

June 18, 1957

R. F. MOORE

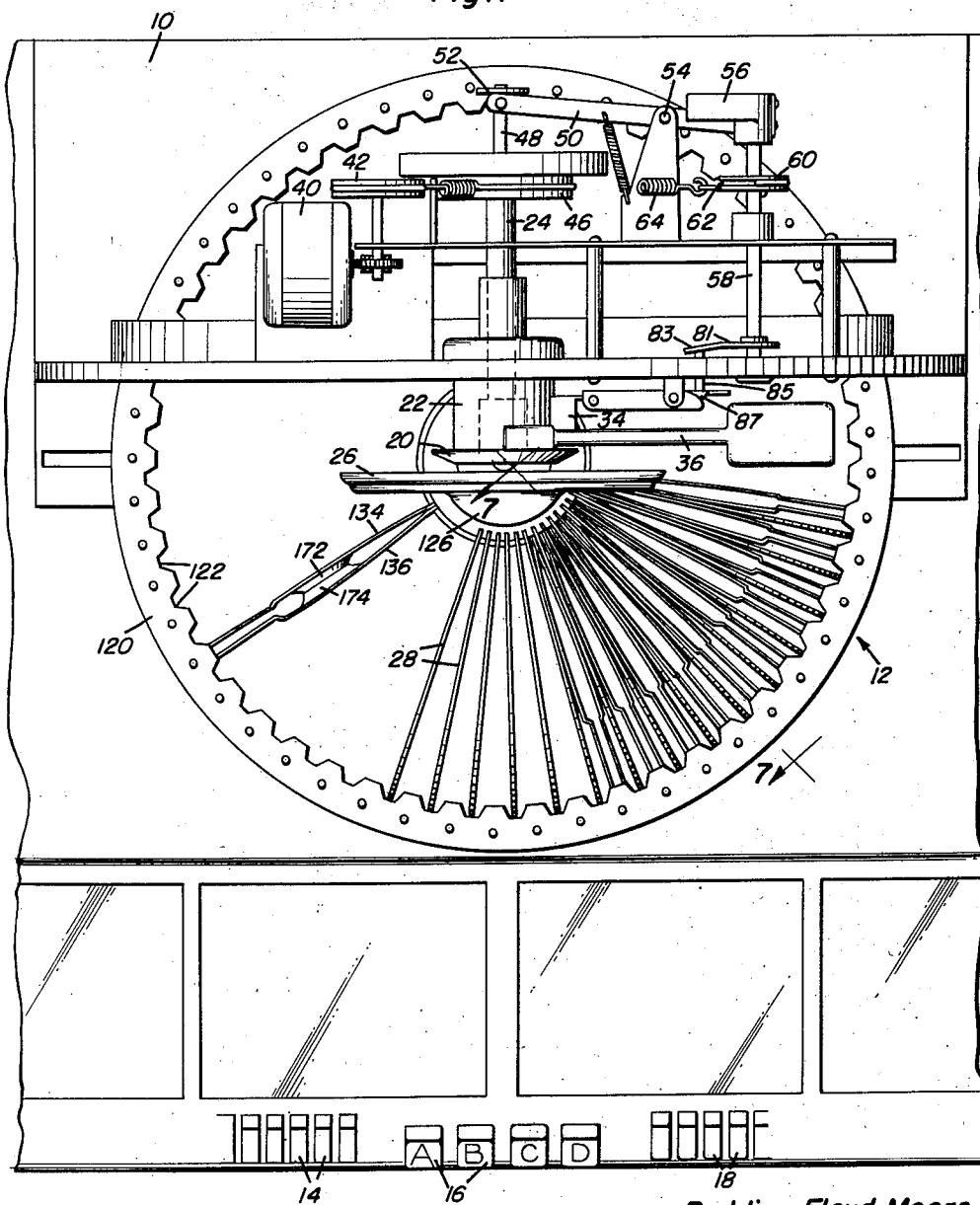
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PHONOGRAPH RECORD BASKET

Filed Dec. 14, 1954

6 Sheets-Sheet 1

Fig. 1



Redding Floyd Moore
INVENTOR.

BY *Chance A. O'Brien*
and *Harvey R. Jackson*
Attorneys

June 18, 1957

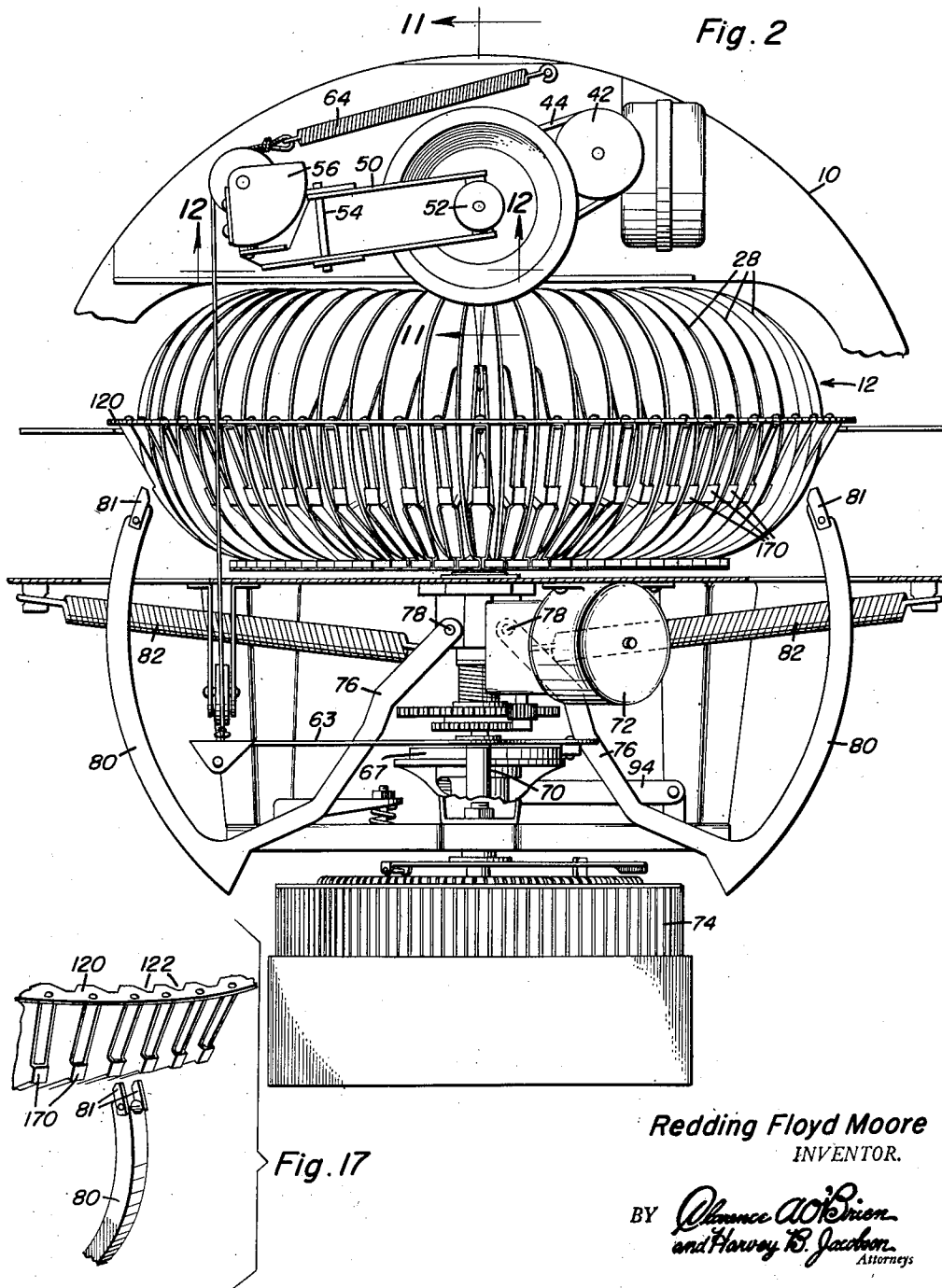
R. F. MOORE

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Fig. 3

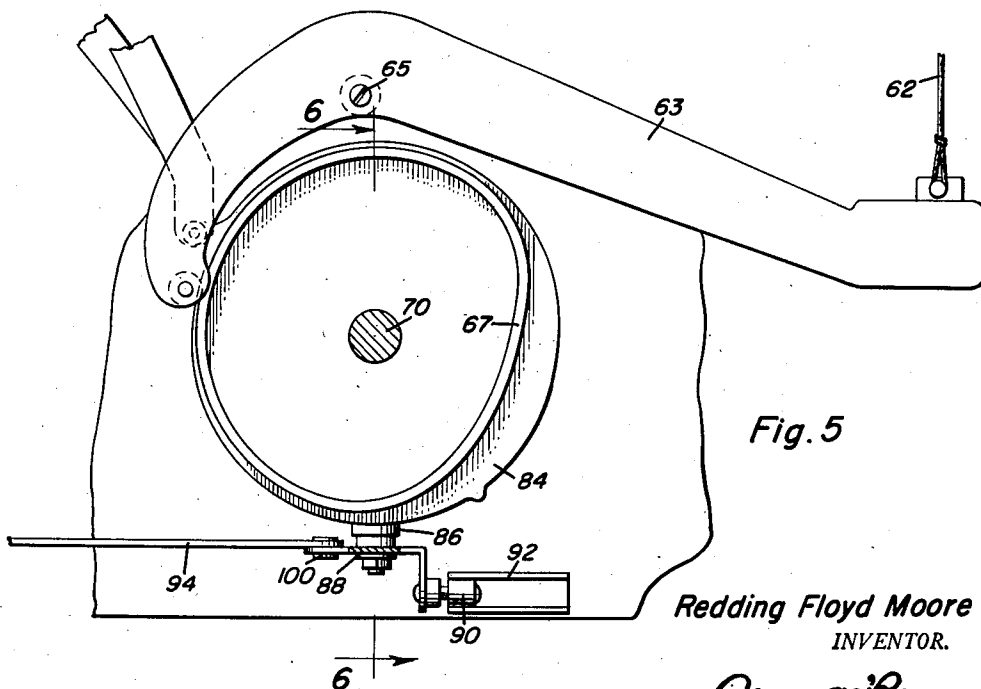
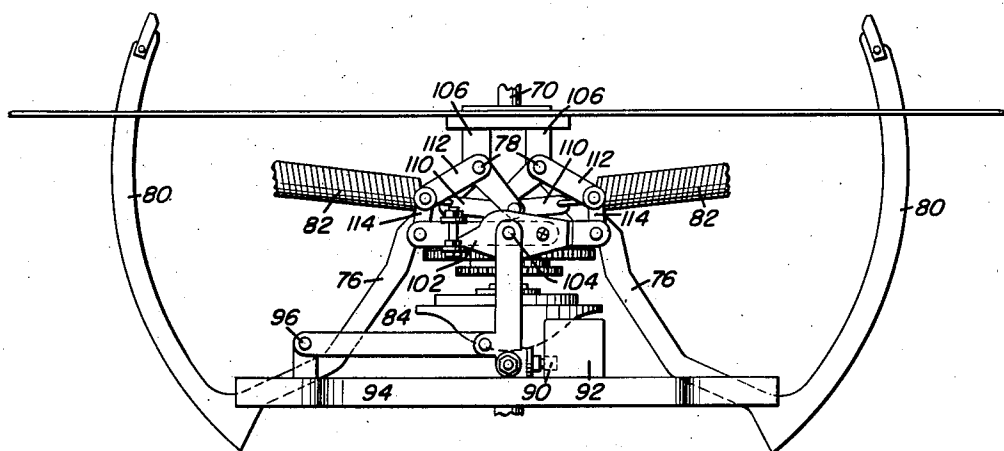


Fig. 5

Redding Floyd Moore
INVENTOR.

BY *Chance A. O'Brien*
and *Harvey E. Jacobson*
Attorneys

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R. F. MOORE

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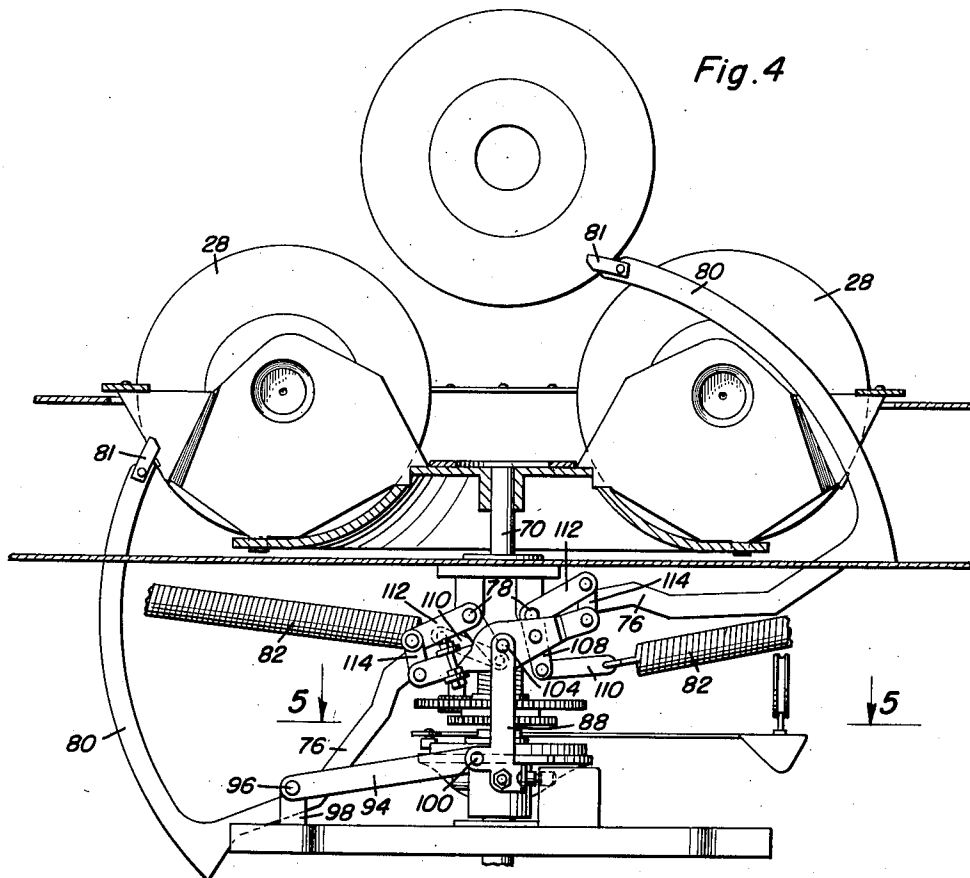


Fig. 6

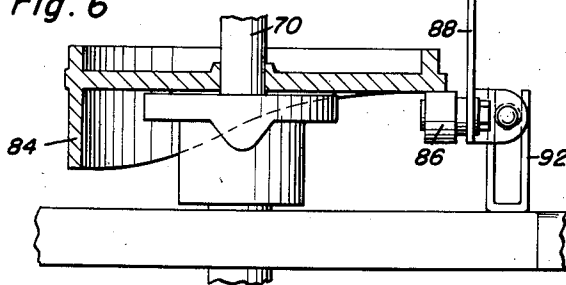
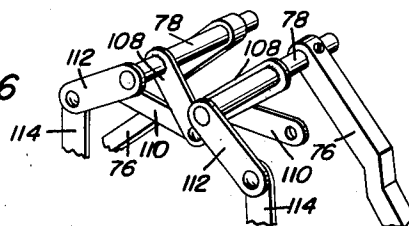


Fig. 16



Redding Floyd Moore
INVENTOR.

BY *Alvanice A. O'Brien*
and *Harvey B. Jackson*
Attorneys

June 18, 1957

R. F. MOORE

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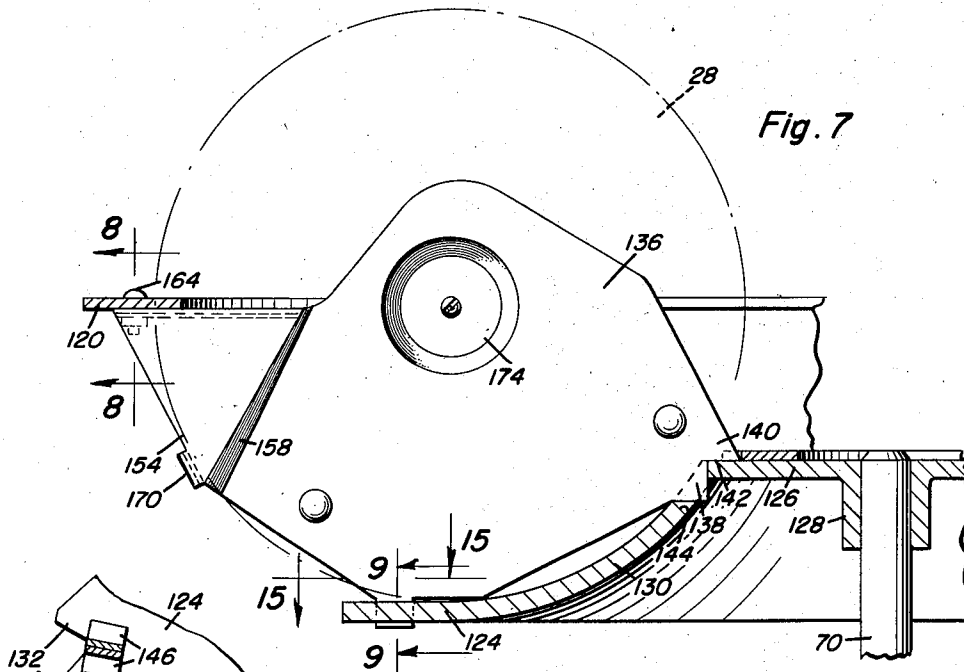


Fig. 7

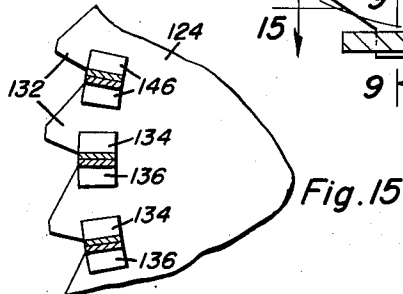


Fig. 15

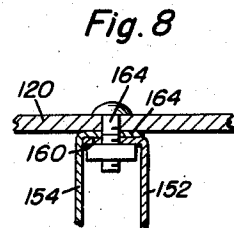


Fig. 8

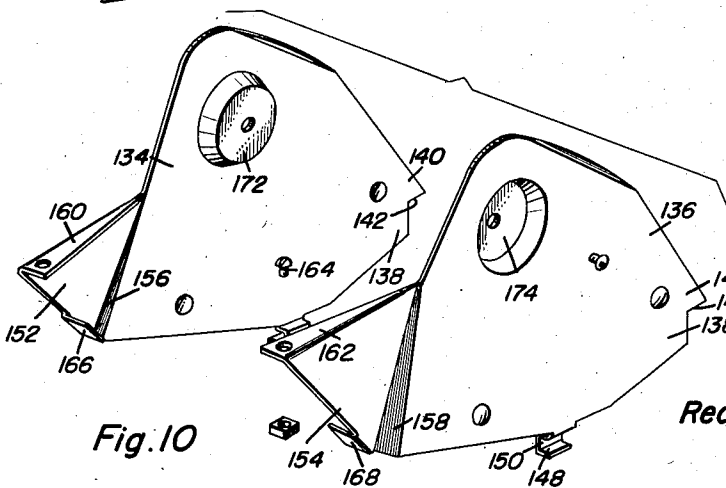


Fig. 10

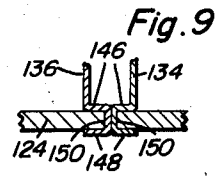


Fig. 9

Redding Floyd Moore
INVENTOR.

BY *Chance A. O'Brien*
and *Harvey B. Jacobson*
Attorneys

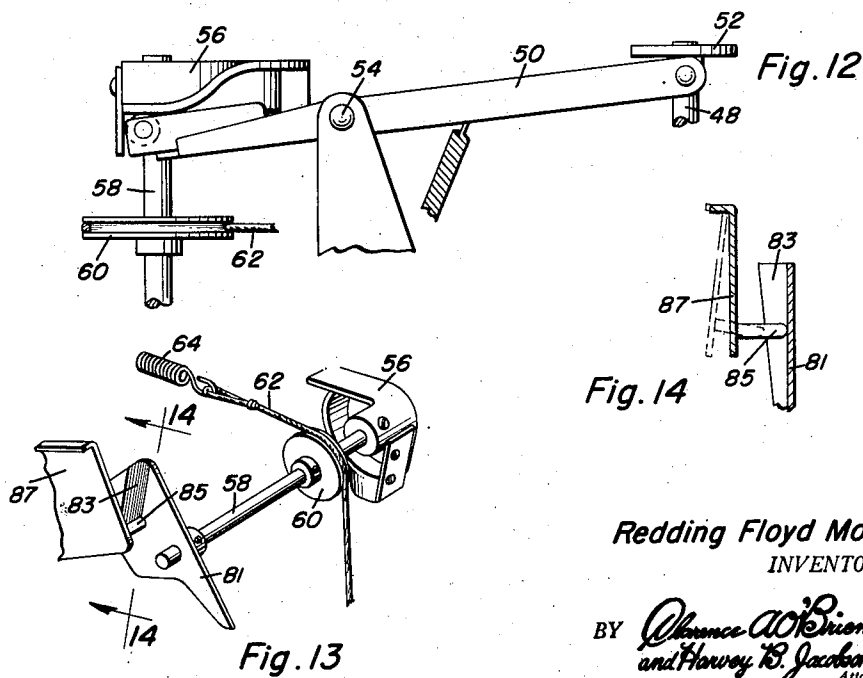
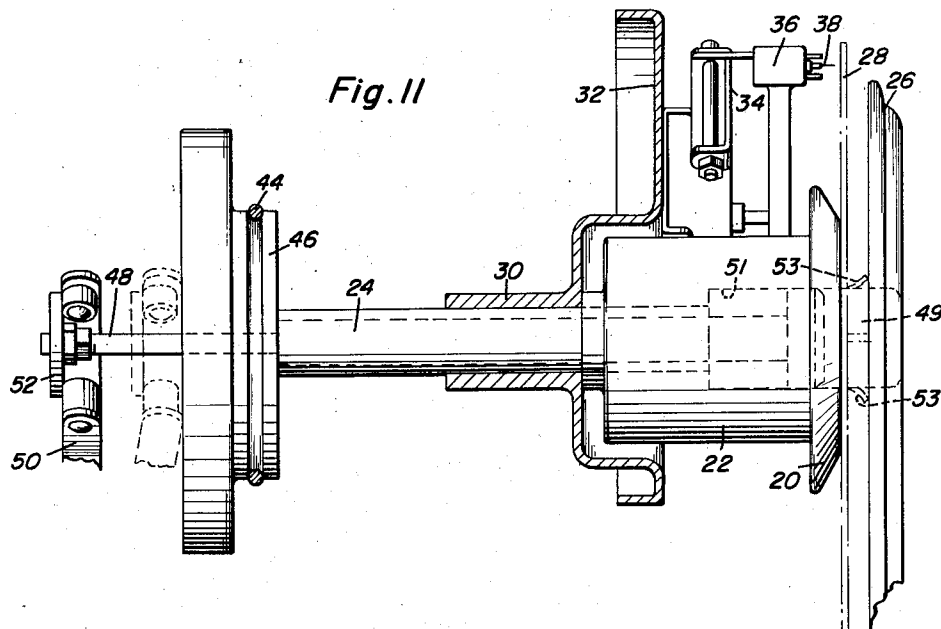
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R. F. MOORE
PHONOGRAPH RECORD BASKET

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Redding Floyd Moore
INVENTOR.

BY *Alvin A. O'Brien*
and *Harvey B. Jackson*
Attorneys

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2,796,263

PHONOGRAPH RECORD BASKET

Redding Floyd Moore, North Charleston, S. C., assignor of fifty percent to Redding Floyd Moore, Jr., North Charleston, S. C.

Application December 14, 1954, Serial No. 475,024

15 Claims. (Cl. 274—1)

This invention comprises novel and useful improvements in a phonograph record basket and more specifically relates to a novel and improved rotary magazine of the basket type for holding a plurality of records to be individually dispensed for playing upon an automatic phonograph record player.

The primary object of this invention is to provide a rotary magazine for receiving records to be played on an automatic player which will facilitate the positioning of a selected record for withdrawal from the magazine for playing, and the return of the record to the magazine after playing.

Another very important object of this invention resides in the provision of a rotary magazine for automatic phonograph record players whereby a single tone arm and stylus may be employed to play each side of a selected record, without moving the record from a vertical plane, by rotation of the magazine to present a selected side of the record for playing.

A further important object of the invention is to provide a rotary magazine for automatic record players wherein a plurality of records may be more compactly stored with the records disposed in a plurality of vertical planes disposed radially of the vertical axis of rotation of the magazine, whereby the record may be moved from a stored position in the magazine to a playing position and thereafter return to the magazine while maintaining the record in a vertical plane at all times.

Yet another object of the invention is to provide a rotary magazine for automatic record players in conformity with the preceding objects wherein a plurality of records may be compactly stored with each of the records being disposed in a plane which is radial to the vertical axis of rotation of the magazine.

Still another object of the invention is to provide a rotary record magazine for automatic record players in which there is provided a highly advantageous construction for storing the records in the magazine when they are not being played by the sound reproducing mechanism of the record player.

An additional object is to provide a rotary magazine for records in accordance with the preceding objects wherein the magazine shall coact with the record elevating means to facilitate the moving of a selected record from the magazine to a playing position.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

Figure 1 is a top plan view, parts being broken away at the sides, and showing the selector panel and some of the selector control buttons and with the rotary magazine of this invention partly filled and with the parts being shown in the normal rest or idle position of the rotary magazine;

Figure 2 is a vertical rear elevational view of the mechanism of Figure 1, parts being broken away, and being shown in the position illustrated in Figure 1;

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Figure 3 is a detail view in front elevation of a portion of the record elevating mechanism and the pair of record lift arms, the parts being shown in the rest position of Figure 1;

Figure 4 is a view similar to Figure 3 but showing the rotary magazine in an operative position and with one of the lift arms positioned for elevating a record from the magazine into playing position, the other of the lift arms being blocked out of its operative position by the rotary magazine, parts of which are shown therein;

Figure 5 is a horizontal sectional detail view taken upon an enlarged scale substantially upon the plane indicated by the section line 5—5 of Figure 4 and showing the cam and lever mechanism for actuating the record lift arms and constituting a part of the record elevating mechanism;

Figure 6 is a vertical transverse sectional detail view taken substantially upon the plane indicated by the section line 6—6 of Figure 5 and showing the cam and follower mechanism for actuating the lift arms into their idle position;

Figure 7 is a vertical sectional detail view taken upon an enlarged scale substantially upon the plane indicated by the section line 7—7 of Figure 1 and showing certain structural details of the rotary magazine and its divider plate construction;

Figures 8 and 9 are detail views taken respectively upon the planes indicated by the section lines 8—8 and 9—9 of Figure 7 and showing certain structural details of the rotary magazine;

Figure 10 is a group perspective view of a pair of plates forming a record receiving compartment or pocket of the rotary magazine;

Figure 11 is a vertical sectional view taken substantially upon the plane indicated by the section line 11—11 of Figure 2 and showing the arbor construction for operatively mounting and rotating a record about a horizontal axis for playing by the tone arm of the phonograph record player;

Figure 12 is a detail view taken substantially upon the plane indicated by the section line 12—12 of Figure 2 and showing in bottom plan a portion of the mechanism controlling the operation of the record mounting and rotating means of Figure 11;

Figure 13 is a detail view of some of the actuating mechanism of Figure 12;

Figure 14 is a detail view taken substantially upon the plane indicated by the section line 14—14 of Figure 13;

Figure 15 is a horizontal sectional detail view taken substantially upon the plane indicated by the section line 15—15 of Figure 7 and showing certain details of the rotary basket indexing means;

Figure 16 is a fragmentary detail view in perspective of a portion of the lift arm mounting and operating mechanism; and

Figure 17 is a perspective detail view of the associated structures of a lift arm and the rotary magazine whereby the latter selectively blocks or prevents operation of one of the lift arms.

It is an essential and fundamental principle of this invention to provide an improved mechanism and manner for compactly storing a plurality of records to be played by an automatic record player, whereby a selected record may be more easily dispensed from the magazine to the record playing instrumentalities of the record player and returning to the magazine after its use; and wherein records may be moved between their stored position in the magazine and their playing position without tilting or inclining the record during such movement.

Conventional record player construction

In carrying out the above mentioned basic principles of this invention a rotary magazine of a basket shape is

provided with provision for disposing the plurality of records, each in a vertical plane and disposed radially of the vertical axis of rotation extending through the center of the basket.

In order to exemplify a satisfactory manner of carrying out the principles of this invention, a rotary magazine embodying the concept of this invention is depicted in the drawings and described in the following specification as associated with a conventional form of an automatic record player, the particular form illustrated being the well known type of phonograph record player manufactured by the Rudolph Wurlitzer Company of North Tonawanda, New York, models 1700 and 1700F. It will be understood that the principles of this invention are not limited in their application to the conventional type of automatic record player above referred to, and now upon the open market, but may be applied to other automatic record players having generally similar modes of operation, and which are adapted to play records while mounted for rotation about a horizontal axis.

In the accompanying drawings and specification the operation and construction of the record player will be given generally in only enough detail to understand the environment in which the present invention is especially adapted for use. In the record player a cabinet or housing is indicated by the numeral 10 and to which is applied the novel rotary magazine construction indicated generally by the numeral 12.

The automatic record player includes a plurality of control buttons such as those shown at 14, 16 and 18 in Figure 1 by means of which the magazine is rotated about a vertical axis to present a selected record to be withdrawn from the magazine, moved to a turntable, played by a tone arm, and returned to the magazine after playing. Since the actual mechanism controlled by the buttons 14, 16 and 18, forms no part of this invention, a description of the same is unnecessary and only sufficient structure will be illustrated and reference to the operation thereof made hereinafter in this application as will be necessary to fully comprehend the manner in which the novel rotary magazine forming the subject of this invention is operatively associated with this particular form of conventional automatic record player.

The mechanism for playing a record in this type of record player, as shown particularly in Figures 1, 11, includes a turntable 20 which constitutes a flange of a drum 22 that is fixedly secured to an arbor 24 which is horizontally disposed and suitably journaled in the cabinet 10 whereby the turntable is caused to revolve in a vertical plane and about a horizontal axis substantially above the center of the rotary magazine 12. A stationary guard and guide plate 26 is supported upon the frame of the cabinet in close proximity to the turntable to assist in positioning a record for mounting upon the turntable, and its removal therefrom and return to the rotary magazine. The arbor 24 may conveniently be journaled in a suitable bushing 30 formed in a frame member 32 constituting a portion of the frame work of the record player cabinet.

Suitably mounted upon a framework carried support bracket 34 is a tone arm 36 having a stylus 38 which is adapted to cooperate with the record 28 during the rotation of the latter by the turntable for playing the record. The operation of the tone arm is automatically controlled and operatively connected with other instrumentalities of the automatic record player and in itself forms no part of the present invention. It is therefore deemed unnecessary to further set forth the details of the construction and operation of this conventional form of tone arm, other than that the tone arm swings horizontally about its vertical pivot, whereby to move the stylus towards and from a record disk 28 clamped upon the turntable 20 for rotation thereby.

As shown more clearly in Figure 1, an electric motor 40 is suitably carried by the framework of the record player casing, and through a reduction gearing is driving-

ly connected with a pulley 42. A belt 44, see Figures 2, 1 and 12, connects this pulley with a driven pulley 46 which is operatively connected to the arbor 24 for rotating the same, the turntable and the record disk 28 when the latter is clamped thereon.

Slidable within the arbor 24 is an actuating shaft 48 having a plunger 49 slidable in the axial recess 51 of the drum 22. Spring elements 53 on the plunger 49 are automatically radially advanced and retracted relative to the plunger, by means not shown, whereby upon axial sliding movement of the shaft 48 and plunger, the plunger will pass through the center aperture of a record and the spring elements 53 will clamp the record to the turntable for rotation therewith. At its outer end the shaft 48 is operatively engaged by the forked end of an actuating lever 50, see Figures 2 and 12, as by means of a collar 52 secured to the shaft, the lever being mounted for horizontal swinging movement about a fulcrum pin 54. A cam assembly 56 cooperates with the end of the lever 50 for causing horizontal swinging movement of the latter about its fulcrum pin 54 whereby the clamping spring elements 53 will be actuated. The cam assembly 56 includes a cam shaft 58 having an operating pulley 60 secured thereto and a cable 62 is entrained over this pulley. As shown in Figures 2 and 13, one end of this cable is secured to tensioning spring 64, while its other end, as shown in Figures 1 and 5, is secured to one end of a lever 63 journaled at a midportion for horizontal swinging movement about the vertical pivot 65. The other end of the lever 63 bears against an actuating cam 67 on the shaft 70 which is driven by the motor 72.

The rotary magazine 12 is secured to the upright shaft 70 for rotation thereby, while the lower end of the shaft is operatively connected with a selector mechanism 74 with which the automatic record player is provided. The arrangement is such that under the control of the selector buttons and the associated electrical circuits, the motor 72 is caused to rotate the rotary mechanism 12 to position a selected record for movement from one side or the other of the magazine to the turntable for playing the record, and thereafter for return to its proper place in the magazine. The selector mechanism 74 controls in a manner which need not be described the rotational turning of the magazine 12 to selected positions for presenting a selected record from one side or the other thereof to the record moving mechanism.

Record lifting mechanism

The record elevating mechanism for removing a selected record from the magazine and for returning the record thereto comprises a pair of identical lift arms 76, disposed below and upon opposite sides of the rotary magazine, and vertically pivotable with the horizontal axes 78 to which they are rigidly secured. The arms have arcuate end portions 80 at their other ends and spaced, curved fingers 81 extend therefrom, as shown in Figure 17. Tension springs 82 are operatively connected to the lift arms adjacent their pivoted ends, and to a convenient portion of the framework of the record player cabinet for yieldingly urging the arms into their elevated position, the lift arms being retracted into their rest or inoperative positions by a further mechanism of the automatic record player. The idle or rest position of the lift arms is shown in Figures 2, 3 and 17, while Figure 4 shows the right lift arm in raised position for elevating a record to the turntable while the left lift arm is blocked from its record lifting position as explained hereinafter.

Secured to the shaft 70 below the cam 67 see Figure 6, is an axial plate lift cam 84 engaged by a roller 86 on the link 88. The link has a guide roller 90 guided for vertical reciprocation in the stationary slotted guide bracket 92. A guide link 94, pivoted at 96 to the stationary fulcrum bracket 98 is pivoted at 100 to the link 88. At its upper end, the link 88 has a crosshead 102 pivoted thereto by a transverse pin 104 for vertical rocking motion.

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The two axles 78 are journaled in stationary supports 106 as shown in Figures 3 and 4, these supports being omitted from the diagrammatic showing of Figure 16. The axles 78 and hence the lift arm 76 are connected to the crosshead by a linkage system shown in Figures 3, 4 and 16. Each axle has an arm 108 which is attached by a connecting link 110 to one of the springs 82. A further pair of arms 112 are carried by the axles 78 and to these are pivotally connecting links 114 pivoted to the opposite ends of the crosshead 102. By this arrangement, the springs 82 tend to rotate the axles 78 and thereby tend to elevate the lift arms 76 and further tend to lift and crosshead and link 88. The cam and follower 84 and 86 prevent such lifting and cause lowering of the link 88, crosshead 102 and the lift arms.

It should now be stated that the lift arms cooperate with the rotary magazine to permit one lift arm only to be raised, when allowed by the cam 84, while blocking upward travel of the other lift arm. When such upward travel is block, the linkage causes the crosshead 102 to tilt downwardly at that lift arm and pivot about its pin 104 thereby causing all of the lift of the link 88 to be amplified and imparted to the other lift arm which is free to rise. Thus either lift arm may be rendered effective to lift a record from either side of the magazine to the turntable; and to return the record to the magazine when the lift arm is lowered by the cam 84.

Shown in Figures 13 and 14 is a portion of the tone arm actuating mechanism, consisting of a cam plate 81 mounted on the shaft 58 and having a cam lobe 83. The latter engages a pin 85 carried by the lever 87 forming a part of the conventional means for moving the tone arm towards and from the record.

Rotary basket magazine

The foregoing construction is that of a conventional known type of automatic record player with which the rotary basket magazine of the present invention is to be used, and does not in itself constitute my invention. The improved rotary magazine 12, claimed hereinafter, includes a rim 120 having a plurality of radial notches 122 on its inner periphery. The bottom of the basket magazine consists of a plate 124, having a raised circular central portion 126 with a central depending sleeve or tubular boss 128 for mounting upon the upper end of the shaft 70.

As will be apparent from Figure 7, the plate 124 is curved upwardly to provide an annular concave portion 130 merging into the central supporting portion 126. The curvature of portion 130 is such as to conform to and support the rim of the records 28 when the latter are stood on edge and disposed in radial position in the basket magazine, as shown in Figures 4 and 7.

The periphery of the plate 124 is toothed as at 132 whereby the basket may be indexed and retained in selected rotational positions for presenting in proper position a selected record to be removed, played and returned. Since the indexing, retaining and rotating mechanism are conventional in this type of player, and form no part of the invention claimed hereinafter, further description thereof is deemed to be unnecessary.

Between the teeth 132, the periphery of the plate 124 is radially slotted or notched to receive divider plates. Pairs of complementary divider plates 134 and 136 are secured to the rim 120 and in the notches of the plate 124 to form recesses or pockets, disposed radially of the basket magazine, for each receiving one of the records 28 and holding the same in a vertical radial plane.

Referring particularly to Figures 7 and 10, it will be noted that the divider plates 134 and 136 are congruent polygonal flat plates having projecting lugs 138 and 140 with a shouldered recess 142 therebetween. The lugs 138 of the divider plates are seated in radial recesses or slots 144 of the curved wall 130 immediately adjacent the central portion 126, while the lugs 140 and shouldered recesses 142 engage upon the surface of the central por-

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tion 126 and the upper edge of the openings 144 to thereby firmly support the radially inward portions of the complementary divider plates.

At their lower portions, see also Figure 9, the divider plates have depending fasteners, comprising inwardly extending flanges 146 and parallel outwardly extending underlying flanges 148 connected thereto by vertical flanges 150. These features are received in the above mentioned slots in the plate 124 lying between the teeth 132. As shown in Figures 9 and 15, the vertical flanges 150 of the two plates lie in side by side relation with the slots, while the lateral flanges 146 and 148 engage and press against respectively the top and bottom surfaces of the plate 124 adjacent the slots. Thus the bottom portion of the divider plates are secured to the basket magazine construction.

At their radially outer portions, the divider plates 134 and 136 have triangularly shaped, projecting brackets 152 and 154 respectively which are laterally offset from the sides of the divider plates as by connecting webs or flanges 156 and 158. The upper edges of the brackets have laterally intumed, overlapping flanges 160 and 162 which are connected to each other and to the rim 120 as by bolts or rivets 164, thereby securing the divider plates to the rim of the basket magazine. The lower outer portions of the brackets 152 and 154 are provided with overlapping intumed flanges 166 and 168 which form stop lugs indicated generally by the numeral 170, see Figures 2, 4, 7 and 17. Inwardly dished cylindrical portions 172 and 174 are provided on the divider plates and abut each other, as shown in Figure 1, to hold the pair of divider plates in fixed relation. As will now be apparent, record receiving receptacles or pockets are provided between adjacent pairs of the assembled divider plates, the plate 124 with its portions 130 and 126 and the notches 122 of the rim 120, each of which is adapted to receive and support a record in a radial and vertical position.

It will be observed that the outer vertically extending edges of the sets of divider plates constitute open ribs in the side of the basket magazine which are bridged by the stop lugs 170. As shown in Figures 4 and 17, the stop lugs are positioned to be embraced by the fingers 81 on the left arm 80, while the upper end of the lift arm abuts the lug when the lift arm is elevated. The basket magazine is so proportioned that a stop lug on one side is diametrically opposite the space between two adjacent lugs on the other side of the basket. Since the lift arms are also positioned at opposite ends of a diameter, it will be evident that when the basket magazine is positioned for a selected record at either end of a diameter of the basket magazine to be engaged by one lift arm, that the latter will pass upwardly between the pair of stop lugs to engage and lift the selected record, while the other arm will strike the opposite stop lug, as in Figure 4 and cause the tilting of the crosshead 102 as hereinbefore mentioned.

As previously set forth, the teeth 132 of the magazine will enable the basket to be turned so that either lift arm can be rendered operative for lifting a record from either side of the magazine. Since a given record can be presented to either arm, by merely rotating the basket through 180°, both sides of the record can be played by a single stylus by presenting a selected face to the stylus.

The rotary basket magazine of this invention offers a number of advantages. First, it insures the storing of a large number of records most compactly; second, the records are stored, played and returned to storage without being tilted from a vertical position; third, both sides of a record are played by merely rotating the magazine to present the record to either of two oppositely disposed record lift arms; fourth, the magazine is of very light and inexpensive construction; fifth, the magazine provides for easy indexing to a desired position; sixth, the magazine cooperates with the lift arm to determine which arm will be activated and consequently which record will be moved to the turntable.

From the foregoing, the construction and operation of the device will be readily understood and further explanation is believed to be unnecessary. However, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction shown and described, and accordingly all suitable modifications and equivalents may be resorted to, falling within the scope of the appended claims.

What is claimed as new is as follows:

1. In an automatic phonograph record player of the type including a magazine basket rotatable about a central vertical axis for holding a plurality of radially disposed phonograph record disks on edge together with a turntable mounted above the basket and centrally thereof for rotation about a horizontal axis and mechanism including a pair of vertically swingable lifting arms disposed on opposite sides of said vertical axis and beneath said basket and pivotal upwardly and inwardly toward said vertical axis for selectively lifting records vertically from opposite sides of said basket to said turntable and for returning records from the latter to the basket; said basket comprising a flat, annular rim, a plate disposed centrally of said rim and having a surface spaced radially inwardly from the rim, a plurality of radially disposed pairs of dividers secured to and connecting the rim and plate into a substantially rigid cage, said rim, plate and adjacent pairs of dividers defining therebetween pockets open at their top and bottom for receiving and supporting records at their lower portions, said adjacent pairs of dividers being spaced sufficiently to permit passage of a lifting arm therebetween for removing a record from the magazine to said turntable and for returning a record from the turntable to the magazine.

2. The combination of claim 1 wherein said plate is disposed below the rim, the arrangement being such that the peripheral edge of a record when disposed in a pocket will be supported at its bottom edge by said plate surface and at about the middle of its vertical portion by said rim.

3. The combination of claim 1 wherein the inner periphery of the rim and said plate at the outer periphery of said plate surface are provided with notches, said dividers having fastening portions secured in said notches.

4. The combination of claim 1 including indexing means on said basket for holding said basket in a predetermined rotational position for positioning a selected record in position for removal by one of said lifting arms, said indexing means including teeth on the outer periphery of said plate.

5. The combination of claim 1 including indexing means on said basket for holding said basket in a predetermined rotational position for positioning a selected record in position for removal by one of said lifting arms, said indexing means including teeth on the outer periphery of said plate, said rim and said outer periphery between said teeth being provided with notches, said dividers having fastening portions received in said notches.

6. The combination of claim 1 wherein said plate has an annular, upwardly curving surface extending from the inner periphery of said first-mentioned surface towards the said axis, said curving surface supporting the vertical portion of the edge of a record disk from its bottom to a position below its midportion.

7. The combination of claim 1 wherein said plate has a central, raised portion having a bore for mounting upon a vertical axle for rotation about said central vertical axis.

8. The combination of claim 1 wherein said plate has a central, raised portion having a bore for mounting upon a vertical axle for rotation about said central vertical axis, said plate being provided with an annular edge portion having said surface thereon, an annular upwardly curving surface joining the first-mentioned surface with the cen-

tral raised portion, radially extending notches in said annular edge and in the curving surface adjacent said central raised portion, each of said dividers having projecting portions received in each of said notches in said edge and in said curving surface.

9. The combination of claim 1 wherein said plate has a central, raised portion having a bore for mounting upon a vertical axle for rotation about said central vertical axis, said plate being provided with an annular edge portion having said surface thereon, an annular upwardly curving surface joining the first-mentioned surface with the central raised portion, radially extending notches in said annular edge and in the curving surface adjacent said central raised portion, each of said dividers having projecting portions received in each of said notches in said edge and in said curving surface, and a shoulder on each divider resting upon said central raised portion.

10. The combination of claim 1 wherein said plate has a central raised portion having a bore for mounting upon a vertical axle for rotation about said central vertical axis, said plate being provided with an annular edge having said surface thereon, an annular upwardly curving surface joining the first-mentioned surface with the central raised portion, radially extending notches in said annular edge and in the curving surface adjacent said central raised portion, each of said dividers having projecting portions received in each of said notches in said edge and in said curving surface, said rim having its inner periphery provided with notches and each divider having fastening portions secured in one of said last-mentioned notches.

11. The combination of claim 1 wherein said plate at the periphery of said surface is provided with notches, said dividers having fastening portions secured in said notches, the fastening portions of adjacent dividers in an adjacent pair of dividers being secured in the same notch.

12. The combination of claim 1 wherein said plate at the periphery of said surface is provided with notches, said dividers having fastening portions secured in said notches, the fastening portions of adjacent dividers in an adjacent pair of dividers being secured in the same notch and including outturned parallel flanges underlying and engaging said plate.

13. The combination of claim 1 wherein each of said dividers has a lateral projection thereon, the lateral projections of the adjacent dividers of each adjacent pair of dividers abutting and being secured to each other.

14. The combination of claim 1 wherein the adjacent dividers of each adjacent pair of dividers carry a stop means, the stop means on one side of the basket being diametrically offset from the stop means on the opposite side thereof, said stop means being thereby positioned to engage and stop lifting movement of one of said pair of lifting arms when the pair of lifting arms is actuated.

15. The combination of claim 1 wherein each divider is provided with a lateral flange, the lateral flanges of adjacent dividers of each adjacent pair of dividers overlap each other and provide a stop means, the stop means on one side of the basket being diametrically offset from the stop means on the opposite side thereof, said stop means being thereby positioned to engage and stop lifting movement of one lift arm when the other lift arm is actuated.

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