

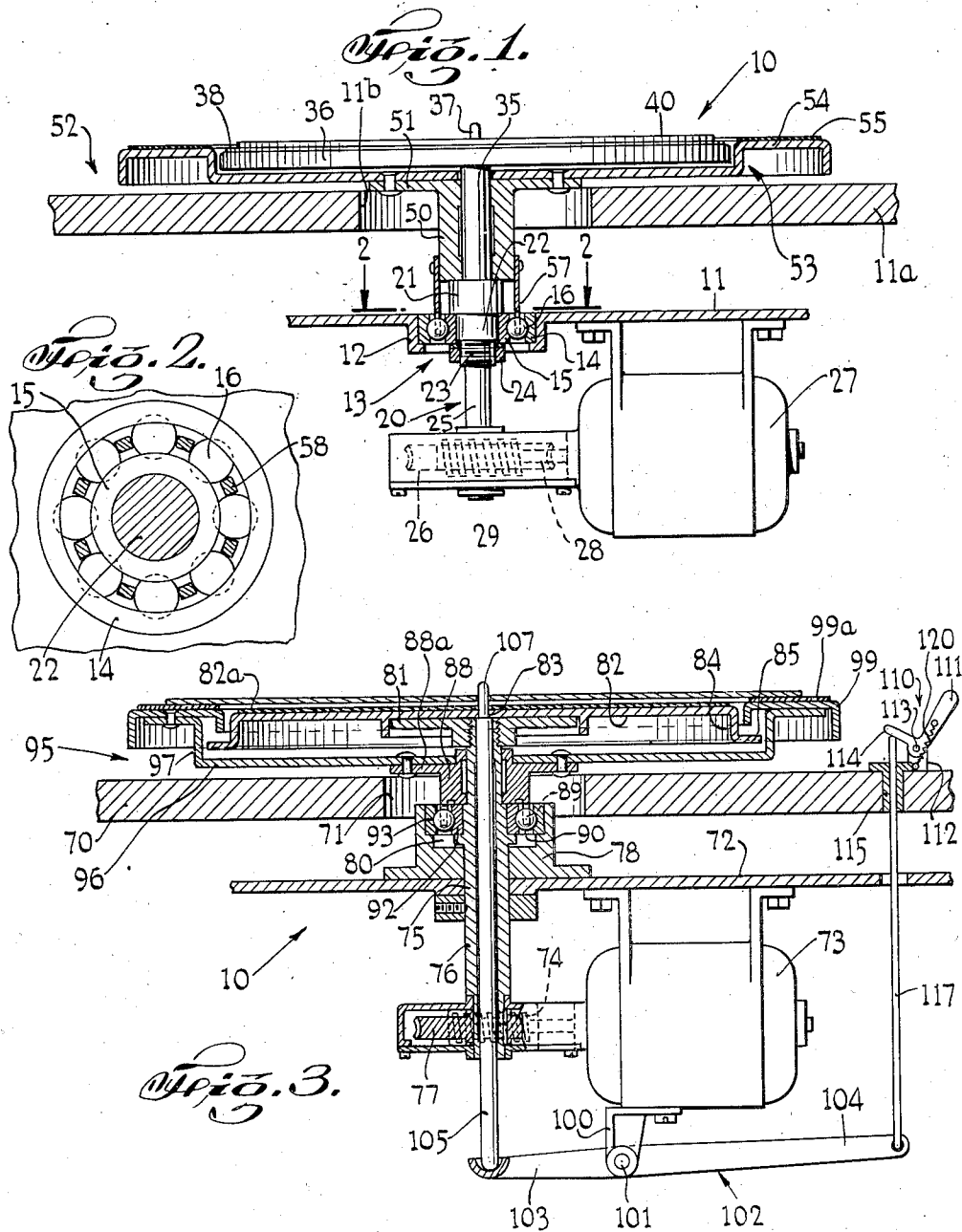
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RECORD PLAYER

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RECORD PLAYER

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This invention relates to record players.

Records used in radio broadcasting stations are mostly of 10" or 12" diameter to be played at 78 revolutions per minute and of 16" diameter to be played at 33 $\frac{1}{3}$ revolutions per minute. The present record players used in broadcasting stations can be operated either at 78 R. P. M. or 33 $\frac{1}{3}$ R. P. M. Sometimes a mistake is made and a record is set to play at the wrong speed, making it necessary to change the speed of the machine or record player sometimes while the broadcast is on. It is therefore an object of the present invention to provide a device of the character described in which it is not possible to play a record at the wrong speed.

A further object of this invention is to provide a record player of the character described comprising an outer turn table for receiving 16" records and rotating at 33 $\frac{1}{3}$ R. P. M. and an inner turn table within the larger turn table, for receiving 10" or 12" records and rotating at 78 R. P. M. The smaller turn table is at a lower level than the outer turn table. Both turn tables rotate concurrently, but at different speeds. If the larger record is set on the turn table it will rotate at the correct speed since it does not contact the smaller turn table, and if the smaller record is placed on the inner turn table it will rotate at the correct speed without touching the outer turn table.

A very small percentage of small records (10" or 12") are made to be played at 33 $\frac{1}{3}$ R. P. M. It is therefore a further object of this invention to provide a machine of the character described having manually settable means to additionally permit playing of a small record at 33 $\frac{1}{3}$ R. P. M.

Still another object of this invention is to provide a durable and compact machine of the character described which shall be relatively inexpensive to manufacture, which shall be smooth and positive in operation, and yet practical and efficient to a high degree in use.

Other objects of this invention will in part be obvious and in part hereinafter pointed out.

The invention accordingly consists in the features of construction, combinations of elements, and arrangement of parts which will be exemplified in the construction hereinafter described, and of which the scope of application will be indicated in the following claims.

In the accompanying drawing, in which is shown one of the various possible illustrative embodiments of this invention,

Fig. 1 is an elevational cross-sectional view of a record player embodying the invention;

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Fig. 2 is a cross-sectional view taken on line 2-2 of Fig. 1; and

Fig. 3 is a view similar to Fig. 1 but illustrating a modified form of the invention.

Referring now in detail to the drawing, 10 designates a record player embodying the invention. The same comprises a horizontal frame 11 provided with a hub 12. Above the frame is a table 11a formed with a hole 11b. Within the hub 12 is a speed reducing ball bearing planetary transmission 13 of usual construction. Said transmission comprises an outer race 14 fixed within the hub 12 and an inner rotary race 15. Between the inner race 15 and the outer race 14 are spaced balls 16 frictionally engaging grooves in said inner and outer races 14, 15. Extending through the inner race 15 is a vertical shaft 20 passing upwardly through hole 11b in table 11a. Said shaft comprises an enlarged portion 21 resting on the inner race and a reduced portion 22 projecting through the inner race, and a still further reduced screw threaded portion 23 below said inner race. On the screw threaded portion 23 is a lock nut and washer 24 to fix shaft 20 to the inner race for rotation therewith.

Extending downwardly from the screw threaded portion 23 is a shaft portion 25 on which is fixed a worm gear 26.

Fixed to the underside of frame 11 is a motor 27 provided with an armature shaft 28 carrying a worm 29 meshing with the worm gear 26.

The speed of the motor 27 and the reduction gearing 26, 29 is such that the shaft 25 is rotated at 78 R. P. M. The speed reducing ball bearing planetary system 13 is so designed that the balls 16 rotate about the axis of shaft 20 at a speed of 33 $\frac{1}{3}$ R. P. M.

Extending upwardly from shaft portion 21 is a reduced shaft portion 35 on the upper end of which is mounted a turn table 36 a little over 12" in diameter, for receiving and playing 10" or 12" records. Extending upwardly from the turn table is a central pin 37 to engage within the central openings of the records. The turn table 36 may be provided with a felt pad covering 38. On the turn table is shown a record 40. It will now be understood that 10" or 12" records may be placed on turn table 36 and played at 78 R. P. M. Most 10" or 12" records are so made that they must be played at 78 R. P. M.

Means is provided to play the large 16" records at 33 $\frac{1}{3}$ R. P. M. To this end there is mounted on shaft portion 21 and surrounding shaft portion 35, a sleeve 50 passing through hole 11b and formed with an annular flat flange 51 at its

upper end disposed above table 11a. Fixed thereto is an outer turn table 52. Said turn table 52 has a central recessed portion 53 to receive the turn table 36 without contacting the same.

Extending upwardly from the recessed portion 53 of turn table 52 is a turn table portion 54 surrounding turn table 36 and having an outer diameter somewhat larger than 16". The upper surface of turn table portion 54 is preferably at a somewhat higher level than the top surface of turn table portion 36. The outer turn table may also be provided with a felt pad covering 55.

The sleeve 50 is freely rotatable relative to shaft 20. Fixed to the lower end of sleeve 50 is a skirted annular portion 57 having a castellated lower end forming teeth or projections 58 received between the balls 16. As the balls rotate about the axis of shaft 20 they will cause rotation of member 57 and hence outer turn table 52.

It will now be understood that both turn tables rotate concurrently when the motor is on, the inner turn table at 78 R. P. M. and the outer turn table at 33 1/3 R. P. M. If a large record is placed on the outer table it will rotate at 33 1/3 R. P. M. because it will not touch the inner turn table which is set at a lower level.

A small percentage of 10" or 12" records are made to be played at 33 1/3 R. P. M. They can be played at that speed on the record player 10 by first placing a large record on said player and then placing a small record on the large record and playing the small record. The small record will then rotate at 33 1/3 R. P. M. Instead of placing a large record on the outer turn table, a flat disc or plate of about 14" diameter and formed with a central opening, may be placed on the large turn table, and the small record to be played then placed on said plate or disc.

In Fig. 3 there is shown a record player 10a which is provided with means for playing small records at 78 R. P. M., large records at 33 1/3 R. P. M., and which is further provided with manually settable means to play small records at 33 1/3 R. P. M. Said device 10a comprises a table 70 formed with an opening 71. Below said table is a fixed frame 72, to the underside of which is attached a motor 73 carrying a worm 74. Frame 72 is formed with a central opening 75 aligned with opening 71. Extending therethrough is a vertical sleeve 76. On the lower end of said sleeve is a worm gear 77 meshing with the worm 74. Fixed on frame 72 is a hub 78 through which said sleeve 76 passes.

Interposed between the hub 78 and sleeve 76 is a speed reducing ball bearing planetary 80 transmission similar to the one shown in Fig. 1. Fixed to the upper end of sleeve 76 is a plate 81. Resting on plate 81 is an inner turn table 82. Said inner turn table has a central opening 83. It is formed at its outer rim with a downwardly extending cylinder portion 84 from which there extends outwardly a flange 85 for the purpose hereinafter appearing.

Rotatably mounted on sleeve 76 between plate 81 and hub 78, is a sleeve 88 provided with downwardly extending castellated teeth 89 received between the balls 90 of the planetary transmission 80. Said transmission comprises an inner race 92 fixed to the sleeve 76 and an outer race 93 fixed to the hub 78. The motor 73 and the gearing 74, 77 is so set as to rotate sleeve 76 at a speed of 78 R. P. M. The inner turn table 82, when it rests on plate 81, thus also rotates

at a speed of 78 R. P. M. The planetary system 80 is so designed that the balls 90 and hence sleeve 88 will rotate at a speed of 33 1/3 R. P. M.

Plate 88 has an annular flange 88a at its upper end. Fixed to flange 88a is an outer turn table 95. Said outer turn table comprises a bottom plate 96 mounted on said flange 88a. Extending upwardly from bottom plate 96 is a cylindrical wall 97 surrounding the inner turn table. Attached to the upper end of wall 97 is a turn table top 99. The inner turn table 82 may be provided with a felt pad 82a, and the turn table top 99 may be provided with a felt pad 99a.

The outer turn table portion 99 is at a somewhat higher level than the inner turn table when the inner turn table rests on plate 81. Thus, when the motor is operating, the inner turn table rotates at 78 R. P. M. and the outer turn table rotates at 33 1/3 R. P. M. Should a small record be placed on the inner turn table it will rotate at the correct speed. Should a large record be placed on the turn table it will also rotate at the correct speed.

It will be understood that in both devices 10 and 10a, when the machine is operating normally, it is not possible to play a small record at 33 1/3 R. P. M., or a large record at 78 R. P. M.

In device 10a however, normally settable means is provided to additionally permit playing of a small record at 33 1/3 R. P. M. To this end there is fixed to the motor 73, a bracket 100 provided with a pivot 101. Pivoted thereto is a lever 102 having one arm 103 extending below the sleeve 76 and a second arm 104 extending in an opposite direction.

Slidably mounted within sleeve 76 is a rod 105, the lower end of which contacts arm 103. At the upper end of rod 105 is a reduced pin 107 passing through the central opening 83 of the inner turn table. The rod 105 has a shoulder just below its pin 107 adapted to engage the inner turn table 102 to lift the same off plate 81 and to bring the flange 85 of said inner turn table into contact with the turn table top 99. Thus rod 105 can be caused to release the inner turn table from plate 81 and engage the same with the outer turn table. Thus upon raising rod 105 the inner turn table is caused to rotate at 33 1/3 R. P. M. instead of 78 R. P. M. If a small record is on the raised inner turn table it will rotate at 33 1/3 R. P. M. instead of 78 R. P. M.

On the table 70 is a bell crank 110 provided with a handle 111. The bell crank is pivoted to a bracket 112 fixed to the table and provided with a pivot 113 for such purpose. Bell crank 110 has an arm 114 for the purpose hereinafter appearing. The table 70 is formed with a through opening 115. Extending through said opening is a rod 117 connected at its lower end to arm 104 of lever 102.

A spring 120 normally tends to rotate the bell crank 110 in a clockwise direction. However, should the handle 111 be grasped and the bell crank 110 rotated in a counterclockwise direction, rod 117 would be depressed causing rotation of lever 102 and raising of the rod 105 for the purpose aforesaid.

Any suitable catch may be provided if desired, to retain the bell crank in a position for keeping the inner turn table raised.

It will thus be seen that there is provided a device in which the several objects of this invention are achieved, and which is well adapted to meet the conditions of practical use.

As various possible embodiments might be made

of the above invention, and as various changes might be made in the embodiments above set forth, it is to be understood that all matter herein set forth or shown in the accompanying drawing is to be interpreted as illustrative and not in a limiting sense.

Having thus described our invention, we claim as new and desire to secure by Letters Patent:

1. A record player comprising a shaft, a turn table on said shaft, a sleeve surrounding said shaft, an outer turn table on said sleeve, said outer turn table having an annular table top surrounding said inner turn table, and at a higher level than said inner turn table, speed reducing means interconnecting said shaft with said sleeve, and means to rotate said shaft and means to center records on either the inner turn table or outer turn table.

2. An outer turn table having a central depressed portion and an outer portion adapted to support a record placed thereon, an inner turn table within said depressed portion adapted to support a record placed thereon, the upper surface of the outer portion of the outer turn table being at a higher level than the inner turn table, and means to rotate said turn tables concurrently in the same same direction at different speeds and means to center records on either the inner turn table or outer turn table.

3. A record playing device comprising a horizontal frame, a vertical shaft rotatably mounted on said frame, a sleeve surrounding said shaft, a turn table of smaller diameter on said shaft, a turn table of larger diameter on said sleeve, said second turn table being formed with a recess receiving the smaller turn table, a speed reducing ball bearing planetary transmission between said shaft and sleeve, and means to rotate said shaft.

4. A record player comprising a sleeve, a rod passing through said sleeve, an inner turn table resting on said sleeve and disposed about said sleeve, a rotary hub surrounding said sleeve, speed reducing means interconnecting said sleeve with said hub, means to rotate said sleeve, an outer turn table on said hub concentric with said inner turn table, the upper surface of the outer turn table being normally at a higher level than the inner turn table, means for raising said rod to lift said inner turn table off said sleeve, and means on said inner turn table adapted to engage the outer turn table when said inner turn table is raised by said rod.

5. A record player comprising a sleeve, a rod

passing through said sleeve, an inner turn table resting on said sleeve and disposed about said sleeve, a rotary hub surrounding said sleeve, speed reducing means interconnecting said sleeve with said hub, means to rotate said sleeve, an outer turn table on said hub concentric with said inner turn table, the upper surface of the outer turn table being normally at a higher level than the inner turn table, means for raising said rod to lift said inner turn table off said sleeve, means on said inner turn table adapted to engage the outer turn table when said inner turn table is raised by said rod, and manually operated means to raise said rod.

6. In a record player, a turn table adapted to support a record placed thereon, a second turn table having a flat annular surface surrounding the first turn table and adapted to receive a relatively larger record placed thereon, means to rotate said turn tables concurrently at different speeds, a common means to center records placed on either turn table, said turn tables being so arranged that a relatively larger record may be placed on the second turn table or a relatively smaller record on the first turn table while both turn tables are in normal position, said turn tables being at different levels so that a record placed on the second turn table will be in spaced overlying relation with respect to the first turn table.

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