April 28, 1931. G. H. PITTMAN 1,802,830

MACHINE FOR AUTOMATICALLY PLAYING PHONOGRAPH RECORDS

Original Filed Sept. 7, 1926 5 Sheets-Sheet 1

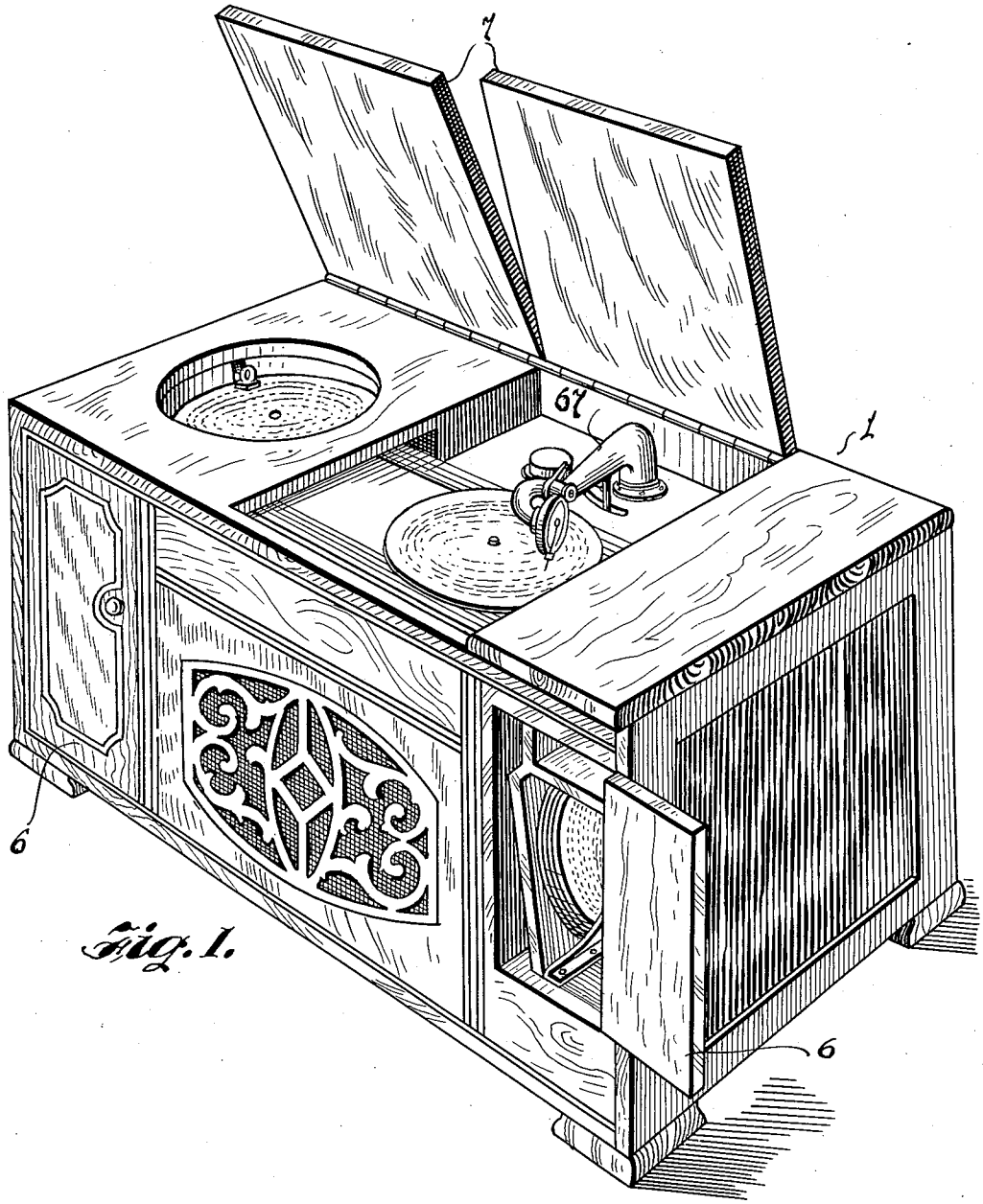


Fig. 1.

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MACHINE FOR AUTOMATICALLY PLAYING PHONOGRAPH RECORDS

Original Filed Sept. 7, 1926 5 Sheets-Sheet 2

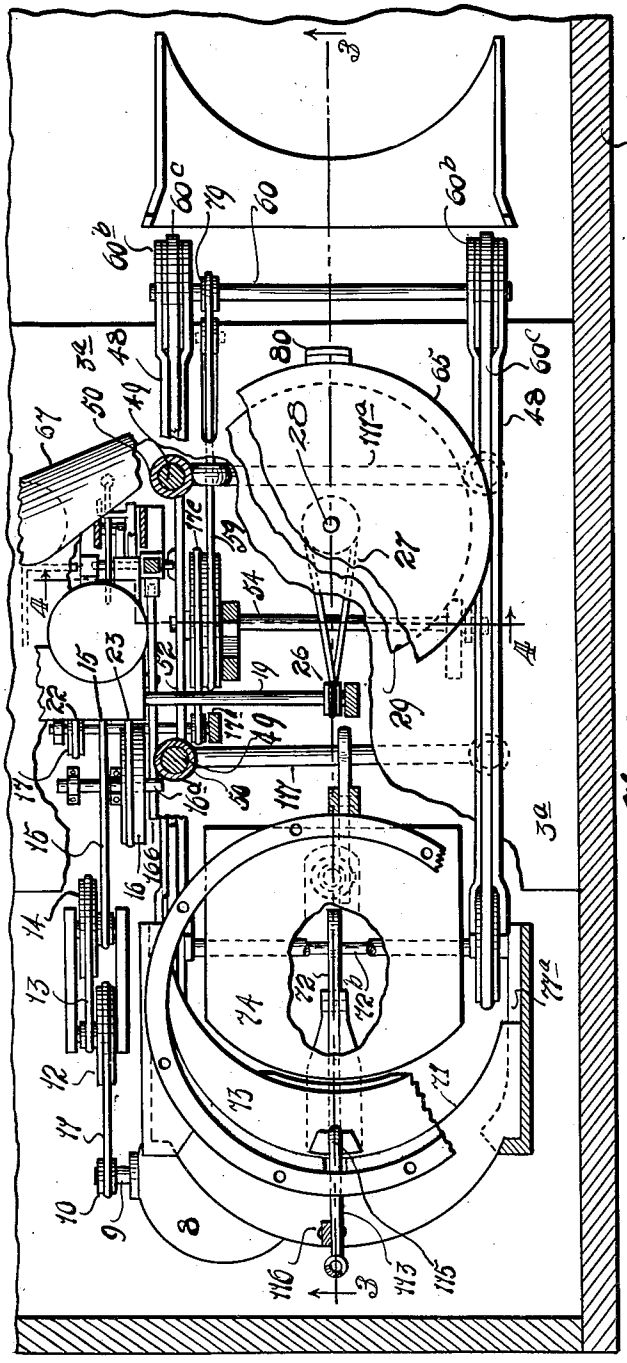


Fig. 2.

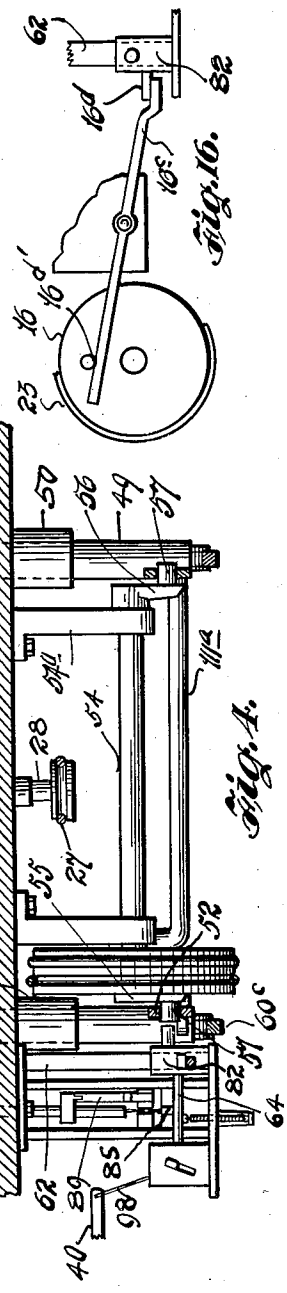


Fig. 4.

Fig. 16.

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MACHINE FOR AUTOMATICALLY PLAYING PHONOGRAPH RECORDS

Original Filed Sept. 7, 1926 5 Sheets-Sheet 3

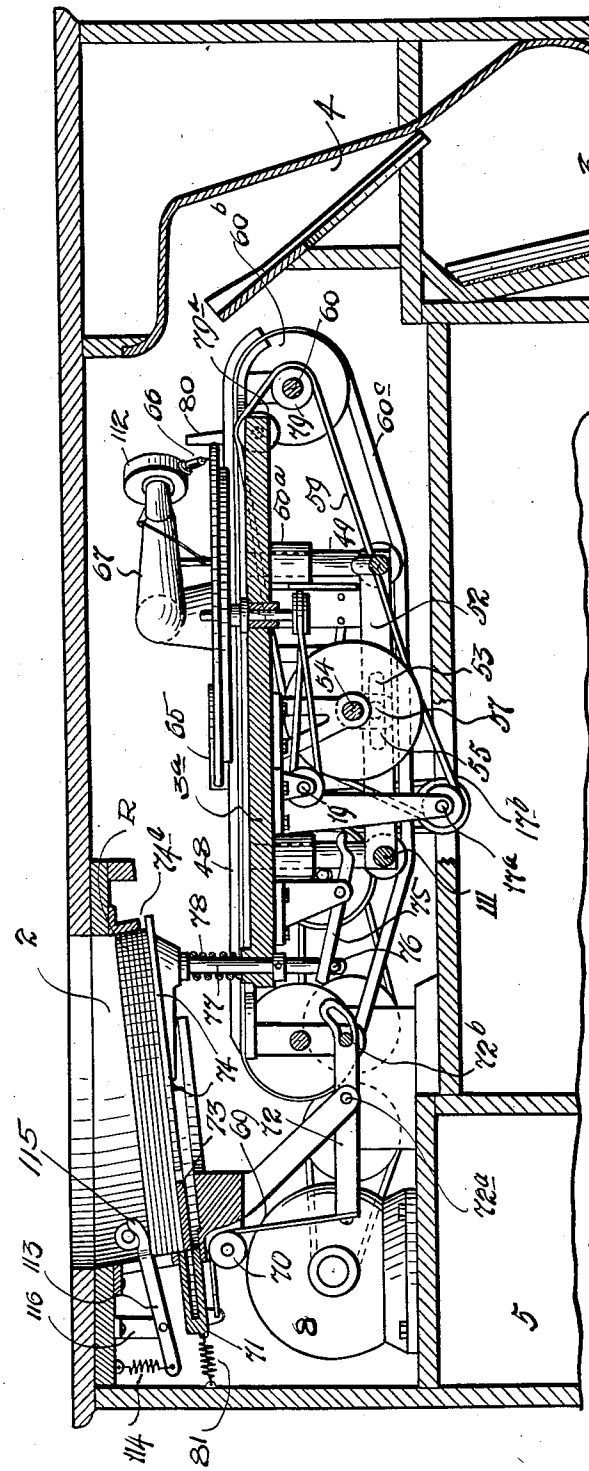


Fig. 3.

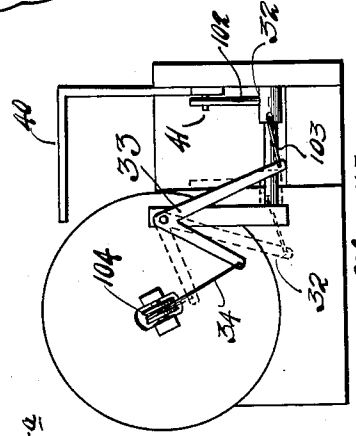


Fig. 15.

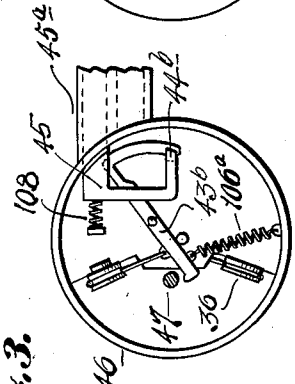


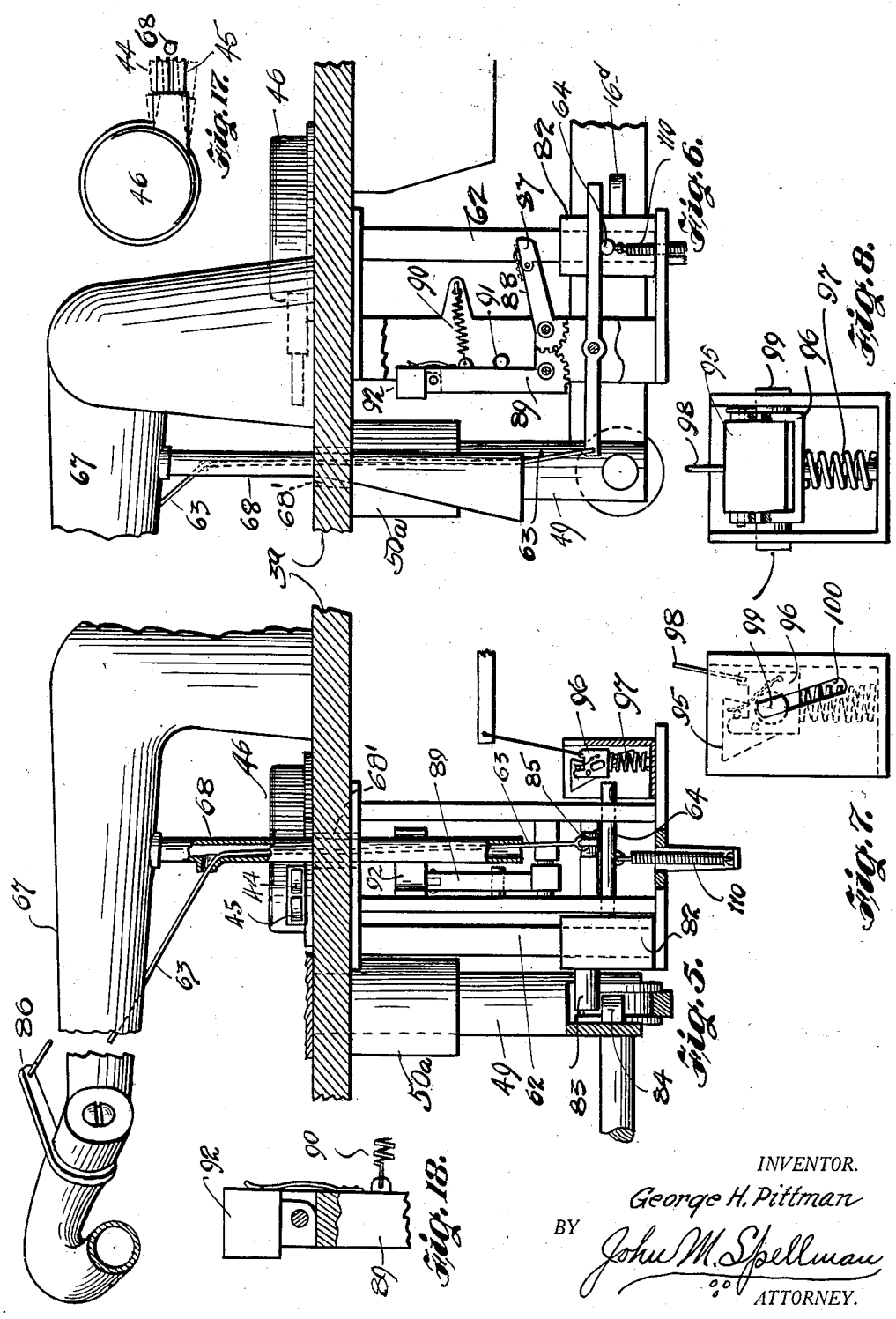
Fig. 14.

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MACHINE FOR AUTOMATICALLY PLAYING PHONOGRAPH RECORDS

Original Filed Sept. 7, 1926 5 Sheets-Sheet 4



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MACHINE FOR AUTOMATICALLY PLAYING PHONOGRAPH RECORDS

Original Filed Sept. 7, 1926 5 Sheets-Sheet 5

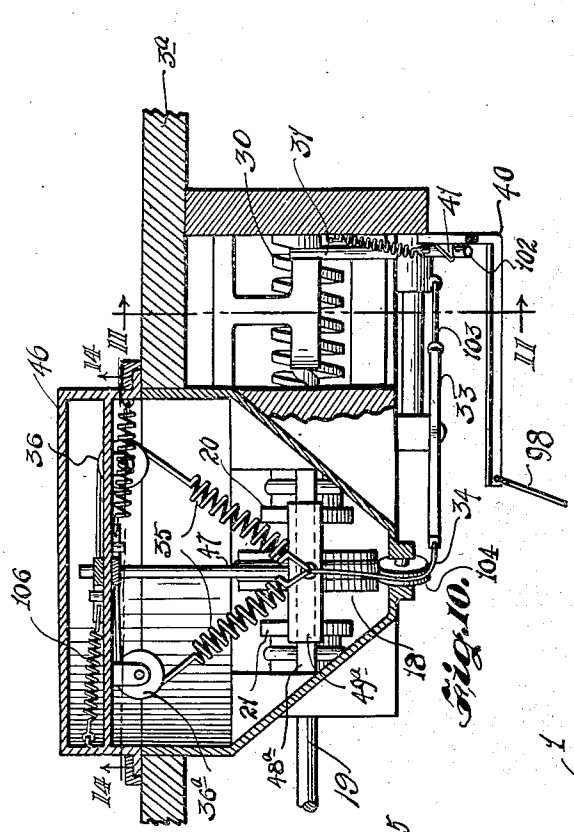


Fig. 10.

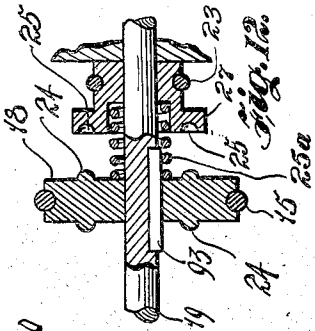


Fig. 12.

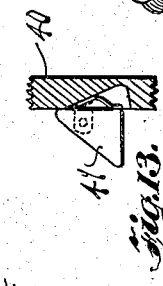


Fig. 13.

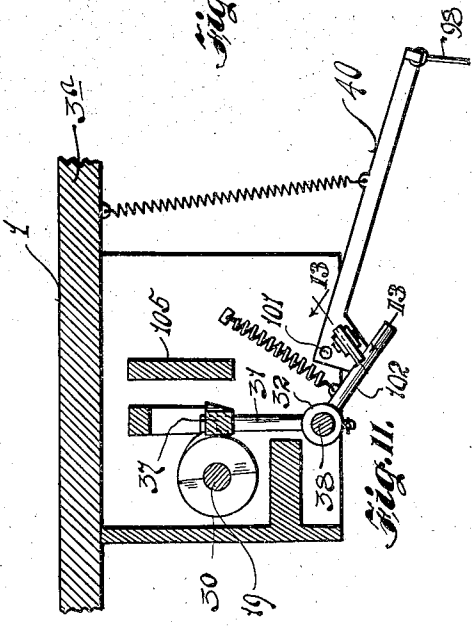


Fig. 11.

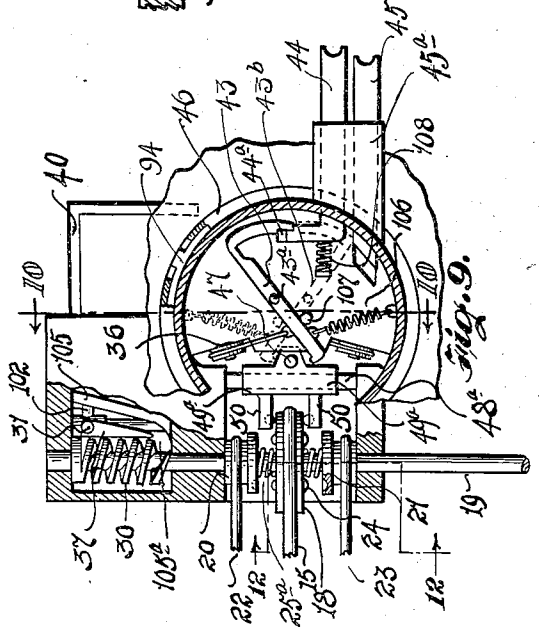


Fig. 9.

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Patented Apr. 28, 1931

1,802,830

UNITED STATES PATENT OFFICE

GEORGE H. PITTMAN, OF JACKSON HEIGHTS, NEW YORK

MACHINE FOR AUTOMATICALLY PLAYING PHONOGRAPH RECORDS

Application filed September 7, 1926, Serial No. 133,827. Renewed July 23, 1929.

This invention relates to improvements in apparatus for the continuous playing of phonograph records, and it relates more particularly to the specific arrangement and construction of the parts thereof.

While the primary object of the invention is to provide generally a machine for the continuous playing of phonograph records, it includes a variety of features in its construction, not included, so far as the inventor is aware, in machines of this character now in use.

The various objects and advantages of the invention will be better understood from a perusal of the following detailed description, taken in connection with the accompanying drawings, forming part hereof and in which:

Figure 1 is a perspective view of the machine.

Figure 2 is a horizontal sectional view.

Figure 3 is a vertical sectional view taken along line 3—3 of Figure 2.

Figure 4 is a transverse vertical sectional view, taken on line 4—4 of Figure 2.

Figures 5 to 9 inclusive are detail sectional views of parts of the machine which will be referred to in more detail hereinafter.

Figure 10 is a sectional view, taken along line 10—10 of Figure 9.

Figure 11 is a sectional view taken along line 11—11 of Figure 10.

Figure 12 is a detail sectional view taken on line 12—12 of Figure 9, one of the springs 25*a* being omitted.

Figure 13 is a detail sectional view, taken on line 13—13 of Figure 11.

Figure 14 is a detail sectional view taken on line 14—14 of Figure 10.

Figure 15 is a view from underneath Figure 10.

Figure 16 is a detail view of a part of the repeating mechanism.

Figure 17 is a detail view taken from Figures 5 and 6; and

Figure 18 is a detail view taken from Figure 6, the upper end of the gear arm being broken away.

Proceeding in accordance with the drawings wherein similar numerals designate the various parts, 1 denotes a box or cabinet in which are included the mechanism of the machine, the cabinet having a record magazine 2 adapted for the reception of a plurality of records to be played, and a compartment 3 including a delivery chute 4 for records which have been played. A compartment 5 is also provided for a collection of stock records other than those in the magazine and compartment 3. The compartments each have doors 6 and the top of the cabinet swingable lids 7.

The motive power for operating the mechanism is provided by a motor 8 seated upon the top of the compartment 5. The motor shaft 9 has a pulley 10 which is connected by belt 11 to a pulley 12, the latter pulley being connected in turn by belt 13 to a pulley 14. From the pulley 14 there is connected a belt 15. Below and in advance of the pulley 14 are pulleys 16 and 17, respectively.

Referring to Figure 9, the belt 15 from the pulley 14 is connected to pulley 18, which comprises a clutch element and includes at each side on a main shaft 19 rotatable members 20 and 21. The belt 22 to pulley 17 is connected to the member 20 of the clutch and the belt 23 to pulley 16 connects to member 21 of the clutch. A detail view of this clutch is shown in Figure 12, the pulley 18 having its sides provided with protuberances 24 which fit in the recesses 25 when the clutch is engaged, the springs 25*a* retracting the pulley 18 from the clutch members, 20 or 21. Shaft 19 includes on one end a pulley 26 and is connected by belt 27 to a shaft 28, see Figure 4, and rotates continually the turn table 29 upon which the records are revolved in playing them. The belt 15 derives its motion from the the motor 8, through the reducing pulleys 12 and 14, and thus rotates main pulley 18. This pulley is affixed by key 93 (see Figure 12) to the main shaft 19, and is arranged to slide either way on shaft 19 to properly engage either of the clutch members 20 or 21. For instance, if it engages the clutch member 20, the conveyor or record changing mechanism is automatically set in motion to change the record, or if it engages the clutch member 21, operating through pulley 16, as illustrated in Figure 16, the mechanism for repeating the playing of a record is set in mo-

tion. Springs 25*a* are provided which operate to maintain the main pulley 18 in a neutral position at all times, unless pressure is exerted to either side. The position of the main pulley 18 is determined by the fingers 50, protruding from sleeve 49*a* (in Figure 9) which is slidably arranged on square rod 48*a*.

This sleeve 49*a* is moved from side to side by pressure applied to the pin 47 which projects upwardly so as to be engaged by either lever 43 or 43*b*.

For conveying the records R from the magazine 2 to the turntable 29 there is provided a carriage 48, which includes the record-transferring mechanism. This carriage includes four posts 49 slidably arranged in sleeves 50*a*, the sleeves being secured to a platform 3*a*. Depending from the platform are supports 54*a* (see Figure 4) providing bearings for a central cross-rod 54 which includes cams 55 and 56 with lugs 57. The cam lugs 57 are seated in slots 53 in the bars 52 connecting two posts 49 on each side of the carriage. The main cam 55 is rotated by the belt 17*b* from the shaft 17*a* also rotating cam 56. Rotating these cams 55 and 56 thus raises and lowers the entire carriage 48, which includes the record-transferring mechanism.

As the main cams 55 and 56 make one complete slow revolution, it raises and lowers the main carriage 48, which, operating through lug 84, carried by one of the bars 52, as shown in Figure 5, raises sleeve 82, which in turn moves bar 64. As bar 64 rises, its tip presses back the latch 95, as shown in Figure 5, and as shown in greater detail in Figures 7 and 8. Bar 64 slides past latch 95, moves upward, then reverses and starts back down with carriage 48 being pulled downward by spring 110.

On the last portion of its downward trip, it bears on latch 95, pushing the trip mechanism 96 down against spring 97. As trip 96 moves downward it pulls on cable 98, which pulls down on the bar 40. The action resulting from pulling this bar 40 downward will be referred to again hereinafter.

The carriage in raising cross rod 72*b*, lifts the slotted end of the lever 72, which is pivoted at 72*a*, thereby causing the free end of such lever to pull down on a flexible brass strip 69, which is connected to a plunger or ejector mechanism 71 and operates over roller 70, said plunger 71 being of a thickness slightly less than the thickness of each record to be played, thereby allowing an appreciable clearance between the upper surface of said plunger and the lower surface of the record immediately superimposed above the record being ejected, during the ejecting process next described. It will, therefore, be appreciated that the plunger 71 does not support any of the records during the ejection of the lowermost record, but that as soon as the lowermost record is removed from the ledge 73, the remaining records move by gravity onto the plunger 71 where they are temporarily supported by that plunger until it is retracted a sufficient distance to permit the remaining records to be again moved by gravity to a position upon the ledge 73. As the strip 69 is actuated, the plunger 71 slides forward into the plunger guideways 71*a* on either side of the plunger. This plunger 71, engaging the lowermost record in the magazine 2, pushes or ejects the same from the fixed ledge 73, which fixed ledge has a curved edge conforming substantially to the periphery of a record, the center of curvature of which curved edge is offset with respect to the center of the lowermost record supported by the fixed ledge, and continues this ejecting movement until the lowermost record is entirely free of this ledge and deposits said record upon the movable platform 74 which is in its elevated position, pushing said record partly through an opening 74*a* which is wide enough to permit only one record at a time to slide through. It will be seen that this fixed ledge 73, which is of the peculiar shape or design described, maintains contact with a greater part than one-half of the peripheral margin of the lowermost of the plurality of records held in the magazine and is capable of alone supporting such plurality of records despite the fact that its surface contact with the lowermost record is much less than one-half of the square unit surface of such lowermost record.

If desired, there may be provided a pivoted lever 113, protruding through and into the magazine 2 which is pivoted at point 116 and connected with spring 114 constantly pulling on the lever 113. The handle end 115 of lever 113 may be raised and records placed under it in the magazine 2 and resting on the ledge 73 and platform 74. The purpose of the lever 113 if employed is to keep a constant pressure on the records against the ledge 73 to insure a perfect contact with the plunger 71.

The record is now supported by the platform 74, only. As the carriage rises, the crossbar 111 engages lever 75, lowering the platform by pressing upon lug 76, pulling down on supporting rod 77, acting against spring 78. It is the lowering of this platform which lays the ejected record on record-transferring means, including an endless conveyor or conveyor belts 60*c*. When the main cam wheel 55 starts rotating, by reason of belt 59, operating over pulley 79, it starts and keeps the axle 60 rotating, which axle is keyed to the wheels 60*b*, and which in turn carries and moves the two endless conveyor belts 60*c* which move between flanges 60*d* to guide the record. Pulley 79*a* is an idler to take up the slack in the belt 59 when the car-

riage is lowered to position as shown in Figure 3.

As the carriage, including the record-transferring mechanism, rises, the endless conveyor 60*c* lifts the record 65, which has been played, off the turntable 29, and as soon as this record is elevated to a position higher than the stop 80 it is passed over this stop into the delivery chute 4 and through which it slides gently into the receiving chamber or compartment 3. This chute is semi-circular in shape as shown in Figure 2. The endless conveyor belts also pick up the ejected record off the platform 74 and the endless conveyor belts move said record toward the turntable, the record being guided by the flanges 60*d*. By the time the record reaches the turntable the carriage has been partly lowered again by the main cam 55 and the on-coming record engages stop 80 and settles down on the turntable 29. When the main cam 55 completes the last half of its one revolution the various motions ascribed to lever 75 and platform 74 have been reversed and the plunger or ejector mechanism 71 is retracted by the spring 81 to its original position. This completes the cyclic operation which accomplishes the removal of the played record from the turn-table, the ejection of the lowermost record from the fixed ledge at the bottom of the magazine and its deposit upon the movable platform, the removal of the ejected record from said platform by the endless conveyor belts and the transfer of this record to the turn-table by said endless conveyor belts.

The reproducer 112, including the needle 66, is lifted, and the tone arm and reproducer are swung by the mechanism appearing in Figures 5 and 6. The sleeve 82 slides up and down on the square rod 62. This is actuated by the pressure exerted under the lug 83 by the lug 84 on the main carriage. Sleeve 82 can also be raised by pressure exerted under the lug 16*d* by the repeating arm 16*c*, when the opposite end of the repeating arm is depressed by the lug 16*d'* through rotation of the pulley 16, as illustrated in Figure 16. The pulley 16 is operated by belt 23 from clutch member 21 as shown in Figures 2 and 9.

The sleeve 82 has a long arm 64 projecting as shown in Figure 5. As this arm rises, it actuates the lever 85 which pulls down on the cable 63, passing through the hollow rod 68, and pulls down on the lever 86, which lifts the reproducer 112. By reversing this process by the lowering of the bar 64, the reproducer is lowered so that the needle will again rest on the record. The arm 64 in rising bends back the tip 87 of the gear arm 88 and passes by without moving gear arm 88. As arm 64 lowers, it bears down on the tip 87, depressing gear arm 88, which acting through the gear teeth moves gear arm 89. This causes the gear arm 89 to bear against the hollow rod 68, thereby swinging tone arm 67 back towards the outer edge of the record.

At the bottom of its trip, arm 64 passes by tip 87, enabling spring 90 to act on gear arm 89, pulling same back against stop 91 resetting this mechanism.

The top tip 92 of gear arm 89, swings back as illustrated in Figure 18, to enable gear arm 89 to exert an even pressure on hollow rod 68. This action completes the lifting of needle and swinging of tone arm.

The hollow rod 68 affixed to and protruding from the under side of tone arm 67 down through the shelf 3*a*, swings exactly as the tone arm swings, operating in a slot 68' cut through the shelf. When the needle point 66 has completed playing record 65, the tone arm 67 has reached its innermost point, which means that hollow rod 68 has also reached its innermost point, and has engaged either trigger 44 or trigger 45 (see Figures 5, 9 and 17) depending upon which position the rotatable cover 46 has been placed in, as governed by lug 94 in Figure 9. If the hollow rod 68 engages trigger 44 and presses same slightly inward through tube 45*a* the trigger 44 carries lug 44*a* inward, releasing lever 43, which is pivoted at 43*a*. Lever 43 is fastened by cable running over pulley 36 down to one of the springs 35, which springs are at a tension. The tension of springs 35, operating over pulley 36, swings lever 43 so that its end engages bar 47, which, controlling the main pulley 18, slides same against clutch member 20, which movement starts the automatic record changing mechanism.

Referring again to the trip mechanism, (see Figures 7 and 8) as the bar 64 pushes trip 96 downward, the trip 96 also moves backward by reason of the lugs 99, sliding in slanting slots 100. The angle of slot 100 is so fixed that as the trip slides downward it also is pushed back so that the latch 95 will become free of the bar 64, enabling spring 97 to push trip 96 back up into its original position, thereby resetting the trip.

The bar 40 is pivoted at point 101 as shown in Figure 11. Its downward motion operating through latch 41, presses down on bar 102, which is fixed to sleeve 32, sliding and rotating on the round rod 38. The other side of sleeve 32 carries bar 31, so that moving the sleeve moves both bar 31 and bar 102. The sleeve 32 is fastened by cable 103, to lever 33, as illustrated in Figure 15, which shows the bottom view of the clutch housing. Lever 33 is fastened by cable 34, operating over pulley 104, to the main springs 35, as illustrated in Figure 10. It must be borne in mind that bar 31 is stationary, resting in a small niche in the end of casting 37, as illustrated in Figure 9. As bar 102 is depressed by latch 41, it turns the sleeve 32,

turning bar 31, which slides it out of said niche, into the slot shown between castings 37 and 105, as illustrated in Figure 9. The tension of springs 35, operating through lever 33, pulls the sleeve 32 and slides bar 31 down this slot into space 105*a*, where bar 31 is immediately picked up by the rotation of worm gear 30, which is fixed to the end of main shaft 19, as shown in Figure 9. This worm gear 30 revolves constantly.

With the bar 31 in its present position in space 105*a* and the sleeve 32 in its present position, all tension is taken off the main springs 35. This enables the spring 106 (see Figure 9) to retract lever 43 until it rests against stop 107. The slot in the curved end of lever 43 is then in position to receive lug 44*a* which immediately is pushed into this slot by the action of spring 108, pressing against trigger 44. In this manner the complete clutch and its tripping mechanism are operated and reset for the next operation.

Now refer to bar 31, which is resting for an instant only in space 105*a*, (see Figure 9). The rotation of worm gear 30 causes said worm gear to pick up bar 31 and carry it outward towards the end of casting 37. The outward end of the worm gear 30 is so constructed eccentrically as to "set off" the bar 31 into its niche in casting 37. This outward motion of bar 31 carrying with it the sleeve 32 operating through the lever 33, and the attached cables has re-drawn the springs 35 until they are once more at a strong tension. It will now be seen that the entire mechanism has been in operation and has passed through its various phases, and is now in the re-set position, ready for the next tripping of the triggers either 44 or 45, by the hollow rod 68, which projects downward from the tone arm 67.

The above includes a description of the operations resulting from the tripping of trigger 44. When the trigger 45 is tripped by the hollow rod 68, by reason of fact housing 46 has been turned into the "repeat" position, its action becomes apparent when Figure 14 is studied, Figure 14 being an underneath view taken along the dotted line 14, as shown in Figure 10. Lug 44*b* is pressed out of the slot in the curved end of rod 43*b*, enabling the cable running over pulley 36*a* to the main springs 35, to swing the lever 43*b*, so that its end engages the bar 47, which slides the sleeve 49*a* in the opposite direction so that main pulley 18 will engage the clutch member 21 (see Figure 9), which operates the repeating mechanism as illustrated in Figure 16, above described.

It should be understood that the invention is not to be limited to the particular construction here shown, but may be modified, such alterations and changes to come within the scope and meaning of the appended claims.

What is claimed is:

1. In a machine of the class described, a turn table, a magazine adapted for the reception of a plurality of records to be played, a carriage including a conveyor adapted to transfer records to and from said turn table, means for successively ejecting the lowermost record from said magazine, means for placing the ejected records on said conveyor to be transferred to said turn table, driving means for driving said conveyor and for raising and lowering said carriage in transferring records to and from said turn table, a main shaft, a clutch mechanism associated with said shaft, clutch actuating means controlling the raising and lowering of said carriage, and a combined delivery chute and compartment adapted to receive the played records as they are transferred from said turn table.

2. In a machine of the class described, a turn table, a magazine adapted for the reception of a plurality of records to be played, a carriage including horizontally arranged conveyor belts adapted to transfer records to and from said turn table, a trackway over which said conveyor belts are adapted to operate, means for successively ejecting the lowermost record from said magazine, means for placing the ejected records on said conveyor belts to be transferred to said turn table, driving means for driving said conveyor belts and for raising and lowering said carriage in transferring to and from said turn table, a main shaft, a clutch mechanism associated with said shaft, clutch actuating means controlling the raising and lowering of said carriage, and a combined delivery chute and compartment adapted to receive the played records as they are transferred from said turn table.

3. A machine for successively playing phonograph records comprising a framework including a magazine adapted for the reception of a plurality of records to be played, means for ejecting the records successively from said magazine, means for lowering the ejected records, a carriage including conveyor belts upon which the records are received from said magazine, means for moving said belts, a turn table adapted to receive the records to be played from said belt, means for raising and lowering said carriage at predetermined speeds and times, and means for repeatedly playing a selected record.

4. In a phonograph, a turn table, means for rotating said turn table, a magazine adapted to hold in a stacked relation a plurality of records to be played, fixed supporting means normally supporting said records, ejector means for ejecting the lowermost record from said magazine and for temporarily supporting the remaining records in said magazine, and means for transferring the ejected records successively to said turn table.

5. In a phonograph, a turn table, means for

rotating said turn table, a magazine adapted to hold in a stacked relation a plurality of records to be played, record transferring means adapted to transfer records to said turn table, a bottom for said magazine including a pair of relatively movable members cooperating with each other to normally support said records in said stacked relation, one of said members being adapted to receive from the other of said members the lowermost record of the stack in a position to be transferred to said record transferring means, and means for moving said one of said members into a position to transfer the record thereon to said record transferring means.

6. In a phonograph, a turn table, means for rotating said turn table, a magazine adapted to hold a plurality of records to be played, an endless conveyor, means for successively placing the records to be played on said conveyor, and means for operating said conveyor whereby the records to be played are successively transferred to said turn table.

7. In a phonograph, a turn table, means for rotating said turn table, a magazine adapted to hold a plurality of records to be played, an endless conveyor, means for successively placing the records to be played on said conveyor, means for operating said conveyor whereby the records to be played are successively transferred to a position over said turn table, and means for effecting relative movement between said turn table and said conveyor whereby the records to be played are successively placed on said turn table.

8. In a phonograph, a turn table, means for rotating said turn table, a magazine adapted to hold a plurality of records to be played, an endless conveyor, means for successively placing the records to be played on said conveyor, means for operating said conveyor whereby the records to be played are successively transferred to a position over said turn table, and means for effecting relative movement between said turn table and said conveyor whereby the records to be played are successively placed on said turn table, and the played records are successively placed on said conveyor to be moved out of the path of the oncoming records.

9. In a phonograph, a turn table, means for rotating said turn table, a magazine adapted to hold a plurality of records to be played, an endless conveyor including a plurality of conveyor belts adapted for synchronous movement, means for successively placing the records to be played on said conveyor belts, and means for operating said conveyor belts in synchrony whereby the records to be played are successively transferred to said turn table.

10. In a phonograph, a turn table, means for rotating said turn table, a magazine adapted to hold a plurality of records to be played, an endless conveyor including a plurality of conveyor belts arranged in a horizontal position and disposed in a parallel relation and adapted for synchronous movement, means for successively placing the records to be played on said conveyor belts, and means for operating said conveyor belts in synchrony whereby the records to be played are successively transferred to said turn table.

11. In a phonograph, a turn table, means for rotating said turn table, a magazine adapted to hold a plurality of records to be played, a conveyor adapted to receive records successively from said magazine and transfer them to a position over said turn table, a restraining device, and actuating means for effecting relative movement between said conveyor and said restraining device, whereby the oncoming records are so positioned as to be engaged by said restraining device.

12. In a phonograph, a turn table, means for rotating said turn table, a magazine adapted to hold a plurality of records to be played, a conveyor adapted to receive records successively from said magazine and transfer them to a position over said turn table, a restraining device, and means for lowering and raising said conveyor whereby the records to be played are moved into a position to be engaged by said restraining device and are placed upon said turn table and the played records are removed from said turn table and elevated to a position to be thereafter transferred out of the way of the on-coming records free of said restraining device.

13. In a phonograph, a turn table, means for rotating said turn table, a magazine adapted to hold a plurality of records to be played, an endless conveyor, means for successively placing the records to be played on said conveyor, means for operating said conveyor whereby the records to be played are successively transferred to a position over said turn table, and means for lowering the conveyor with respect to said turn table whereby the records to be played are successively placed on said turn table.

14. In a phonograph, a turn table, means for rotating said turn table, a magazine adapted to hold a plurality of records to be played, an endless conveyor, means for successively placing the records to be played on said conveyor, means for operating said conveyor whereby the records to be played are successively transferred to a position over said turn table, and means for lowering and raising said conveyor with respect to said turn table whereby the records to be played are successively placed on said turn table and the played records are successively removed from said turn table by said conveyor to be moved out of the path of the oncoming records.

15. In a phonograph, a turn table, means

for rotating said turn table, a magazine adapted for the reception of a plurality of records to be played, a conveyor adapted to transfer records to said turn table, a platform at the bottom of said magazine, means for successively placing records on said platform, and means for raising and lowering said conveyor with respect to said platform whereby the played record is removed from said turn table and the record carried by said platform is transferred to said conveyor to be moved to a position directly above said turn table and thereafter deposited on said turn table during the lowering movement of said conveyor.

16. In a phonograph, a turn table, means for rotating said turn table, a magazine adapted for the reception of a plurality of records to be played, a conveyor adapted to transfer records to said turn table, a platform at the bottom of said magazine, means for successively placing records on said platform, and means for moving said conveyor toward said platform and for simultaneously moving said platform toward said conveyor whereby the played record is lifted from said turn table by said conveyor and moved out of the path of the next record to be played and whereby the record carried by said platform is deposited upon said conveyor to be transferred to a position directly over said turn table.

17. In a phonograph, a turn table, means for rotating said turn table, a magazine adapted for the reception of a plurality of records to be played, a conveyor adapted to transfer records to said turn table, a platform at the bottom of said magazine, means for successively placing records on said platform, and means for moving said conveyor toward said platform and for simultaneously moving said platform toward said conveyor whereby the played record is lifted from said turn table by said conveyor and moved out of the path of the next record to be played and whereby the record carried by said platform is deposited upon said conveyor to be transferred to a position directly over said turn table, and means for moving said conveyor away from said platform and for simultaneously moving said platform away from said conveyor, whereby the said next record to be played is deposited upon said turn table and whereby said platform is caused to assume its normal position at the lower end of said magazine.

18. In a phonograph, a turn table, means for rotating said turn table, a magazine adapted to hold in a stacked relation a plurality of records to be played, record transferring means adapted to transfer records to said turn table, a bottom for said magazine including a pair of relatively movable members cooperating with each other to normally support said records in stacked relation, one of said members being adapted to receive from the other of said member the lowermost record of the stack in a position to be transferred to said record transferring means, means for lowering said one of said members and for raising said record transferring means, whereby the record carried by said one of said members is deposited upon said record transferring means to be thereafter transferred to said turn table.

19. In a phonograph, a turn table, means for rotating said turn table, a magazine adapted for the reception of a plurality of records to be played, a conveyor adapted to transfer records to said turn table, a platform at the bottom of said magazine, means for successively placing records on said platform in a position to be moved as said platform is moved, and means for moving said platform whereby the record carried thereby is placed upon said conveyor to be transferred to said turn table.

20. In a phonograph, a turn table, means for rotating said turn table, a magazine adapted for the reception of a plurality of records to be played, a conveyor adapted to transfer records to said turn table, a platform at the bottom of said magazine, means for successively placing records on said platform in a position to be lowered as said platform is lowered, and means for lowering said platform whereby the record carried thereby is placed upon said conveyor to be transferred to said turn table.

21. In a phonograph, a turn table, means for rotating said turn table, a magazine adapted for the reception of a plurality of records to be played, a conveyor adapted to transfer records to said turn table, a platform at the bottom of said magazine, means for successively placing records on said platform in a position to be moved as said platform is moved, means for moving said platform whereby the record carried thereby is placed upon said conveyor to be moved to a position over said turn table, and means for effecting relative movement between said conveyor and said turn table whereby the record positioned above said turn table is removed from said conveyor.

22. In a phonograph, a reproducing device, a turn table, means for rotating said turn table, a magazine adapted for the reception of a plurality of records to be played, a conveyor adapted to transfer records to said turn table, a platform at the bottom of said magazine, means for successively placing records on said platform in a position to be moved as said platform is moved, means for moving said platform whereby the record carried thereby is placed upon said conveyor to be moved to a position over said turn table, and means for effecting relative movement between said conveyor and said turn table whereby the record positioned above said turn

table is removed from said conveyor, and means for returning said reproducing device to starting position after the playing of each record.

23. In a phonograph, a turn table, means for rotating said turn table, a magazine adapted to hold in a stacked relation a plurality of records to be played, conveyor belts, means for successively placing the lowermost of said records on said conveyor belts, and means for operating said conveyor belts whereby the records to be played are successively transferred to said turn table.

24. In a phonograph, a turn table, means for rotating said turn table, a magazine adapted to hold a plurality of records to be played, conveyor belts, means for placing a record from said magazine on said conveyor belts, and means for operating said conveyor belts whereby the record thereon is transferred to said turn table.

25. In a phonograph, a turn table, record holding means adapted to hold a plurality of records to be played, an endless conveyor, means for placing a record from said record holding means on said conveyor, means for operating said conveyor whereby the record to be played is free to move to a position over said turn table, and means for effecting relative movement between said conveyor and said turn table whereby the played record is deposited upon said conveyor and the record next to be played is transferred from said conveyor to said turn table.

26. In a phonograph, a turn table, means for rotating said turn table, a magazine adapted to hold a plurality of records to be played, record transferring means adapted to transfer records to said turn table, a bottom for said magazine including a fixed member and a movable member adapted to co-operate with each other to normally support said records in said magazine, one of said members being adapted to receive from the other of said members a record from said magazine in a position to be transferred to said record transferring means, and means for moving said movable member into a position to transfer the record thereon to said record transferring means.

27. In a phonograph, a turn table, means for rotating said turn table, a record holding means adapted to hold a plurality of records to be played, and a bottom for said record holding means including a fixed member and a movable member cooperating with each other to normally support said records in said record holding means, one of said members being adapted to receive from the other of said members a record in position to be subsequently transferred to said turn table.

28. In a phonograph, a turn table, means for rotating said turn table, a magazine adapted to hold in a stacked relation a plurality of records to be played, a crescent shaped ledge plate at the bottom of said magazine, said ledge plate being normally in contact with the lowermost of said records throughout the greater portion of its peripheral margin, means for ejecting the lowermost record from said magazine, the remaining records being retained in a supported position by said ledge plate during such ejection, and means for transferring the ejected records successively to said turn table.

29. In a phonograph, a turn-table, means for rotating said turn-table, record holding means adapted to hold a plurality of records to be played, a bottom for said record holding means including a fixed member and a movable member cooperating with each other to support said records, one of said members being adapted to receive from the other of said members a record in a position to be subsequently transferred to said turn-table, and record-transferring means including said movable member.

30. In a phonograph, a turn-table, means for rotating said turn-table, record holding means adapted to hold a plurality of records to be played, a bottom for said record holding means including a fixed member and a movable member cooperating with each other to support said records, one of said members being adapted to receive from the other of said members a record in a position to be subsequently transferred to said turn-table, and record-transferring means including said movable member, and means for actuating said record-transferring means whereby the record to be played is transferred to said turn-table.

31. In a phonograph, a reproducing device, a turn-table, means for continuously rotating said turn-table, a record holding means adapted to hold a plurality of records to be played, a bottom for said record holding means including a fixed member and a movable member, said movable member being adapted to receive from the other a record to be subsequently transferred to said turn-table, record-transferring means including said movable member adapted to receive records successively from said record holding means and transfer them to said turn-table, and operating means adapted for cyclic operation for raising and lowering said record-transferring means whereby during the lowering operation of said record-transferring means the record carried thereby and to be played is placed upon said turn-table.

32. In a phonograph, a reproducing device, a turn-table, means for continuously rotating said turn-table, record holding means adapted to hold a plurality of records to be played, a bottom for said record holding means including a fixed member and a movable member, said movable member being adapted to receive from the fixed member a record to be subsequently transferred to said turn-

table, record transferring means including said movable member adapted to receive records successively from said record holding means and transfer them to said turn-table, operating means adapted for cyclic operation for raising and lowering said record-transferring means whereby during the lowering operation of said record-transferring means the record carried thereby and to be played is placed upon said turn-table, means controlled by said reproducing device for setting said operating means in operation, and means for returning said reproducing device to starting position.

33. In a phonograph, a turn-table, continuously operated means for rotating said turn-table, record holding means adapted for the reception of a plurality of records to be played and having a bottom including a fixed member and a movable member, record-transferring means adapted to transfer records to said turn-table and including said movable member at the bottom of said magazine, means for successively placing records on said movable member in a position to be moved as said movable member is moved, and means for actuating said record-transferring means whereby the records successively placed on said movable member are transferred to said turn-table.

34. In a phonograph, a turn-table, means for rotating said turn-table, record holding means adapted for the reception of a plurality of records to be played and having a bottom including a fixed and a movable member, operable record-transferring means adapted to transfer records to said turn-table and including said movable member for successively receiving records from said fixed member in a position to be moved as said movable member is moved, means for operating said record-transferring means whereby the record carried by said movable member is moved to a position to be subsequently transferred to said turn-table and whereby relative movement is effected between said record-transferring means and said turn-table to deliver the record from said record-transferring means to said turn-table.

35. In a phonograph, a turn-table, means for rotating said turn-table, record holding means adapted to hold a plurality of records to be played, a fixed ledge supporting said records and having a curved edge conforming substantially with the periphery of a record, ejecting means adapted to cooperate with one of said records and remove it from said ledge, and means for transferring the ejected records successively to said turn-table.

36. In a phonograph, a turn-table, means for rotating said turn-table, record holding means adapted to receive a plurality of records in a stacked relation, a fixed ledge supporting the stack of records and having a curved edge conforming substantially to the periphery of a record, the center of curvature of which curved edge is offset with respect to the center of the lowermost record in its supported position while upheld by said fixed ledge, ejecting means adapted to cooperate with the lowermost record and move it out of engagement with the fixed ledge, and means for transferring the ejected records successively to said turn-table.

37. In a phonograph, a turn-table, means for rotating said turn-table, record holding means adapted to hold in a stacked relation a plurality of records to be played, an ejector mechanism including a fixed ledge and a reciprocatory plunger, means for actuating said plunger whereby the lowermost record is removed from said ledge, the remaining records being upheld by said ejector mechanism, and means for transferring the ejected records successively to said turn-table.

38. In a phonograph, a turn-table, means for rotating said turn-table, record holding means adapted to hold in a stacked relation a plurality of records to be played, operable means for ejecting the lowermost record from said record holding means, a fixed ledge for supporting the records during such time as said ejector means remains inactive, one edge of said ledge conforming substantially to the periphery of a record, and means for transferring the ejected records successively to said turn-table and including a support to which the records are successively transferred from said fixed ledge by said ejector means.

39. In a phonograph, a turn-table, means for rotating said turn-table, record holding means adapted to hold in a stacked relation a plurality of records to be played, operable means for ejecting the lowermost record from said record holding means, a fixed ledge for supporting the records during such time as said ejector means remains inactive, one edge of said ledge conforming substantially to the periphery of a record and having its center of curvature offset with respect to the center of the lowermost record in its normally supported position, and means for transferring the ejected records successively to said turn-table and including a support to which the records are successively transferred from said fixed ledge by said ejector means.

40. In a phonograph, a turn-table, means for rotating said turn-table, record holding means adapted to hold a plurality of records to be played, operable means for ejecting the lowermost record from said record holding means, a fixed ledge for supporting the records during such time as said ejector means remains inactive, and means for transferring the ejected records successively to said turn-table and including a support adapted to be raised and lowered and to which the records

are successively transferred by said ejector means from said fixed ledge.

41. In a phonograph, a turn-table, means for rotating said turn-table, record holding means adapted to hold a plurality of records to be played, an ejector mechanism including a fixed ledge, one edge of which conforms substantially to the periphery of a record and a reciprocatory plunger, means for actuating said plunger whereby the lowermost record is removed from said ledge, the remaining records being upheld by said ejector mechanism, and means for transferring the ejected records successively to said turn-table.

42. In a phonograph, a turn-table, means for rotating said turn-table, record holding means adapted to hold in a stacked relation a plurality of records to be played, an ejector mechanism including a fixed ledge having a curved edge conforming substantially to the periphery of a record, the center of curvature of which curved edge is offset with respect to the center of the lowermost record in its normally supported position when upheld by said fixed ledge, and a reciprocatory plunger, means for actuating said plunger whereby the lowermost record is removed from said ledge, the remaining records being upheld by said ejector mechanism, and means for transferring the ejected records successively to said turn-table.

43. In a phonograph, a turn-table, means for rotating said turn-table, record holding means adapted to hold a plurality of records to be played, means for successively ejecting records from said record holding means, a bottom for said record holding means including a fixed member and a movable member adapted to cooperate with each other to support said records in said record holding means including the record being ejected, one of said members being adapted to receive from the other of said members the ejected record in a position to be subsequently transferred to said turn-table.

44. In a phonograph, a turn-table, means for rotating said turn-table, record holding means adapted to hold in a stacked relation a plurality of records to be played, means for successively ejecting records from said record holding means, a bottom for said record holding means including a fixed ledge having a curved edge conforming substantially to the periphery of a record and a movable member, said fixed ledge and movable member being adapted to cooperate with each other to support said records in said record holding means including the record being ejected, said movable member being adapted to receive from said ledge the ejected record in a position to be subsequently transferred to said turn-table.

45. In a phonograph, a turn-table, means for rotating said turn-table, record holding means adapted to hold in a stacked relation a plurality of records to be played, means for successively ejecting records from said record holding means, a bottom for said record holding means including a fixed ledge having a curved edge conforming substantially to the periphery of a record, which curved edge is offset with respect to the center of curvature of the lowermost record in its normally supported position when upheld by said fixed ledge, and a movable member adapted to cooperate with said fixed ledge to support said records in said record holding means, including the record being ejected, said movable member being adapted to receive from said ledge the ejected record in a position to be subsequently transferred to said turn-table.

46. In a phonograph, a turn-table, means for rotating said turn-table, record holding means adapted to hold a plurality of records to be played, means for successively ejecting records from said record holding means, a bottom for said magazine, including a fixed member and a movable member adapted to cooperate with each other to support said records in said record holding means including the record being ejected, said movable member being adapted to receive from said fixed member the ejected record in a position to be subsequently transferred to said turn-table, and means for moving said movable member in the process of transferring said record to said turn-table.

47. In a phonograph, a turn-table, means for rotating said turn-table, record holding means adapted to hold in a stacked relation a plurality of records to be played, means for successively ejecting records from said record holding means, a bottom for said magazine including a fixed ledge, one edge of which conforms substantially to the periphery of a record and a movable member, said fixed ledge and movable member being adapted to cooperate with each other to support said records in said record holding means including the record being ejected, said movable member being adapted to receive from said ledge the ejected record in a position to be subsequently transferred to said turn-table, and means for moving said movable member in the process of transferring said record to said turn-table.

48. In a phonograph, a turn-table, means for rotating said turn-table, record holding means adapted to hold in a stacked relation a plurality of records to be played, means for successively ejecting records from said record holding means, a bottom for said magazine including a fixed ledge having a curved edge conforming substantially to the periphery of a record, the center of curvature of said curved edge being offset with respect to the center of the lowermost record in its normally supported position when upheld by said fixed ledge, and a movable member

adapted to cooperate with said ledge to support said records in said record holding means including the record being ejected, said movable member being adapted to receive from said ledge the ejected record in a position to be subsequently transferred to said turn-table, and means for moving said movable member in the process of transferring said record to said turn-table.

49. In a phonograph, a turn-table, means for rotating said turn-table, record holding means adapted to hold a plurality of records to be played, record-transferring means adapted to receive records successively from said record holding means and transfer them to a position over said turn-table, restraining means located in the path of movement of the record being transferred to said turn-table and adapted to cooperate with record-transferring means and to engage the record being transferred for so locating that record with respect to said turn-table as to insure its being centrally deposited thereon.

50. In a phonograph, a turn-table, means for rotating said turn-table, record holding means adapted to hold a plurality of records to be played, record-transferring means adapted to receive records successively from said record holding means and transfer them to a position over said turn-table, a restraining device cooperating with record-transferring means to correctly center the record being transferred with respect to the turn-table and means for lowering said conveyor whereby said restraining device is rendered effective to perform its restraining and centering functions and whereby said record is deposited upon said turn-table.

51. In a phonograph, a turn-table having a centrally located record receiving post, means for rotating said turn-table, record holding means adapted to hold a plurality of records to be played, record-transferring means to receive records successively from said record holding means and transfer them to a position over said turn-table, restraining means located in the path of movement of the record being transferred to said turn-table and adapted to cooperate with record-transferring means and to engage the record being transferred for so locating that record with respect to said turn-table as to insure its being centrally deposited on said record receiving post, and means for lifting the played record from said record receiving post whereby its removal from said turn-table and its transferal out of the path of the next record to be played is facilitated.

52. In a phonograph, a turn-table having a centrally located record receiving post, means for rotating said turn-table, record holding means adapted to hold a plurality of records to be played, record-transferring means adapted to receive records successively from said record holding means and to transfer them to a position over said turn-table, a restraining device cooperating with record-transferring means to correctly center the record being transferred with respect to the turn-table, means for lowering record-transferring means whereby said restraining device is rendered effective to perform its restraining and centering functions and said record is deposited upon said record receiving post, and means for lifting the played record from said post whereby its removal from said turn-table and its transferal out of the path of the next record to be played is facilitated.

53. In a phonograph, a turn-table, means for rotating said turn-table, record holding means adapted to hold in a stacked relation a plurality of records to be played and having a bottom including a fixed ledge and a movable member, ejector mechanism including said fixed ledge and a reciprocatory plunger, means for actuating said plunger whereby the lowermost record is removed from said ledge, the remaining records being upheld by said ejector mechanism, and means for transferring said records successively to said turn-table.

54. In a phonograph, a turn-table, means for rotating said turn-table, record holding means adapted to hold in a stacked relation a plurality of records to be played and having a bottom including a fixed ledge and a movable member, ejector mechanism including said fixed ledge and a reciprocatory plunger, operable record-transferring means for transferring records successively to said turn-table and including said movable member, means for actuating said plunger whereby the lowermost record is removed from said ledge and deposited upon said movable member in a position to be moved as said movable member is moved, the remaining records being upheld by said ejector mechanism, operating means for said record-transferring means whereby the record deposited upon said movable member is moved to a position to be subsequently transferred to said turn-table and whereby relative movement with respect to said turn-table is effected so that the record carried by said record-transferring means is transferred to said turn-table.

55. In a phonograph, a turn-table, means for rotating said turn-table, record holding means adapted to hold in a stacked relation a plurality of records to be played and having a bottom including a fixed ledge having one edge conforming substantially to the periphery of a record and a movable member, ejector mechanism including said fixed ledge and a reciprocatory plunger, means for actuating said plunger whereby the lowermost record is removed from said ledge, the remaining records being upheld by said ejector mechanism, and means for transferring said ejected records successively to said turn-table.

56. In a phonograph, a turn-table, means for rotating said turn-table, record holding means adapted to hold in a stacked relation a plurality of records to be played and having a bottom including a fixed ledge having one edge conforming substantially to the periphery of a record and a movable member, said ledge having a curved edge conforming substantially to the periphery of a record, the center of curvature of said ledge being offset with respect to the center of the lowermost record of the stack in its normally supported position, ejector mechanism including said fixed ledge and a reciprocatory plunger, means for actuating said plunger whereby the lowermost record is removed from said ledge, the remaining records being upheld by said ejector mechanism, and means for transferring said ejected records successively to said turn-table.

In testimony whereof I affix my signature.

GEORGE H. PITTMAN.