

Jan. 15, 1963

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AUTOMATIC PHONOGRAPH

3,073,604

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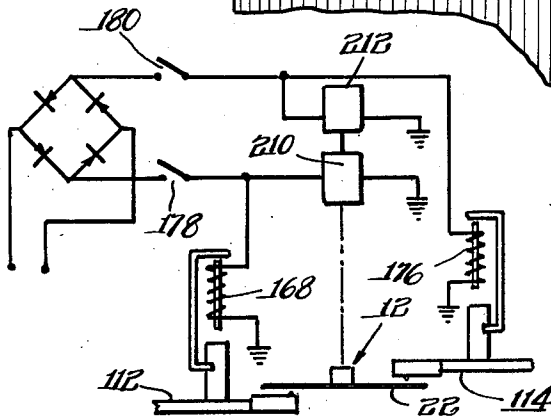
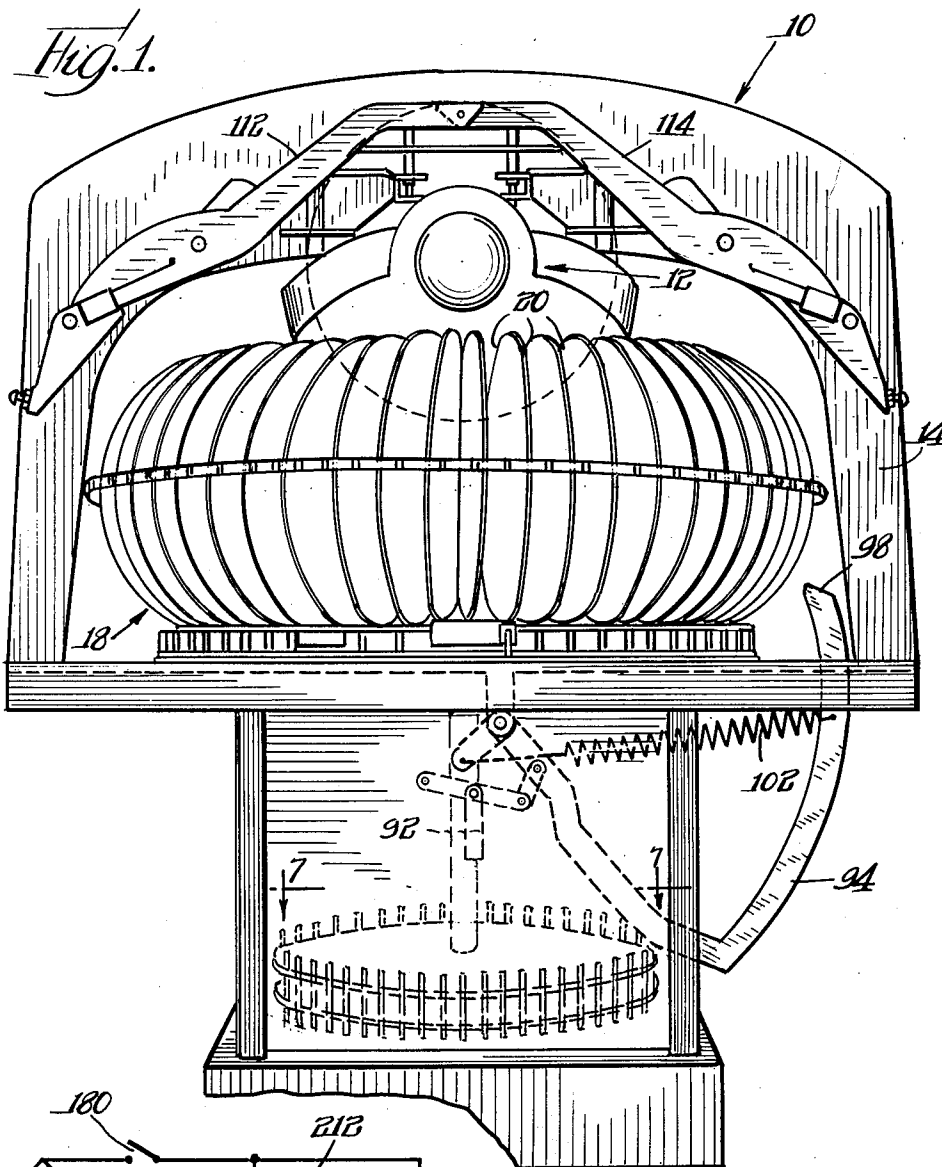


Fig. 10.

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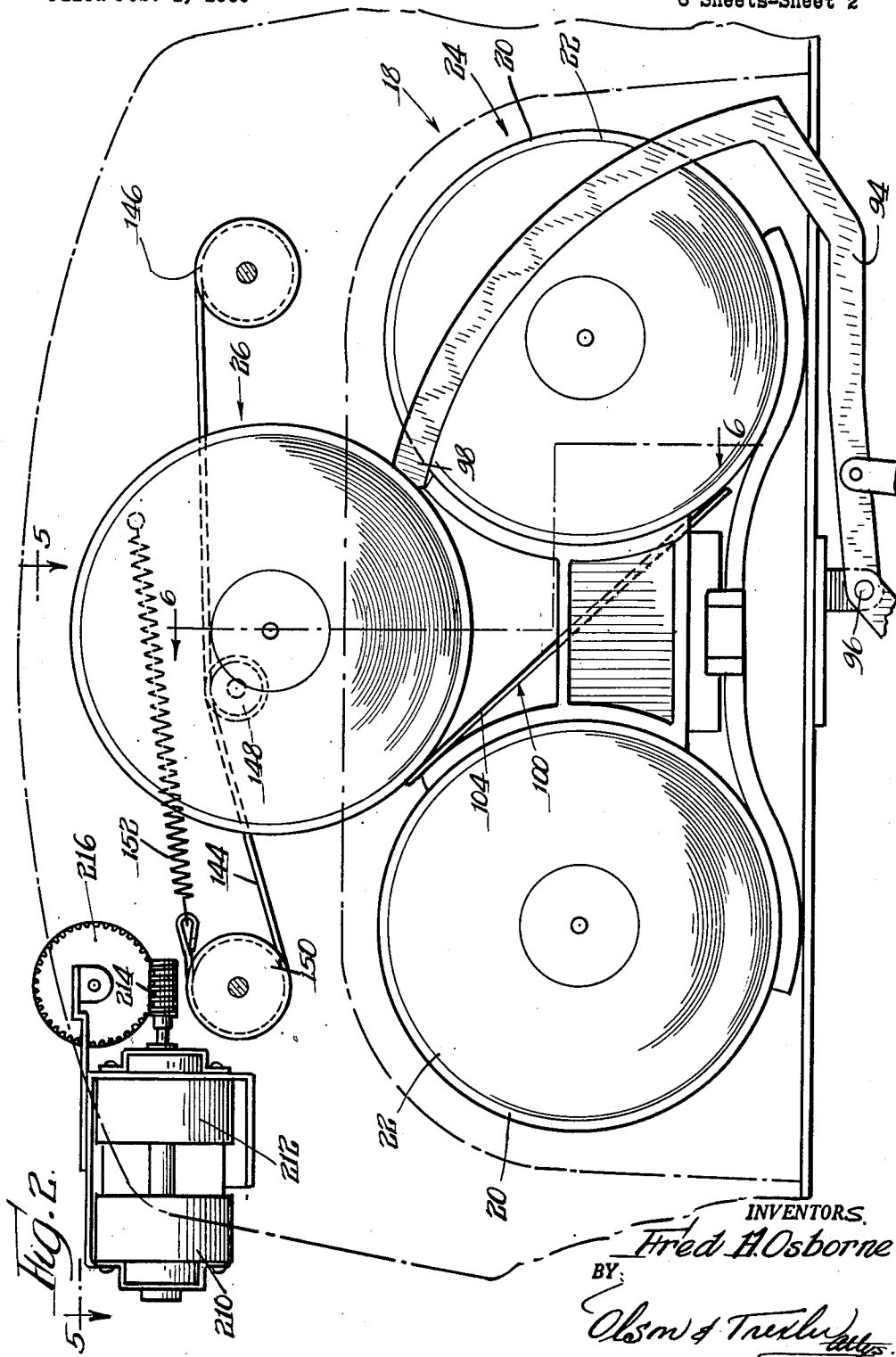
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Fig. 5.

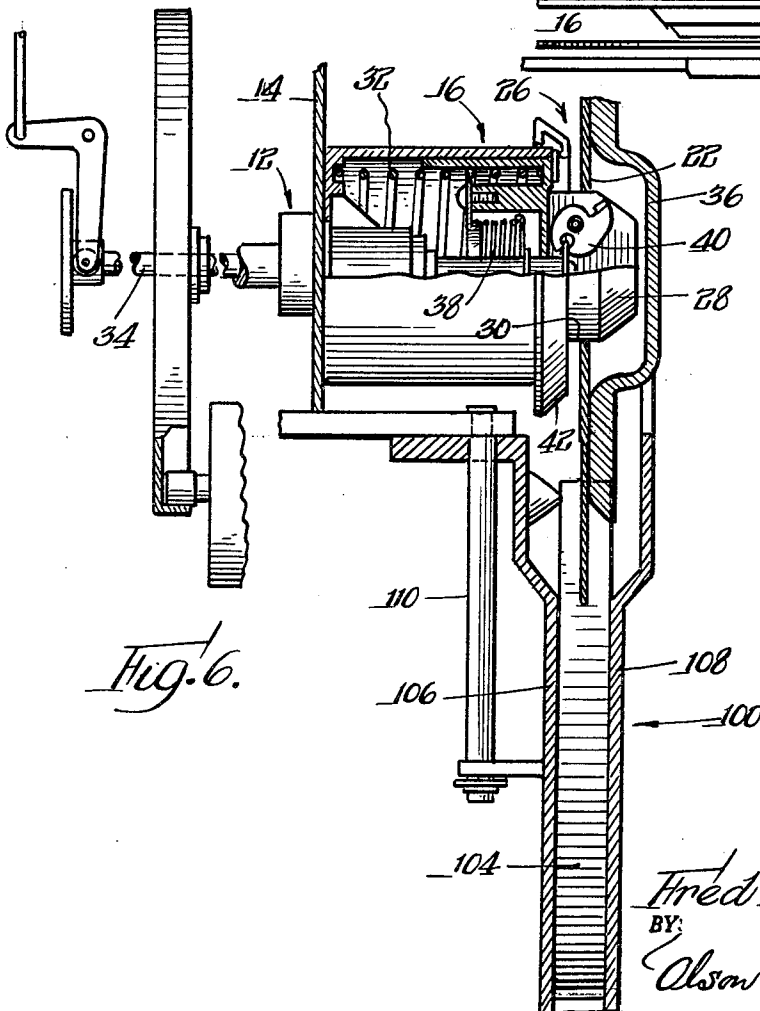
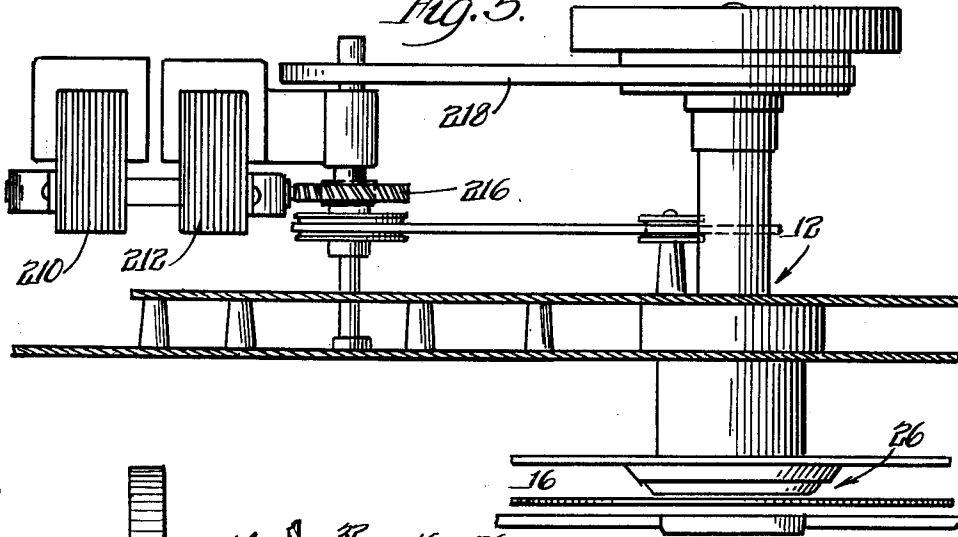


Fig. 6.

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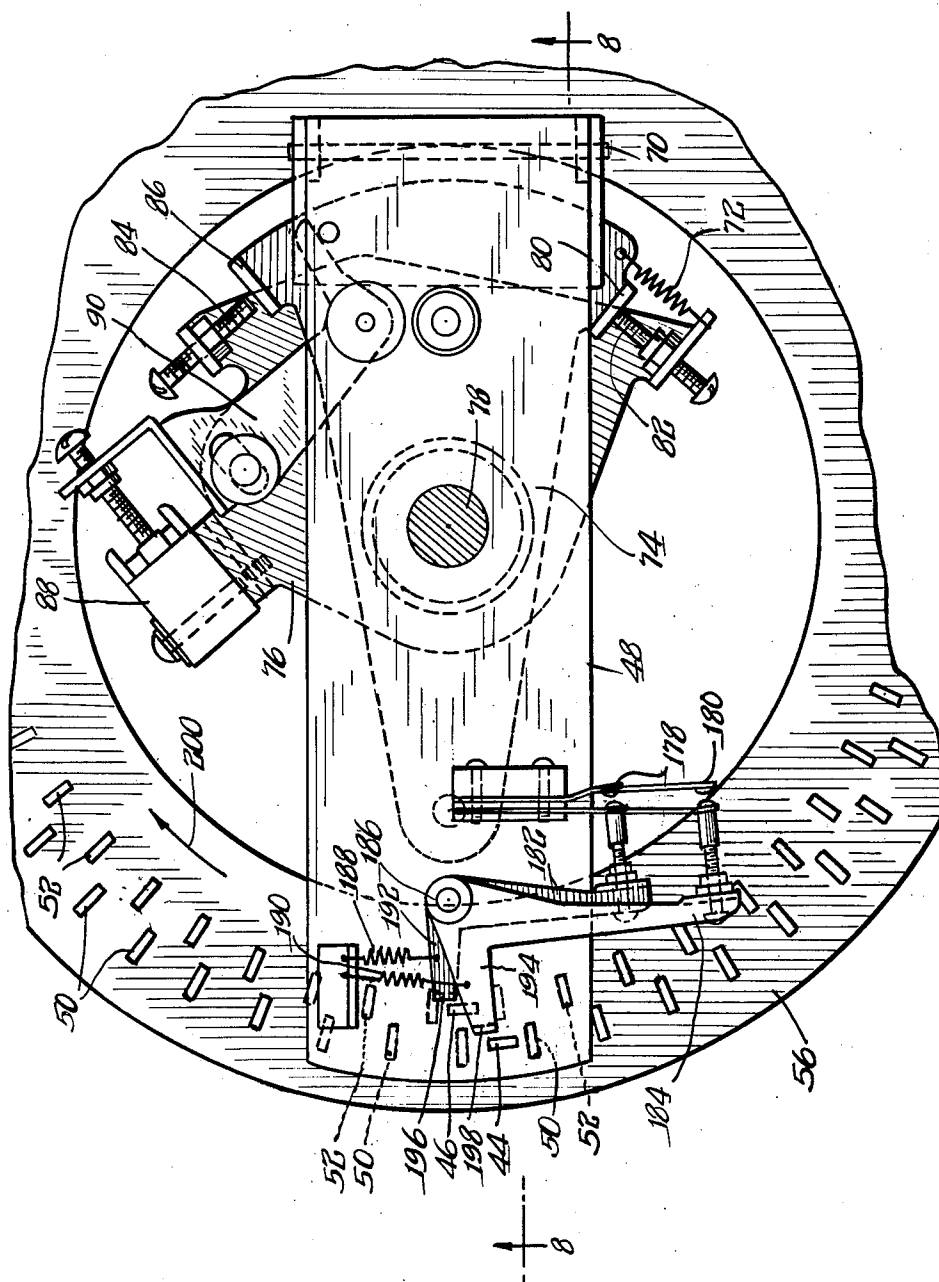
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AUTOMATIC PHONOGRAPH

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6 Sheets-Sheet 5



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AUTOMATIC PHONOGRAPH

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3 Claims. (Cl. 274—10)

The present invention relates to coin controlled, automatic phonographs or jukeboxes.

One object of the invention is to provide an improved automatic phonograph or jukebox having an improved construction and mode of operation which simplifies the structure required for effecting playing of records normally carried in a magazine, while at the same time providing operating efficiency and advantages of a worth while character.

Another object is to simplify the structure used in an improved automatic phonograph to temporarily transfer individual records from a rotary magazine to a turntable for playing, while at the same time providing for efficient and advantageous playing of either side of a record transferred to the turntable.

Another object is to provide, in an automatic phonograph or jukebox, new and improved means for controlling the playing of either side of a record mounted on a turntable in accordance with the setting of conventional selector elements incorporated into the machine.

A further object is to provide, in an automatic phonograph, new and improved means which responds automatically to the presetting of selector elements to transfer any desired selection of records successively from a rotary magazine to a turntable through a transfer path extending from only one side of the turntable and to effect playing of either side of individual records on the turntable in accordance with the setting of the selector elements.

Another object is to provide new and improved means for transferring records from a single transfer station to a turntable and for playing either side of a record on the turntable by means of two tone arms, both of which carry pickups in dragging relation to the supports for the respective arms.

Other objects and advantages will become apparent from the following description of the invention taken with reference to the accompanying drawings, in which:

FIGURE 1 is a simplified elevational view of an automatic phonograph or juke box forming the exemplary embodiment of the invention, from which certain housing components and other elements have been removed for clearness in illustration;

FIG. 2 is a vertical sectional view on a somewhat enlarged scale showing the upper portion of the phonograph of FIG. 1;

FIG. 3 is a fragmentary elevational view showing the dual tone arm assembly used in the phonograph;

FIG. 4 is a horizontal plan view of the tone arms and tone arm control structure of FIG. 3;

FIG. 5 is a horizontal sectional view taken generally along the line 5—5 of FIG. 2 and showing the turntable drive structure;

FIG. 6 is a vertical sectional view taken along the irregular line 6—6 of FIG. 2 and showing the turntable head and fixed record support and guide structure used to transfer individual records to the head for playing;

FIG. 7 is a fragmentary sectional view taken generally along the line 7—7 of FIG. 1 and showing control structure used in controlling the selection and playing of records by the phonograph;

FIG. 8 is a vertical sectional view of the control structure taken with reference to the irregular line 8—8 in FIG. 7;

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FIG. 9 is a fragmentary elevational view taken with reference to the line 9—9 of FIG. 8; and

FIG. 10 is a simplified diagrammatic illustration of electrical circuits used in controlling the playing of records supported by the turntable.

Referring to the drawings in greater detail, the automatic phonograph or jukebox 10 forming the exemplary embodiment of the invention illustrated comprises a turntable 12, FIGS. 1 and 6, journaled on a support frame 14 for rotation about a horizontal axis. The turntable includes a record clamping and support head 16 of generally conventional construction which is centrally located in vertically spaced relation to a toroidal record magazine 18 supported on the frame 14 for rotation about a vertical axis.

The magazine 18 defines an annular series of radially disposed record holders or receivers 20, each of which is adapted to support a record 22 on edge, as shown in FIG. 2. The construction of the toroidal record magazine 18, as such, is conventional and well known in the commercial jukebox art. A magazine of this character is disclosed in United States application Serial No. 388,242, filed October 26, 1953 and assigned to the assignee of the present application. The magazine 18 thus formed is rotated about its own axis to move the record holders 20 through a circular path which carries the successive holders through a transfer station 24, FIG. 2, located in the path of the holders in a position which is symmetric with respect to a central plane that substantially coincides with the plane in which a record is supported by the turntable head 16 for playing, as will presently appear. The drive means used to rotate the magazine 18 is similar to that disclosed in the above mentioned application Serial No. 388,242, and need not be illustrated or described here in order to convey an understanding of the present invention.

The record clamping and support head 16 of the turntable 12, FIGS. 5 and 6, is designed to receive and clamp for rotation a record 22 transferred from the transfer station 24 to a loading station 26 aligned with the projecting free end of the head 16, as shown in FIG. 6. The loading station 26 is situated above the transfer station 24 and displaced horizontally to one side of the transfer station toward the axis of the magazine 18. Actually, the axis of the magazine 18 extends substantially through the center of the loading station 26 which has a central plane substantially coinciding with the previously mentioned plane of symmetry of the transfer station 24. This location of the record loading station relative to the transfer station facilitates transfer of records from the magazine 18 into positions of alignment with the turntable head 16, as will presently appear.

The specific construction of the turntable head 16, as such, is conventional. In general, the head 16 comprises an axially protruding spindle 28 on the loading station end of the head, which is projected through a large central aperture 30 in a record aligned with the spindle. The spindle is advanced into the record aperture 30 by a compression spring 32 in the head which extends the spindle upon operation of a central control rod 34 to release the spindle for extension in the direction of the record loading station.

It will be noted that the means defining the record loading station 26 includes a generally vertical record butressing member 36 which is recessed to provide clearance for the free end of the spindle 28 and shaped to engage and support the record radially outward of the spindle. When the spindle 28 reaches its fully advanced position, a second compression spring 38 in the head 16 operates to swing a number of record clamping dogs 40 from retracted positions in the spindle into engagement with the

inner marginal edge of the adjacent record, to clamp the record against a support collar 42 where it is held firmly for rotation by the turntable in a direction which is pre-selected in accordance with the side of the record to be played, in a manner to be described presently.

The improved phonograph 10 is controlled and operated in a new and improved manner which simplifies the structure used to transfer individual records from the transfer station 24 to the record loading station 26 for playing, while at the same time providing for most efficient playing of either desired side of a record moved into alinement with the turntable from the single transfer station 24 located at one side of the turntable, as described.

A record to be played is located in the single transfer station 24 by the operation of selector means which terminates rotation of the magazine 18 when the magazine holder 20 containing the record reaches a position of alinement with the transfer station. Moreover, the selector means used in locating the desired record in the transfer station is also utilized, as will presently appear, to effect the playing of the desired side of the record after it has been moved from the transfer station into a mounted position on the turntable.

Selective termination of rotary movement of the magazine 18, to locate various selected records in the transfer station 24 is accomplished by means of a pair of abutment elements 44, 46 which depend from the radially projecting end of a support arm 48 mounted, as shown in FIGS. 7 to 9, for rotation with the magazine. The two abutment elements 44, 46 are carried in radially spaced relation to each other with respect to the axis of the magazine 18 to be moved in circular paths overlying the upwardly projecting ends of two annular series of circumferentially spaced selector pins 50, 52.

The upper ends of the two series of pins 50, 52 are concentric and radially spaced from each other, as shown in FIG. 7. The individual pins or stop elements in each series correspond to the respective record holders 20 in the magazine 18, one selector pin being provided in each series for each record holder.

A particular record in a given one of the magazine holders 20 can be located in the transfer station 24 either by engagement of the abutment element 44 with the particular one of the pins 50 corresponding to the given pocket, or by engagement of the abutment element 46 by the one of the pins 52 which corresponds to the same pocket. The side of the record which is subsequently played is determined, as will presently appear, by which of the two pins 50, 52 corresponding to the record is used to locate the record in the transfer station.

The structure and mode of mounting the selector pins or elements 50, 52 is not new with this invention. Similar selector pins similarly mounted are disclosed in the previously mentioned patent application Serial No. 388,242.

The upper ends of the pins 50, 52 are guided for vertical movement in radial slots 54 in an upper support and guide disk 56, the upper ends of the pins 52 being offset radially inward of the upper ends of the pins 50, as shown. Normally, each pin is retained in a lowered or depressed position by engagement of a notch 58 in the lower side edge of the pin with the adjacent edge of a lower support and guide plate 60 for the pin. The lower end of each pin is guidedly supported in a radial slot 62 in the plate 60 which has sufficient radial length to allow limited radial movement of the pin for releasing the pin, as will appear. A tension spring 64 connected between the lower portion of each pin and the outer periphery of the upper guide disk 56, as shown in FIG. 8, biases the lower end of the pin upwardly and radially outwardly to hold the retaining notch 58 in engagement with the lower plate 60.

Thus, with two selector pins provided for each record in the magazine 10, the two pins corresponding to the re-

spective sides of the record, there is a selector pin for each of the recorded selections or sides made available for playing. The individual pins corresponding to the selections or record sides to be played are "set" or activated by moving the lower ends of the pins radially inward, as indicated by the arrow 65 in FIG. 8. Radially inward movement of a selector pin disengages the retaining notch 58 from the plate 60, allowing the coacting spring 64 to shift the pin upwardly to a raised position in which the upper end of the notch protrudes into the rotary path of the coacting one of the abutment elements 44, 46. Upward movement of each released pin is limited by engagement of a toe 66 on the pin with the under side of the plate 60.

Each of the abutment elements 44, 46 defines, as does the element 44 shown in FIG. 9, a horizontally extending ledge 68 which moves into overlying relation to the upper end of an extended one of the selector pins which is engaged by the stop element to terminate rotary movement of the magazine. After the selector pin engaged by one of the stop elements 44, 46 has fully served its purpose in the selection and playing of a recording, the pin is returned to its normal position by downward swinging movement of the arm 48 about its support pivot 70. This causes the abutment ledge 68 in engagement with the pin to move the pin downwardly to a position where the coacting pin spring 64 engages the pin retaining notch 58 with the disk 60. The arm 48 is swung downwardly for this purpose by conventional components of the phonograph 10, which are disclosed in the previously mentioned application Serial No. 388,242.

The abutment carrying arm 48 is caused to rotate with the magazine 18 by means of a tension spring 72, FIGS. 7 and 9, which connects a rotary support element 74 for the arm pivot 70 with a sector element 76 non-rotatably connected with a shaft 78 which is connected to and rotates with the magazine 18. The spring 72 yieldably urges an ear 80 on the support 74 into engagement with an adjustable abutment 82 on the sector 76 which rotates with the magazine.

Engagement of one of the abutments 44, 46 with a set selector pin abuttingly stops rotation of the arm 48 and its support 74, but does not stop rotation of the magazine until the latter has continued its movement through a small predetermined angle to engage a second adjustable stop 84 on the sector 76 with a second ear 86 on the arm support 74. This continued movement of the sector 76 through a small angle after the arm support 74 has stopped rotating effects operation of a control switch 88 carried by the sector 76 and operated by a bell crank 90 on the sector 76 which coacts with the support 74 to be moved rotatably by relative movement of the support 74 and sector 76.

The switch 88 controls magazine drive structure and player operating means, as disclosed in the previously identified application Serial No. 388,242, to power components of the phonograph to effect playing of the record located in the transfer station, as will be described.

The actuating structure disclosed in the above mentioned application and included in the present phonograph 10 responds to the switch 88 to release a record pusher control link 92 to move upwardly, FIG. 1, to effect transfer of the selected record from the transfer station to the loading station.

A record located in the transfer station 24 in the manner described is shifted or transferred to the loading station 26 in alinement with the turntable by a simple upward swinging movement of a record pusher arm 94, FIGS. 1 and 2, shaped in the form of a scythe. One end of the arm 94 is mounted on a pivot 96, underlying the magazine 18, which supports the arm for swinging movement in a vertical path which carries the opposite end 98 of the arm from a normal position, shown in FIG. 1, upwardly through the transfer

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station 24 toward the loading station 26. As a matter of fact, the plane of movement of the arm 94 substantially coincides with the common plane of the transfer and loading stations.

The free end 98 of the arm 94 is shaped to engage the edge of the record in the loading station 24 at a position below the center of gravity of the record and push the record upwardly through an inclined guide chute 100 to the loading station. Progressive releasing of the link 92 to move upwardly as described enables a tension spring 102, interconnected with the arm 94 as shown in FIG. 1, to swing the arm 94 from its normal retracted position, shown in FIG. 1, to its upmost record loading position, shown in FIG. 2.

This upward swinging movement of the arm 94 carries the tip 98 of the arm through the transfer station 24 in an arcuate path which continues upwardly into immediate underlying relation to the record loading station 26.

The chute 100 which supports and guides a record as it is moved from the transfer to the loading station is extremely simple in construction. The bottom of the chute 100, FIGS. 2 and 6, is formed by a simple record support track element 104 which is fixed in an inclined position extending upwardly from the transfer station 24 to the loading station 26, as shown in FIG. 2.

Movement of a record along the fixed record support track 104 is guided by two side elements 106, 108 of the chute 100 which are firmly connected in fixed, spaced relation to each other and supported in generally vertical positions by a common pivot 110, which allows for limited swinging movement of the guide elements away from the normal position of the elements. This limited swinging movement of the guide chute structure is used to actuate a conventional safety deenergizing switch (not shown) in a well known manner to shut off the machine. Thus, in the event a record is not fully returned to its holder after being played, as will be described, damage to the machine as a result of jamming of a record between the chute structure and the magazine structure when the magazine is rotated after playing a record, is prevented by pivoting of the chute to shut off the machine, as recited.

After swinging upwardly to transfer a record into the loading station 26, the arm 94 remains in its raised position until playing of the record is completed. A record supported in the loading zone 26 by the fixed record support track 104 and the transfer arm tip 98, as shown in FIG. 2, is picked up by the forwardly tapered turntable spindle 28 and clamped against the collar 42 of the turntable head 16 in the manner previously described. This record pickup action of the turntable head 16 is produced by the previously mentioned movement of the control element 34 to the right, FIG. 6. Actuation of the control element 34 in timed relation to release of the link 92 to transfer a record into the loading station is effected by conventional actuating mechanism incorporated into the phonograph 10. Such mechanisms are disclosed in the United States patent application Serial No. 388,242, previously mentioned.

Either side of a record clamped in a vertical position on the turntable head 16 can be played through the operation of one of two tone arms 112, 114 disposed on opposite sides of the record, as shown in FIGS. 1, 3 and 4.

As will be described later in detail, both of the tone arms 112, 114 are normally held in inactive condition. The arm located on the side of the record to be played is activated or released to engage and play the desired recording by means of an automatic control which responds to the setting of a selector pin in one of the two series of selector pins 50, 52 previously described.

Generally similar operating mechanisms are used to actuate the two tone arms 112, 114. Both arms are actuated by rotary movement of an operating shaft 116 which

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is rotated in opposite directions through a predetermined angle by means of a cable 118 trained around a wheel 120 on the shaft. Actuation of the cable in timed relation to the champing of a record in playing position on the turntable is effected through conventional operating mechanism, as disclosed in the often mentioned patent application Serial No. 388,242.

The tone arms 112, 114 cantilever toward each other from substantially frictionless pivotal supports 122, 124 for the respective arms. These tone arm supports, as such, are of a well known construction and are horizontally spaced from each other and located on opposite sides of the turntable, as shown in FIGS. 3 and 4. The tone arms are yieldably urged toward a record 22 on the turntable 12 by means of springs 126, 128.

In operation, the tone arm 114, for example, is released as will be described, to engage the adjacent side of a record 22 near the outer periphery of the record at the beginning of the record groove. The tone arm is counterbalanced to swing easily in a counterclockwise direction with reference to FIG. 3 as the stylus 130 on the tone arm is carried radially toward the center of the record as the playing progresses.

Upon completion of the playing of the record the tone arm 114 operates a limit switch 132 in a conventional manner to effect through the previously mentioned actuating mechanisms action of the cable 118 to rotate the shaft 116 in a clockwise direction with reference to FIG. 3. This swings a radially projecting tone arm lifting cam 134 in the direction of rotation of the shaft 116. The cam 134 coacts with a cam follower 136 on the adjacent end of a medially pivoted tone arm lifting lever 138 to swing the latter in a clockwise direction with reference to FIG. 4. The cam 134 is shaped to effect movement of the lifting lever 138 through its full range of action as an incident to initial movement of the cam through only a fraction of its range of movement.

The end of the lever 138 opposite to the cam 136 is shaped to coact with the bracket 140 on the tone arm 114 to retract the arm and the stylus 130 from the record. Continued movement of the shaft 116 subsequent to lifting of the tone arm 114 operates through the conventional pivotal mounting structure 124 for the arm to swing the arm radially outward with respect to the turntable for alinement with the periphery of the next record to be played.

The tone arm 112 is operated in a similar manner by a horizontal shaft 142 which forms the counterpart of the shaft 116. The shaft 142 is rotated in synchronism with the shaft 116 but in an opposite direction, by means of an interconnecting power transmitting cable 144 trained around an actuating drum 146 fixed to the shaft 116. The cable 144 extends over a medial guide pulley 148, FIG. 2, and extends more than one turn around an actuating drum 150 fixed to the shaft 142. A tension spring 152 connected at the extreme end of the cable which projects from the drum 150 urges both of the shafts 142 and 116 toward the extreme rotary positions of these shafts. The shafts are moved toward their other extreme positions by tension applied to the actuating cable 118.

Rotation of the shaft 142, upon completion of the playing of the record, actuates a radial cam element 154, similar to the cam 134, to coact with a tone arm lifting lever 156 forming the counterpart of the tone arm lever 138. The lever 156 operates through a bracket 158 on the tone arm 112 to displace the arm and its pickup stylus 160 away from the record played. Since the tone arms are located on opposite sides of an intervening record, they are moved in opposite directions to lift their respective styli away from the record. Hence, the cam 154 is shaped to displace the lever 156 in the clockwise direction, to shift the tone arm 112 downwardly, with respect to FIG. 4, whereas the tone arm 114 is shifted upwardly, with respect to the same figure, upon completion of playing of the record. The shaft 142 swings the tone arm

112 outwardly to its starting position in the same manner that the tone arm 114 is actuated by the shaft 116.

Upon being lifted from a record and returned to its starting position, the tone arm 112 is latched in an inoperative or ineffective position by means of an L-shaped latch element 162 which engages a coacting notch 164 on the tone arm bracket 158. The latch 162 is swingably mounted on the medial pivot 166 and extends across a normally deenergized release solenoid 168.

The other tone arm 114 is normally latched in an inoperative position in a similar manner. Thus, upon return of the tone arm 114 to its starting position after playing a record, an L-shaped latch element 170 engages a coacting notch 172 in the tone arm bracket 140 to hold the tone arm against subsequent movement into engagement with a record. The latch element 170 is swingably mounted on the medial pivot 174 and extends at one end across a normally deenergized release solenoid 176.

After a record is clamped to the turntable head 16 for playing, as described, the cable 118 operates to rotate the shafts 116 and 142 in directions opposite to the respective directions in which the shafts rotate to return the tone arms to starting positions after playing a record. This causes the respective cams 134 and 154 to coact with the lifting levers 138 and 156 to allow movement of both tone arms 112 and 114 toward the record for playing. However, both arms are restrained from movement toward the record by the detent action of the latches 162, 170.

The desired side of the record is played by energizing one of the tone arm release solenoids 168, 176, to release the tone arm on the side of the record to be played. The continued restraint of the other tone arm against movement toward the record does not interfere with playing of the record by the released arm. The released arm is returned to its starting position after playing the record in the manner described.

Energization of the tone arm release solenoid corresponding to the side of the record to be played is controlled by two selector switches 178, 180 carried by the arm 48, FIGS. 7 to 9, for operation by the selector pins in the respective series of pins 52, 50.

As shown in FIG. 7, the switches 178 and 180 are operated by two bell crank levers 182, 184 swingably mounted on a common pivot 186 on the arm 48. Springs 188 and 190 coact with the levers 182, 184 to urge the latter in directions clockwise with respect to FIG. 7, for opening the respective switches 178 and 180.

The respective levers 182, 184 include legs 192, 194 which project radially outward from the pivot 186 and support depending abutment elements 196, 198 which extend below the arm 48, FIGS. 7 and 8, in adjacent relation to the respective abutment stops 46, 44. Moreover, the lever abutment elements 196, 198 are disposed in a slightly leaning position relative to the respective abutment stops 46, 44 and with respect to the direction of rotation of the arm 48, as indicated by the arrow 200 in FIG. 7.

Thus, as the lever stop 196 and stop 46 approach a "set" one of the selector pins 52 the lever stop 196 engages the set pin and swings the lever 182 in a counterclockwise direction, FIG. 7, to close the switch 178 as rotation of the arm 48 continues to bring the abutment stop 46 into engagement with the same set selector pin. In a similar manner, the lever abutment element 198 engages a set one of the selector pins 50 and closes the selector switch 180 as the abutment stop 44 moves into engagement with the set pin.

Hence, as an incident to stopping of the magazine 18 to locate a desired record in the transfer station 24, as described, one of the selector switches 178, 180 is closed, depending upon whether the magazine is stopped by a selector pin 52 or a selector pin 50. As shown in the simplified circuit diagram of FIG. 10, the selector switches 178 and 180 are connected to energize the re-

spective tone arm release solenoids, 168, 176. Consequently, the selector pins 50 operate to release the tone arm 114 to play one side of records mounted on the turntable, and the selector pins 52 operate to release the other tone arm 112 to play the other side of records mounted on the turntable.

The selector switches 178, 180 also serve to control the direction of rotation of the turntable 12 to rotate each record played in a direction corresponding to the side of the record being played. Thus, a record played by the tone arm 112 is rotated in the clockwise direction, with respect to FIG. 2, and a record played by the tone arm 114 is rotated in the counterclockwise direction, with respect to FIG. 2.

The turntable is rotated in opposite directions by two electric motors 210, 212 mounted in tandem, as shown in FIGS. 2 and 5, and connected through a common drive worm 214 with a worm wheel 216, which operates through a belt 218 to drive the turntable 12. The motor 210 drives the turntable 12 in the clockwise direction, with respect to FIGS. 1 and 2, and is connected for energization by the switch 178, as indicated in FIG. 10. The motor 212 drives the turntable in the opposite direction and is energized by the switch 180, as indicated in FIG. 10.

It will be appreciated that the pickup styli 130 and 160 of the respective tone arms 114, 112 operate in dragging relation to the support for the respective tone arms to provide the most efficient action in picking up sound signals from either selected side of the record being played.

It should be appreciated that the invention is not necessarily limited to the particular embodiment illustrated but includes variants and alternatives within the spirit and scope of the invention as defined by the claims.

The invention is claimed as follows:

1. In an automatic phonograph, the combination of means defining a single record transfer station located in a stationary position, a toroidal record magazine defining an annular series of record holders, means rotatably supporting said magazine for rotation about the axis thereof in a position such that the toroidal form of the magazine extends through said record transfer station, record selector means for rotatably indexing said magazine to move the individual holders thereof selectively into said record transfer station, a single turntable head defining a single record playing station located in a stationary position, said turntable head including means for rotatably supporting a record positioned in said playing station, two tone arms each including a pickup, two tone arm supports supporting said respective tone arms on opposite sides of said record playing station to engage and play opposite sides of a record supported by said turntable head, two tone arm control linkages interconnected for simultaneous operation and coacting with both said arms to condition both arms simultaneously for engaging opposite sides of a record supported by said turntable head, two solenoid latches coacting with said respective tone arms to restrain said respective arms selectively against engagement with a record supported by said turntable head, reversible driving means coacting with said turntable head to rotate the latter in either of two opposite directions, control means coacting with said reversible driving means and said solenoid latches to control said turntable head and said tone arms selectively for effecting selective playing of either side of a record supported by said turntable head, each of said tone arms being oriented to support the pickup thereof in dragging relation to the coacting support for the tone arm and with reference to the direction of turntable head rotation for playing the corresponding side of a record, a single record guide chute extending between said record transfer station and said record playing station and including a fixed record support element located in a stationary position extending from a record supporting position in relation to said

record transfer station continuously to a record supporting position in relation to said record playing station, and a single record transfer device movably reversible through said record transfer station and into said guide chute to transfer individual records from said record transfer station to said record playing station.

2. In an automatic phonograph, the combination of a single turntable head rotatable about a horizontal axis and defining a single record playing station located in a stationary position, said turntable head including means for supporting and rotating a record moved into said playing station, reversible drive means for rotating said turntable head in either of two opposite directions for playing either side of a record supported by the turntable head, means defining a single record transfer station disposed generally in the plane of said record playing station and located in a stationary position disposed downwardly from and laterally to one side of said record playing station, a single record guide chute extending between said record transfer station and said record playing station and including a fixed record support track located in a stationary upwardly inclined position extending from a record supporting position in relation to said record transfer station to a record supporting position in relation to said record playing station, a single record pusher element movable reversibly through said record transfer station and into said record guide chute to transfer individual records from said transfer station to said playing station for rotation by said turntable, a toroidal record magazine defining an annular series of record holders and being rotatably supported to move the individual record holders of the magazine selectively into said record transfer station for transfer by said pusher element along said record support track into said record playing station, two structurally separate tone arms disposed on opposite sides of said record playing station for playing opposite sides of a record supported by said turntable head, each of said tone arms including a pickup; support means supporting said respective tone arms in positions such that the pickup of each tone arm is, with reference to the corresponding direction of rotation of said turntable head, disposed in dragging relation to the support means for the tone arm; tone arm control means coacting with both said tone arms to activate said tone arms selectively for playing a record in said playing station, and control means coacting with said reversible head drive means and said tone arm control means to effect playing of either selected side of a record supported by said turntable head.

3. In an automatic phonograph, a movable record magazine defining a series of record holders, record selecting means coacting with said magazine for selectively positioning the latter to selectively locate individual holders in a single record transfer station located in a stationary position, a single turntable head defining a single record playing station located in a stationary position spaced from said single record playing station, said turntable head including means for rotatably supporting a record positioned in said playing station, two tone arms each including a pick-up, two tone arm supports supporting said respective tone arms on opposite sides of said record playing station to engage and play opposite sides of a record supported by said turntable head, two tone arm control linkages interconnected for simultaneous operation and coacting with both said arms to condition both arms simultaneously for engaging opposite sides of a record supported by said turntable head, two electrical tone arm controls coacting with said respective tone arms to restrain said respective arms selectively against engagement with a record supported by said turntable head, reversible driving means coacting with said turntable head to rotate the latter in either of two opposite directions for playing either side of a record supported by said turntable head, control means coacting with said reversible driving means and with said electrical tone arm controls to control said turntable head and said tone arms selectively for effecting selective playing of either side of a record supported by said turntable head, each of said tone arms being oriented to support the pick-up thereof in dragging relation to the coacting support for the tone arm with reference to the direction of turntable rotation for playing the side of a record corresponding to the tone arm, and means for transferring records from said single record transfer station to said single record playing station.

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