or magazine 43.

The worm 29 on the main driving shaft 44 meshes with a vertically-toothed section 45 of a turntable driving hub 46, the teeth of section 45 slidable up and down with respect to the worm teeth without disturbing the driving relation, thereby accommodating various playing elevations of the turntable 18. A spring 47 coiled about the hub and resting on the upper end of the tube 16 maintains driving pressure of top flat

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surface of 46 against similar bottom surface of turntable 18 for the rotation of the turntable 18, throughout the range of playing elevations. An electric or other motor 48 drives the shaft 44.

A short downward extending stud integral with the turntable runs in spindle 17. The dotted lateral flange at top of spindle 17 and part thereof serves to steady the turntable laterally while the driving hub 46 provides rotation by friction of surface in contact with turntable. Both the turntable and the driving hub run freely on spindle 17 which moves only vertically. The hub 46 with toothed section 45 rotates freely about spindle 17.

Hollow magazine posts 49, shown for example as three in number, house arms 50 pivoted at their lower ends 51 to swing toward and from the record stack 43. At their upper portions the arms 50 carry fingers 52 pivoted at 53 opposite slots 54 in the posts 49 through which the free end portions of the fingers project to enter between or beneath the record stack 43. The fingers 52 pivot in a vertical plane to permit bosses or detents 55 on the lower sides of fingers 52 to move into and out of engagement with the lower edges of the post slots 54. At their inner ends the bases of the fingers 52 are wide and have separated outstanding prongs 56 and 57 to be engaged by flat springs 58. Tension springs 59 are connected between the arms 50 and their respective posts 49. Compression springs 60 backed by the posts exert thrust against the arms 50 through plunger heads 62 on rods 61 slidable through perforations 63 in the arms 50. The several rods 61 are radial of the machine and the inner ends of the same are positioned to engage the periphery of the disc cam 41. Stops 65 and 66 limit the pivotal movement of the arms 50.

In the position shown in Figure 1 the weight of records 43 keeps fingers 52 down to a point where the detents 55 encounter the lower edges of slots 54. In this "down" position of the fingers 52 the upper prongs 56 are rotated away from contact with flat springs 58 which exerts a pressure on lower prongs 57 tending constantly to raise the fingers 52 to an "up" position where the detents 55 clear the bottom walls of slots 54. The weight of the records 43 exceeds the load of flat springs 58 and it is only when this weight is lifted from the fingers that the flat springs 58 can rotate the fingers 52 to the "up" position and it is only in the "up" position of fingers 52 that arms 50 can be pulled back against stops 66 by tension springs 59. The stronger oppositely-acting compression springs 60 overcome the weaker tension springs 59 to normally swing the arms 50 out against the outer stops 65. When the high point of disc cam 41 pushes outwardly on rods 61 compression springs 60 are compressed and consequently tension springs 59 become influential in pulling back the arms 50 whenever detents 55 are freed.

The conventional tone arm 67 rotates about its axis member 68, being moved by a connecting link 69 (Figure 2) having a pin or outturned end 70 slidable in a slot 71 of the tone arm control lever 72 pivoted at 73.

The tone arm control lever 72 is urged toward the cam 32 by a pressure finger 74 pivoted at 75 on the framework and having a tail-piece 76 pulled by a spring 77 yieldably against an adjustable screw stop 78. A projection or cam follower 79 on the side of the lever 72 engages the peripheral edge of the cam 32.

A hook-shaped member 80 (Figure 3) on the

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lower side of lever 72 is adapted to slide beneath the inclined lower side of a tripper arm 82 having an upturned free end 83 positioned to engage a boss 81 on the lower side of the lever 72. The tripper arm 82 is pivoted at 84 and has an upstanding tail-piece 85 arranged to engage beneath a clutch-control lever 86. The lever 86 is fulcrumed at 88 on a bracket 89 and is let down by gravity of cam 32 assembly. The lever 82 is fulcrumed at 84 on a bracket 90. The bow spring 87 is fastened at one end 91 to the lower side of the cam 32. A helical shaped member 92 on the clutch collar 35 is arranged on rotation to engage beneath the free end portion of clutch control lever 86.

A pin 93 upstanding from the cam 32 and rotating therewith enters a recess 94 in non-rotary bushing 95 when the clutch is disengaged, that is when the cam 32 and its integral clutch member 35 are raised. As seen in Figure 3 the right-hand ends of both pin 93 and recess 94 are inclined so that when the cam 32 is rotated to the right the pin 93 will ride down out of the recess 94 and push the cam 32 and its connected clutch member down into positive engagement when clutch is released to engage.

A push rod 96 is positioned for vertical sliding movement in the frame having a right-angularly turned upper end 97 positioned beneath tripper arm 82 and having a lower right-angularly turned end 98 positioned to be lifted by one member of a divided selector arm 99. The two members of the arm 99 are for the purpose of straddling the tube 16 but the same are joined together by the pivot 100 at one end and by the web 101 at the other end so as to constitute in mechanical effect a single arm 99 which has an elongated slot 102 about the pivot 100. A spring or springs 103 wound about pivot 100 engage a pin or pins 104 on the selector arm 99 so as to normally lower the arm to the lowermost position of Figure 1. The arm 99 is raised by contact of a lug 105 with the web 101, the lug 105 being on a collar 106 fixed on the lower end portion of the spindle 17. The lug 105 projects through a guide slot 107 in tube 16. The upper and lower end walls of the slot 107 constitute stops for the lug 105. The lower end of the spindle 17 rests on a counterbalance spring 108 housed within the lower part of tube 16.

The arm web 101 carries a slide bar 109 having slots 110 to slide back and forth on screws or pins 111 held by the web 101. A spring 112 on the web 101 tends to yieldingly retract the slide bar 109 but permits the slide bar to be projected out from the arm. The outer end of slide bar 109 is of a width to move freely up and down in the vertical slot between the opposed side edges 113 of a C-rail track 114 held to the tube 16 or to other frame parts by the bracket arms 115. At the outer free end of the slide bar 109 are lateral extensions 116 to overlap the inner side faces of the jaws or side edges 113 of the C-rail track 114. In the upper swinging movement of the arm 99 the lateral extensions 116 are adapted to slide over the inclined bottom edges of ratchet teeth 117 on the inner faces of the jaws 113, which movement is accompanied by the outer sliding of the slide bar 109 on web 101 as permitted by spring 112 which promptly pulls the slide bar 109 back to the right (Figure 1) whereby to engage the lateral extensions 116 with the upper horizontal edges of the ratchet teeth 117.

The lateral extensions 116 are also arranged

as indicated in Figure 1 to engage the curved lips 118 at the lower ends of the jaws 113. A raised rib 119 on the free end of the slide bar 109 is arranged in the path of the inner ends of a vertical bank of sliding latches 120 corresponding in number to the number of records in the magazine. The latches 120 slide horizontally through a supporting plate and through slots 122 in the base of the C-rail track 114, having inclined lower edges 123 to engage the lower edges of the slots 122 to cause the inner ends of the latches 120 to ride upwardly until the ratchet teeth 124 clear the lower edges of the slots 122; whereupon the latches 120 fall by gravity into the position shown by the uppermost latch in Figure 5 with the ratchet tooth 124 interlocking with the lower edge of the slot 122 to hold the latch against being automatically returned to the outer position. Downturned lugs 125 on the inner ends of the latches 120 are adapted to be engaged by the rib 119 on the slide bar 109. The latches 120 have individual springs 126 for yieldably urging them outwardly, that is to the left in Figure 1 and the free ends of these round springs 126 which extend beyond the latches 120 are positioned to engage a swinging switch bar 127 pivoted at its upper end 128 and normally hanging in such position that the switch at 129 is open. A spring 130 tends to pull the switch bar 127 to the left to hold the switch 129 open.

A pawl 131 pivoted on the switch bar 127 has a tooth 132 adjoining inclined edge 133 adapted to hook over a pin 134 extending between the jaws 113 when the switch bar is pushed to the right by one of the latch springs 126. The pin 134 is above the topmost latch 120 and above a point where the jaws 113 are cut-away to permit the lateral extensions 116 to pass from the inside to the outside of the C-rail track 114. A dependent leg 135 on the free end of the pawl 131 is arranged to be encountered by the rising arm 99 to lift the tooth 132 from the pin 134.

The operation is as follows:

As shown for best description Figure 1 indicates the machine in playing position on No. 6 record, there being twelve records in the stack. No. 6 latch 120 has been pushed in.

But to consider the operation from the start, assume the mechanism to be stopped in the normal inoperative position, i. e. the turntable 18 in the extreme top position, all records on board. The tone arm 67 has been swept aside where it will remain until ready to play a selected record. In this position the bottom record is slightly above the protruding fingers 52. The motor control switch 129 has previously been opened at this point by means of the spring 130.

In this position the selector arm 99 also has been carried to its topmost position as shown in dotted lines in Figure 1. Here as shown, the slide bar 109 has arrived at the cut-away portion or opening in the jaws 113 of the C-rail track 114. It will be understood that in rising from the lowermost position of the arm 99 the lateral extensions 116 engage curved lips 118, pulling slide bar 109 out so that the lateral extensions may pass within C-rail track and engage the ratchet teeth 117. In thus moving the spring 112 is put under tension. Consequently when the arm 99 reaches its uppermost position where the lateral extensions are presented to the cut-away portions 136 the extensions are no longer under the restraint of the jaws 113 and the spring 112 is free to retract the slide bar 109, drawing the extensions 116 to the outside of the jaws

113, down which they may freely move without interference from the ratchet teeth 117. As soon as the lateral extensions 116 clear the jaws the spring 103 swings the selector arm 99 to its lowermost position.

Now upon pressing in one of the selector latches 120, for example No. 6, the motor switch 129 is simultaneously closed by spring 126 moving switch bar 127. The motor 48 starts, the cam shaft clutch 35, 36 being already engaged, cam 26 starts the turntable on its downward travel. Before the lowermost record thereon contacts the fingers 52, these fingers have receded out of the path of the records by reason of the action of cam 41 against push rods 61 and springs 60. The detents 55 do not engage the lower edges of slots 54 as the centerpose springs 58 have raised the fingers 52 to a point to clear the detents 55.

Hence the turntable 18, spindle 17 and collar 106 descend on the tube 16 to the extreme lower end of their travel. As the lug 105 descends the selector arm 99 follows down by action of its spring 103. Incidentally pressure is built up in the counterbalance spring 108 which overcomes the weight of the turntable, records, etc., and bears the roller 22 upwardly against the lower part of the cam track 25.

As the selector arm 99 and slide bar 109 approach the lower end of their travel the lateral extensions 116 sliding down the outer faces of jaws 113 encounter the outer faces of the curved lips 118 so that extensions 116 and slide bar 109 are automatically shifted to the right the required distance to enable the extensions 116 to clear the outside faces of the lips and then subsequently be returned by the spring 112 to a central position where on the next rise of arm 99 the extensions 116 will engage the inner faces of curved lips 118 so as to be drawn into the interior of the C-rail track 114.

Now as cam 26 continues in rotating the spindle 17, turntable 18 and selector arm 99 start upward, the lug 105 on collar 106 engaging web 101 and lifting arm 99 against the action of its spring 103. Travel proceeds until the slide bar 109 engages the first depressed selector latch 120, which in this example is No. 6. Upon engagement against this latch the selector arm 99 is brought to a stop; thereby lug 105, spindle 17, turntable 18 and records thereon are held stationary at this elevation. At this point cam 41 releases its pressure on push rods 61 and compression springs 60 and allows springs 60 to again come into play and project fingers 52 between records No. 6 and No. 7, this being the elevation at which the turntable 18 has come to stop relative to selector latch No. 6.

With the spindle thus arrested the cam 26 continues to raise sleeve 23, the spring 19 allowing for such relative movement by slipping upwardly over the slightly corrugated section 20 of the spindle 17. However, this grip spring 19 must hold rather firmly through other operations.

Now that the records have been set for division on the selected number the cam 26 continues into a second cycle and starts the turntable on a downward travel. Soon after the records above the fingers 52 are left to rest thereupon the cam 41 presses back the compression springs 60 but the fingers 52 are locked out by the detents 55.

As the turntable lowers, the spindle 17 carries down the collar 106 and lug 105 which allows selector arm 99 to descend. However, arm 99 moves down only a slight degree sufficient to disengage latch 120 and settle the lateral extensions

116 against the immediate ratchet tooth 117, there to reside until the next changing cycle.

The turntable continues to descend to a point just below the playing position of the record selected, meanwhile picking up rotation by contact with driving hub 46; then, by virtue of the track 25 of cam 26, is caused to rise, gently engaging the record against the predisposed needle. The tone arm 67 is borne into this starting position by means of the tone arm control lever 72, the lateral extension 79 of which has followed the contour of cam 32 to the point of clearance as shown in Figure 2. The above positioning is further determined by finger 74 and the setting of screw stop 78.

At this time the cam shaft clutch 35, 36 is disengaged, and the record is played to the finish groove. The declutching is permissible when pin 93 arrives opposite recess 94 into which the pin is pushed by the expansion of spring 87 reacting against lever 86 (Figure 3).

As the needle is led inward by the finish groove the tone arm 67 is swept toward the center of the record. With it is carried the tone arm operating lever 72 by means of the connecting link 69. As this occurs the hook shaped member 80 slides under the inclined lower edge of tripper arm 82, thus raising said arm, which bellcranks to remove its upturned end from beneath clutch control lever 86. Being supported upon lever 86 through spring 87, the cam 32, with its clutch hub 35, drops by gravity into engagement with clutch teeth 36 of gear 28, and the cam shaft assembly is set in rotation.

Immediately cam 26 lowers the turntable and records thereon to clear the needle as the tone arm 67 rests on an adjustable support within the arm. Thereupon the tone arm 67 is carried aside to clear the edge of the records, the tone arm operating lever 72 executing this movement through its lateral extension 79 impinging against the periphery of the cam 32.

Meanwhile cam 26 has lowered the turntable, spindle 17 and its assembly to the extreme bottom position where lug 105 on collar 106 abuts against the lower end wall of the guide slot 107 in tube 16. The carrier sleeve 23 continues downward while grip spring 19 allows slippage on spindle 17 until sleeve 23 arrives at its lowermost position relative to bottom of track 25 of cam 26.

Thus the spindle 17 is gripped in relative position to carry the turntable to the extreme top position, i. e., clearing the bottom record thereon above the fingers 52 which then are caused to protrude as previously described. In this position the power supply is cut off and the mechanism stops ready for the next play. As the top record on the turntable, in this case No. 6, rose against fingers 52, detents 55 were disengaged and the fingers were retracted by springs 59, clearing the path for the upwardly-moving records.

During the first part of the cam shaft cycle, or just after the clutch 35, 36 has been engaged, the helical shaped member 92, affixed to cam 32, hooks under clutch control lever 86, raising it to a point where tripper arm end 85 can drop under the lever 86, thus resetting lever 86 in normal position.

It is to be noted that in any case when the turntable ascends to its topmost position the clutch control lever 86 is retripped as follows: selector arm 99, which is also in top position, engages push rod 96 at its lower end 98, bearing it upward against tripper arm 82 at its upper end 87; thereby, as described in previous tripping ac-

tion, allowing continued engagement of the clutch 35, 36 for a second cycle. A second cycle is necessary in two cases—first, when the mechanism stops in inoperative position, i. e., ready for the selecting cycle of any record; second, in case, while machine is playing, a selection is registered for one or more of the records still in the magazine stack or residing on the fingers 52. It will be apparent that reloading the turntable with all records is then necessary ahead of the next selecting cycle. In either case during the reloading cycle the tone arm is detained in clear of the records by the end 83 of the tripper arm 82, which is then in the path of boss 81 of the tone arm operating lever 72.

The operation of the selector is as follows:

By exerting an inward pressure with the push buttons 137 or otherwise on the tapered ends 138 of the latches 120, they will be depressed against the action of spring 126 with a downward tendency, causing the latch to hook over and lock by engagement of its ratchet tooth 124 with the lower edge of slot 122, as shown in Figure 5 by latch No. 1. This imposes the hook end 125 of the latch in the path of the raised rib 119 of the slide bar 109 so that when the selector arm 99 travels upward, such rib 119 engages the aforesaid hook 125, as shown in Figure 1 in connection with latch No. 6. This engagement locks the latch from retraction by its spring 126 as the inner end of the latch is raised by the rising arm 99 to a position where the ratchet tooth 124 is lifted from the bottom edge of slot 122. The latch is borne against the upper edge of slot 122 by pressure of the selector arm 99 as the grip spring 19 slips on the spindle 17 and selection or division of the records takes place.

When the selector arm 99 starts downward the hook engagement between 119 and 125 is released, the point of tooth 124 residing or resting on the lower edge of slot 122 during the releasing movement. The latch is then allowed to return to its normal position by action of its spring 126, as shown in Figure 1, latch No. 12.

During the period of playing of a record, as for example No. 6, selector latches 120 may be depressed and registered for succeeding plays. If these selections, in the present case, are between No. 6 and No. 1, the selector arm 99 simply succeeds on selections up its travel, playing through No. 1, the mechanism making only one cycle to change each record. If, however, selector latches 120 are depressed between No. 6 and No. 12 during the playing of No. 6, the turntable must be reloaded before a higher record or a record remaining above the fingers can select. So the selector arm 99 will have to travel to its topmost position, retrip the clutch arm, as previously described, allowing the reloaded turntable to descend, then to complete the selecting cycle, as previously described. This makes it necessary for the selector arm 99 to reside just below each selector latch during the playing of its respective record, and not return to its bottom position unless the turntable is fully loaded with records; else it might try to select a record that is not even on the turntable.

The slide bar 109, by virtue of the centering spring 12, allows for the ratchet action between lateral extension 116 and the teeth 117. The retention of the selector arm 99 is effected when slide bar 109 is released from engagement with the selector latches 120 and is drawn back by spring 112 so as to engage lateral extensions

116 on top of ratchet teeth 117, this occurring just as arm 99 starts in downward travel.

As switch bar 127 is carried to the right by any one of the selector latch springs 126, circuit is established and the motor 48 starts. As long as any latch 120 remains depressed the motor continues to run. When the last selector latch is released, during function of selecting, as previously described, the switch bar 127 is released by the selector latch springs 126 but is still held in contact position by pawl 131 which engages over pin 134. This pawl 131 is not disengaged until selector arm 99 reaches its topmost position which represents the normal stand-by position of the mechanism, when the switch bar 127 is released and the mechanism stops by opening the circuit at 129. Of course, if pawl 131 is disengaged between selections still registered to be played, the selector latch springs 126 retain the switch bar 127 in the "on" position.

The notch 94 in bushing 95, best shown in Figure 3, receives pin 93 affixed to shaft 34 for the purpose of "timing out" the clutch. As spring 87 rides over arm 82 (clutch member down or in) tension of spring is built up to press clutch member up or out. This cannot actually take place until pin 93 is coincident with the notch 94 which is the proper stopping position of the cam shaft relative to playing position of the turntable. The inclined surfaces of the notch 94 and pin 93 tend to force clutch into full engagement in case it does not fully drop by gravity but does catch enough to impart rotation.

The pawl 131 carries a tooth 132 to hook over a pin 134 in the C rail to hold switch bar 127 with contact 129 in the "on" position even after springs 126 have been released. The hook 132 is disengaged by contact at top position of selector arm 101 which is stand-by position of mechanism. If, while a record is playing a higher "numbered" (or lower latch) selection is "pressed," the selector arm 101 will cycle through the top position disengaging the hook or pawl 131 but the contact bar 127 is then being held "on" by the latter selected latch. This member 131 and its pawl may be a flat steel stamping if desired.

Referring to Figure 2, the difference in radius between the point at which the extension 79 of lever 72 leaves contact with cam 32 and the extreme outer radius of cam 32 represents travel of the tone arm from a position clear of the records to the point at which the needle engages the starting groove of the record; therefore, the stop 78 is adjusted to predetermine this latter position. At this position of the cam 32, the cam shaft stops to allow the record to play. As the needle traverses the record toward the center, the extension 79 of arm 72 travels into the recess of the cam 32 where it is engaged at the end of the record when the cam shaft is set in rotation carrying the tone arm across the record and clear of the records. A slight differential in the aforesaid radii is amplified by leverage to accomplish the necessary clearance, which is actually only one inch in needle travel.

It is obvious that various changes and modifications may be made in the details of construction and design of the above specifically described embodiment of this invention without departing from the spirit thereof, such changes and modifications being restricted only by the scope of the following claims:

1. A record changer comprising a turntable for carrying a stack of phonograph records, a vertically movable post rotatably carrying said turn-

table, a tubular shaft mounted over said post for relatively rotatable and vertically sliding motion and having a rotatable driving hub adapted to contact said turntable, rotary means for both rotating said tubular shaft and for raising and lowering said post and turntable, a projection movable up and down with said post, a movable selector arm in the path of and moved by said projection, selector latches movably mounted and selectively depressible into the path of said arm for arresting the movement of the arm and said turntable to bring the records to a selected elevated position controlled by the particular latch selected, horizontally movable fingers mounted adjacent the record stack and adapted to enter between records of the stack to divide the same into upper and lower sections and to support the upper section, finger projecting means timed to project the fingers following the arrest of the upward movement of the turntable, and record playing means movable into and out of the path of the records for playing the top record of the lower section when the turntable is lowered to expose such record.

2. A record changer comprising a turntable carrying a stack of phonograph records and being movable vertically and also rotatable, elevating means for raising and lowering said turntable, horizontally projectible supporting means positioned to enter between selected records and to divide the stack of records into upper and lower sections and for supporting the upper section, a projection movable up and down with said turntable, a movable selector arm in the path of and adapted to be moved by said projection and having a selector latch nose, a plurality of horizontally movable latches vertically disposed above one another and corresponding to the various records on the record stack, latch means for holding said latches in the depressed position, retracting means for restoring the latches to origin position when said latch means is released, said nose positioned in the path of said latches when depressed and moving in a direction to disengage said latching means, secondary latching means between said latches and said nose, said nose adapted to fall by gravity to disengage said secondary latching means, projecting means timed to project said supporting means between the records when the same have been halted by the engagement of said nose with a depressed latch, said elevating means adapted to subsequently lower said turntable with the lower section of records, and a movably mounted reproducing tone arm having a needle movable into playing engagement with the exposed upper record of the lower section, and means for rotating said turntable.

3. A record changer as claimed in claim 2 characterized by the fact that the first mentioned latching means comprises slots through which the inner end portions of the latches are slidable with bars below the slots to receive notched shoulders of the latches.

4. A record changer as claimed in claim 3 further characterized by the fact that upwardly and inwardly inclined surfaces on the under sides of the latches originating from said shoulders are adapted to rest on the bars when the first mentioned latching means is released by reason of the nose encountering and lifting an inner end of a latch.

5. A record changer as claimed in claim 4 characterized by the fact that the second latching means comprises hooks mutually turned toward

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one another upon the inner ends of the latches and upon the outer end of the nose.

6. A record changer as claimed in claim 5 wherein a guide for the nose is provided with ratchet means to limit the downward movement of the nose substantially beyond a point where necessary to release the secondary latching means.

7. A record changer as claimed in claim 6 wherein the nose is spring-biased to an inwardly retracted position, a guide bar spaced inwardly from the inner ends of the latches, said guide bar and nose having means therebetween for projecting the nose outwardly in position to encounter the depressed latches as the projection lifts the selector arm.

8. A record changer comprising a rotatable and vertically movable turntable carrying a stack of records, elevating means for raising and lowering said turntable, rotary means for rotating said turntable, playing means for engaging and playing a selected record on said turntable, a selector mechanism for arresting the elevating movement of the turntable at a selected vertical position, fingers at the edges of the records adapted to be projecting between adjacent records, movable arms on which said fingers are pivoted, relatively strong springs for urging said arms and fingers to the outwardly projecting pressure of said strong springs from said arms, lighter springs for retracting said arms and fingers when the load of the stronger springs is so relieved, hollow posts having slots through which the pivoted fingers project, catches on the under sides of said fingers adapted to engage the lower edges of the slots, the slots being high enough to permit rotation of the pivoted fingers sufficiently to release the catches from the lower edges, said fingers having inner end portions with oppositely disposed projections, and flat springs engaging against said projections to bias the fingers to released position.

9. A record changer comprising a rotary and vertically movable turntable carrying a stack of records, elevating means for raising and lowering said turntable, rotary means for rotating said turntable, horizontally movable supporting means positioned to enter between selected records to divide the stack into upper and lower sections with the upper section held upon said supporting means while the turntable is lowered with the

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upper record of the lower section exposed for playing, projecting means for projecting said supporting means at a selected elevation of the turntable and record stack, drive means for the projecting means, a clutch for connecting said driving means and projecting means, clutch disengaging means comprising a clutch controlled lever carried adjacent said clutch and a spring carried by said clutch in the path of said lever and so related thereto as to be compressed by said lever to place the clutch under disconnecting tension, and means for maintaining the clutch engaged in opposition to such tension and timed to permit disengagement of the clutch when the top record of the lower section is in playing position.

10. A record changer as claimed in claim 9 in which a tripper arm is pivotally mounted crosswise of the clutch control lever having an upturned portion adapted to support a clutch control lever in raised position, a swinging tone arm, means to swing said tone arm into and out of operative playing position with respect to the selected record, and a part carried by said last named means positioned in the path of said tripper arm to move the same to shift the upturned portion out of supporting relation to said clutch control lever.

11. A record changer as claimed in claim 10 characterized by the fact that a second member for tripping the tripper arm is arranged in the path of a member of the selector mechanism.

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