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DUAL SPEED PHONOGRAPH
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Fig. 1

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The invention relates to phonographs and more particularly to a phonograph provided with a dual motor turntable drive and means for selectively driving the turntable by either one of the motors.

There are at present many phonograph records in use, and still being made, which play at a speed of 78.26 R. P. M., while in recent years many large size records have been made which play at a speed of 33 1/3 R. P. M.

The type of phonograph which has been manufactured for many years is designed to rotate the turntable at a speed of 78.26 R. P. M. and can not be used for playing the newer, large records which are constructed to play at a speed of 33 1/3 R. P. M., while the newer type phonographs which are designed to rotate the turntable at a speed of 33 1/3 R. P. M. for playing these new, large records cannot be used for playing the old style 78.26 R. P. M. records.

Phonographs, frequently in connection with a public address system, are now being widely used in shops, factories, schools, lodges and the like, and for this purpose it is usually desirable to play both types of records. It is therefore customary to provide two phonographs for such installations, one with a turntable arranged to rotate at 78.26 R. P. M., and the other to rotate at a speed of 33 1/3 R. P. M., with means for connecting either phonograph to the public address system as desired.

The object of the present invention is to provide a single phonograph with selective means for rotating the turntable at a speed of 78.26 R. P. M. and a speed of 33 1/3 R. P. M. as desired, in order that both types of records may be played upon the same phonograph.

Another object is to provide a phonograph having two motors and means for operatively connecting either motor to the turntable.

A further object is to provide a phonograph provided with two motors, one motor being arranged to drive the turntable at high speed and the other being arranged to drive the turntable at a lower speed.

A still further object is to provide a device of this character in which a large drive pulley is mounted on one motor shaft and a smaller drive pulley is mounted on the other motor shaft, an idler wheel being arranged to be selectively moved into engagement with either drive pulley and the turntable.

Still another object of the invention is to provide a phonograph of the character referred to in which a three-way switch is provided to close an electric circuit to either motor at the time the motor is operatively connected to the turntable.

A further object is to provide a phonograph of this character in which the idler wheel is mounted upon a slidable platform plate arranged to be moved by an operating lever carried by a manually operable knob upon which the three-way switch is mounted so that the switch and idler wheel will be simultaneously operated by rotation of the knob.

A still further object of the invention is to provide a phonograph of the character referred to in which the operating lever is connected to the sliding idler wheel supporting plate by means of tension springs, means being provided for independently adjusting the tension upon the springs.

The above objects together with others which will be apparent from the drawings and following description, or which may be hereinafter referred to, may be attained by constructing the improved dual speed phonograph in the manner illustrated in the accompanying drawings in which:

Figure 1 is a top plan view of the improved phonograph a portion of the turntable being broken away for the purpose of illustration;

Fig. 2 a diagrammatic plan view of the sliding idler wheel supporting plate and portions of the two motors and turntable, showing the parts in neutral position;

Fig. 3 a view similar to Fig. 2 showing the idler wheel operatively connecting the relatively low speed motor to the turntable;

Fig. 4 a similar view showing the idler wheel operatively connecting the high speed motor to the turntable, and;

Fig. 5 a longitudinal sectional view through the manually operable knob and the three-way switch. The improved phonograph may be provided with the usual platform 10 having a vertical spindle 11 extending above the top thereof, upon which is rotatably mounted the turntable 12 of any usual and well known design provided with the depending peripheral rim 13.

A pickup arm, of any usual and well known construction, is indicated at 14, being pivotedly mounted upon the platform as in usual and well known manner, as shown at 15, the usual electric cable 16 leading from the pickup arm to the loud speaker or public address system as in ordinary practice. The above mentioned parts of the phonograph may be of any usual and well known construction and design.

The motor supporting plate 17 is flexibly mounted above the platform 10 as by the resilient grommets 18 of rubber or the like. The motors 19 and 20 are suspended from said motor sup-
porting plate through openings 21 and 22 respectively in the platform 10, by means of screws 23 or the like, located through ears 24 upon the motor supporting plate and into the motors.

The motors may be of the same speed, or of different speeds, and the holes of the same size or of different sizes, so as to provide for differential speeds of rotation of the turntable 12 when the drive pulley of either motor is operatively connected to the rim flange 13 of the turntable. In the form of the invention illustrated the motor 19 may be of lower speed than the motor 20, and the drive pulley 25 upon the armature 26 thereof may be of smaller diameter than the drive pulley 27 upon the armature 28 of the motor 20.

The idler wheel 29 is provided with a resilient tire 30 and is journaled upon the spindle 31 which may be substantially centrally mounted upon the top of the T-shaped idler wheel supporting plate 32.

This T-shaped plate is slidably mounted upon the top of the motor supporting plate as by means of the elongated slot 33 in one end portion of the plate 32 which receives the headed stud or screw 34 carried by the motor supporting plate, a washer 34′ being preferably mounted upon the stud 34 between the head thereof and the top of the sliding plate 32.

For the purpose of providing a three-way contact of the sliding plate 32 upon the motor supporting plate, indentations or blisters 35 may be formed in the plate 32 near the end portions thereof for sliding contact upon the motor supporting plate 32.

For the purpose of operating the sliding T-shaped plate 32 in order to move the idler wheel 23 into engagement with either of the motor drive pulleys 25 or 27, an operating lever 36 is fixed upon a manually operable knob 37 rotatably mounted upon the platform 10 and provided with the stop fingers 38 for engagement with the stop pins 39 and 39′ upon the platform, for limiting movement of the knob and lever in each direction.

An upturned ear 40 is formed upon the end of the lever 36 and a pair of coil springs 41 are connected to said ear and to the T-shaped idler wheel plate 32. For the purpose of independently adjusting the tension upon each spring 41, the springs may be connected to the plate 32 by means of independently adjustable arms 42 adjustably mounted upon the plate 32 as by the adjusting screw 43 and having their ends located through arcuate slots 44 in the plate 32 and connected to the ends of the springs 41.

With this construction each arm 42 may be independently moved to proper position to support the desired tension upon the corresponding spring 41 and the adjusting screw 43 may then be tightened to hold both arms in adjusted position with the desired tension upon each spring.

A three-way switch is operatively connected to the knob 37 and convolves a rotor 45 provided with switch blades 46 and 47 for engagement with the fixed contacts 48 and 49 respectively. The rotor 45 of the switch is of suitable electric conductive material and is connected to one wire 50 of an electric circuit as through the contact 51. The other wire 52 of the circuit is connected to the motors 19 and 20 respectively and return wires 55 and 56 lead from the motors 19 and 20 to the fixed contacts 48 and 49 respectively.

In the operation of the improved phonograph, assuming that it is desired to play a 78.26 R. P. M. record, the record is placed upon the turntable in usual manner, the pickup arm is swung into position upon the record and the knob 37 is manually rotated in a clockwise direction, as shown in Fig. 2, to engage the friction wheel 29 with the pulley 21 of said motor and the peripheral rim 13 of the turntable, all as shown in Fig. 3. At the same time the switch blade 41 will be moved into contact with the fixed contact 49 closing the circuit to the motor 20 so that the turntable will be operated at a speed of 78.26 R. P. M. in order to play said record.

If it is then desired to play a 33½ R. P. M. record the knob 37 is rotated in counter-clockwise direction until the finger 37 contacts the stop stud 39 as shown in Fig. 4. The operating lever 36, through the springs 41, slides the plate 32 toward the motor 19 moving the idler wheel 29 into contact with the turntable rim 13 and peripheral flange 13 of the turntable. At the same time the switch blade 41 will be moved into contact with the fixed contact 48 closing the circuit to the motor 19 so that the turntable will be operated at a speed of 33½ R. P. M. so that the record may be played at the proper speed.

In order to hold the machine in neutral position the knob 37 is rotated to move the lever 36 to the central position, shown in Figs. 1 and 2, holding the sliding plate 32 in the position shown in said figures so that the idler wheel 29 is held out of contact with the drive pulleys of both of the motors and the turntable rim, and the three way switch is in the off position as shown in dotted lines in Fig. 1.

It is important that in the neutral position the idler wheel 29 be out of contact with the motor drive pulleys and the rim flange of the turntable because in standing idle the rubber tire 46 of the idler wheel develops a permanent set at the point of contact with any object, such as a motor pulley or turntable rim flange, resulting in vibration or noise when the unit is operating.

From the above it will be seen that a simply constructed and easily operated dual speed phonograph is provided for selectively playing records of 78.26 R. P. M. and 33½ R. P. M. as desired, no gear transmission or other mechanism being required for changing the speed of the turntable. Thus a single phonograph may be electrically connected to the loud speakers of a public address system and records of either speed may be played as desired merely by turning the knob 37 to the right or left as may be necessary, depending upon which speed record is to be played.

I claim:

1. A friction transmission for phonograph turntables, including a supporting plate, a turntable rotatably mounted above said plate and having an annular flange, a spaced pair of motors carried by said plate, a friction pulley operatively connected to each motor, an idler wheel movable relative to the plate and means for urging the idler wheel into contact with the motor pulley and the turntable flange.

2. A friction transmission for phonograph turntables, including a supporting plate, a turntable rotatably mounted above said plate and having an annular flange, a spaced pair of motors carried by said plate, a friction pulley
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operatively connected to each motor, one pulley rotating at a higher peripheral speed than the other pulley, a plate slidably mounted to the plate and means for urging the idler wheel into contact with either pulley and the turntable flange.

3. A friction transmission for phonograph turntables, including a supporting plate, a turntable rotatably mounted above said plate and having an annular flange, a spaced pair of motors carried by said plate, a friction pulley operatively connected to each motor, one pulley being of relatively larger diameter than the other, an idler wheel movable relative to the plate and means for urging the idler wheel into contact with either motor pulley and the turntable flange.

4. A friction transmission for phonograph turntables, including a supporting plate, a turntable rotatably mounted above said plate and having an annular flange, a spaced pair of motors carried by said plate, a friction pulley operatively connected to each motor, an idler wheel movable relative to the plate, an electric circuit, a three-way switch for closing the circuit to either motor and means for urging the idler wheel into contact with either motor pulley and the turntable flange and for simultaneously operating the switch to close the circuit to the corresponding motor.

5. A friction transmission for phonograph turntables, including a supporting plate, a turntable rotatably mounted above said plate and having an annular flange, a spaced pair of motors carried by said plate, a friction pulley operatively connected to each motor, one pulley rotating at a higher peripheral speed than the other pulley, an idler wheel movable relative to the plate, an electric circuit, a three-way switch for closing the circuit to either motor and means for urging the idler wheel into contact with either motor pulley and the turntable flange and for simultaneously operating the switch to close the circuit to the corresponding motor.

6. A friction transmission for phonograph turntables, including a supporting plate, a turntable rotatably mounted above said plate and having an annular flange, a spaced pair of motors carried by said plate, a friction pulley operatively connected to each motor, one pulley being of relatively larger diameter than the other, an idler wheel movable relative to the plate, an electric circuit, a three-way switch for closing the circuit to either motor and means for urging the idler wheel into contact with either motor pulley and the turntable flange and for simultaneously operating the switch to close the circuit to the corresponding motor.

7. A friction transmission for phonograph turntables, including a supporting plate, a turntable rotatably mounted above said plate and having an annular flange, a spaced pair of motors carried by said plate, a friction pulley operatively connected to each motor, one pulley rotating at a higher peripheral speed than the other pulley, a plate slidably mounted upon the supporting plate, an idler wheel rotatably mounted upon the said plate, an operating lever and spring means connecting the lever to the said plate for urging the idler wheel into contact with either motor pulley and the turntable flange.

8. A friction transmission for phonograph turntables, including a supporting plate, a turntable rotatably mounted above said plate and having an annular flange, a spaced pair of motors carried by said plate, a friction pulley operatively connected to each motor, one pulley rotating at a higher peripheral speed than the other pulley, a plate slidably mounted upon the supporting plate, an idler wheel rotatably mounted upon the said plate, an operating lever and spring means connecting the lever to the said plate for urging the idler wheel into contact with either motor pulley and the turntable flange.

9. A friction transmission for phonograph turntables, including a supporting plate, a turntable rotatably mounted above said plate and having an annular flange, a spaced pair of motors carried by said plate, a friction pulley operatively connected to each motor, one pulley rotating at a higher peripheral speed than the other pulley, a plate slidably mounted upon the supporting plate, an idler wheel rotatably mounted upon the said plate, an electric circuit, a three-way switch for closing the circuit to either motor, an operating lever operatively associated with the said plate for urging the idler wheel into contact with either motor pulley and the turntable flange.

10. A friction transmission for phonograph turntables, including a supporting plate, a turntable rotatably mounted above said plate and having an annular flange, a spaced pair of motors carried by said plate, a friction pulley operatively connected to each motor, one pulley being of relatively larger diameter than the other, a plate slidably mounted upon the supporting plate, an idler wheel rotatably mounted upon the said plate and an operating lever operatively associated with the said plate for urging the idler wheel into contact with either motor pulley and the turntable flange.

11. A friction transmission for phonograph turntables, including a supporting plate, a turntable rotatably mounted above said plate and having an annular flange, a spaced pair of motors carried by said plate, a friction pulley operatively connected to each motor, one pulley being of relatively larger diameter than the other, a plate slidably mounted upon the supporting plate, an idler wheel rotatably mounted upon the said plate, an electric circuit, a three-way switch for closing the circuit to either motor, and an operating lever operatively associated with the said plate for urging the idler wheel into contact with either motor pulley and the turntable flange and for simultaneously operating the switch to close the circuit to the corresponding motor.

12. A friction transmission for phonograph turntables, including a supporting plate, a turntable rotatably mounted above said plate and having an annular flange, a spaced pair of motors carried by said plate, a friction pulley operatively connected to each motor, one pulley being of relatively larger diameter than the other, a plate slidably mounted upon the supporting plate, an idler wheel rotatably mounted upon the said plate, an operating lever, and spring means connecting the lever to the said plate for urging the idler wheel into contact with either motor pulley and the turntable flange.

13. A friction transmission for phonograph turntables, including a supporting plate, a turntable rotatably mounted above said plate and having an annular flange, a spaced pair of motors carried by said plate, a friction pulley operatively connected to each motor, an idler wheel movable
relative to the plate and means for urging the idler wheel into contact with either motor pulley and the turntable flange and for moving the idler wheel into neutral position out of contact with both pulleys and the turntable flange.

14. A friction transmission for phonograph turntables, including a supporting plate, a turntable rotatably mounted above said plate and having an annular flange, a spaced pair of motors carried by said plate, a friction pulley operatively connected to each motor, an idler wheel movable relative to the plate, an electric circuit, a three-way switch for closing the circuit to either motor and means for urging the idler wheel into contact with either motor pulley and the turntable flange and for simultaneously operating the switch to close the circuit to the corresponding motor, and for moving the idler wheel to neutral position out of contact with both pulleys and the turntable flange and for simultaneously opening the circuits to both motors.

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