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H. L. HARTMAN
 DRIVE MECHANISM FOR PHONOGRAPH
 TURNTABLES AND TAPE MECHANISMS
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2,625,827

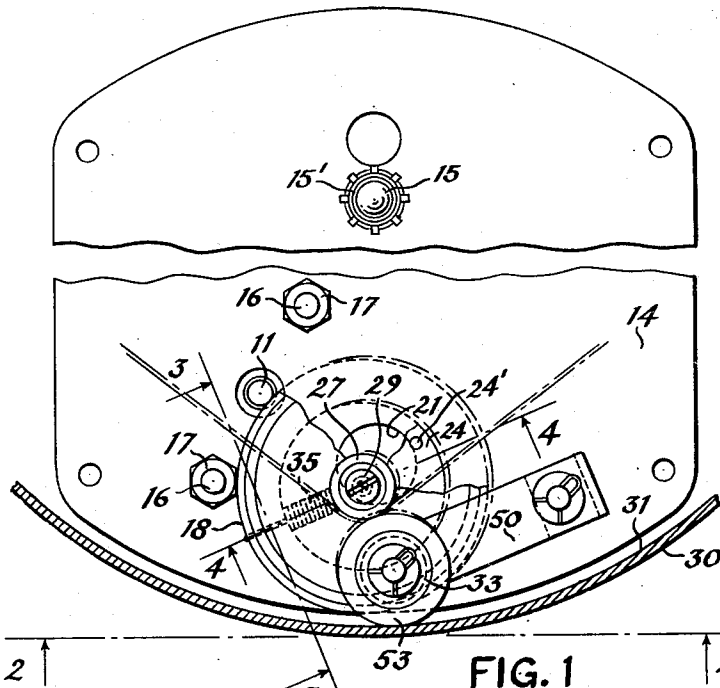


FIG. 1

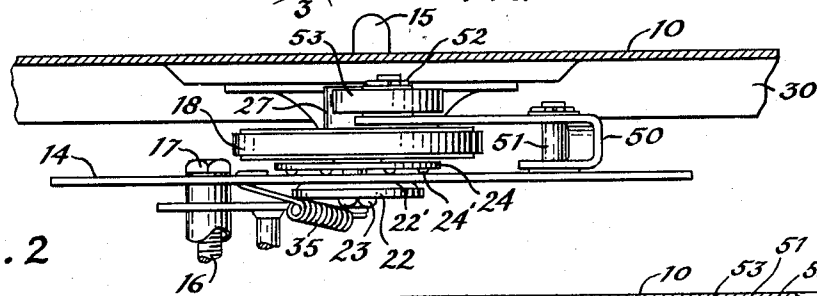


FIG. 2

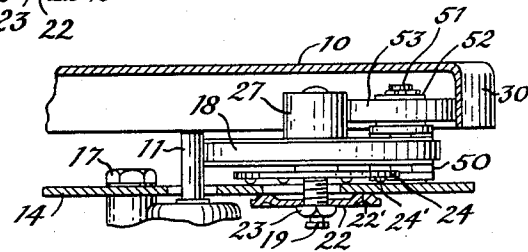


FIG. 3

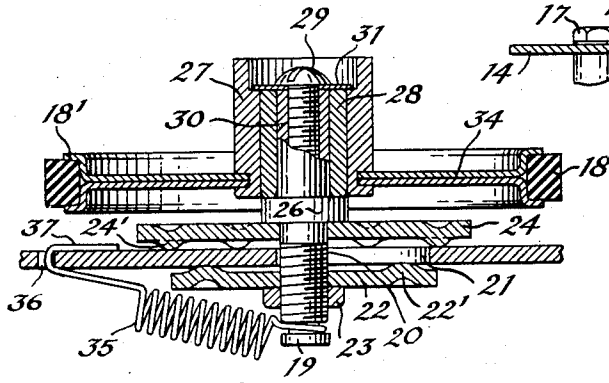


FIG. 4

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DRIVE MECHANISM FOR PHONOGRAPH
TURNTABLES AND TAPE MECHANISMSHerbert L. Hartman, Elyria, Ohio, assignor to The
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3 Claims. (Cl. 74-209)

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My invention relates to phonograph turntable drive mechanisms and relates more particularly to drive mechanisms of the type commonly referred to as "rim drive" mechanisms and also relates to mechanisms used for driving tape recorder mechanisms.

It is an object of my invention to provide a drive mechanism of the type referred to which is adapted to be used for a low-speed, relatively small turntable application.

Another object of my invention is to provide a drive mechanism of the type referred to which will be adapted for driving a tape recorder.

A still further object of my invention is to provide a drive mechanism of the type referred to which may interchangeably be used for driving tape recorder mechanisms or driving phonograph turntable mechanisms.

A further object of my invention is to provide a drive mechanism of the type referred to which is adapted for use in driving phonograph turntables by idler means brought into driving engagement with the rim of such turntables.

Another object of my invention is to provide drive mechanisms of the type referred to which will be economical to manufacture, durable in use, compact, and highly efficient in operation.

Other objects of my invention and the invention itself will become more readily apparent from a perusal of the description which follows, in which description reference will be had to the accompanying drawings, in which drawings:

Fig. 1 is a top plan view of the improved drive mechanism of my invention, the top of certain portions thereof being removed therefrom to facilitate illustrating the embodiment and a taut tape being designated by double dotted lines to illustrate use thereof when desired;

Fig. 2 is a view taken from the line 2-2 of Fig. 1, the tape being deleted in this view;

Fig. 3 is a view of the line 3-3 taken from Fig. 1;

Fig. 4 is a cross-sectional view of the idler wheel assembly of Figs. 1 to 3 inclusive.

Referring now to the drawings in all of which like parts are designated by like reference characters, at 10 I show a portion of a phonograph turntable with which the drive mechanism of my invention is associated. As best illustrated in Fig. 3, at 11 I show a rotor shaft extending vertically upwardly from a phonograph motor 12 and projected through an aperture 13 in a main motor mounting plate 14. The motor is suspended from the main supporting plate by means of a supplemental plate 15, Fig. 2, pendantly supported from the main plate by means of a pair

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of mounting bearings 16, said bearings being secured to the main supporting plate 14 by means of hexagonal nuts 17.

The turntable 18 may be carried on the post 15 in any well known manner and preferably the post 15 is journaled in a bearing tube 15' for free frictionless rotation. The turntable is preferably formed with a pendant flange 30 having a smooth cylindrical surface 31 with which the rubber peripheral tread 53 of an intermediate driven pulley 33 is frictionally engaged whereby rotation of a relatively large idler wheel 34 by the rotor shaft 11 is transmitted to the turntable driving the same at a rate determined by the rate of rotation of said idler wheel and the reduction achieved by the driving contact between a small step diameter portion or hub 27 of the larger idler wheel and the diameter of the intermediate idler or pulley 33.

The idler wheel 34 is carried above the motor mounting plate 14 and is secured thereto, Fig. 4, by means of a turntable drive disc stud 19 having a screw-threaded reduced end portion 20 projected through a cylindrical opening 21 in the motor mounting plate 14, a washer 22 being interposed between a locking nut 23 threaded over the extreme end portion 20 and the underside of the plate 14, a circular plate 24 being telescoped over an intermediate portion 25 of the stud and disposed between shoulders 26 of the stud and the upper surface of the plate 14. The washer 22 is preferably formed with a circular rib 22' which contacts the under surfaces of the plate 14 and the circular plate 24 is preferably formed with a plurality of circular or semi-spherical protuberances 24' on its lowermost surface which contact the uppermost surface of the plate. A tension spring 35 is loosely journaled on the lowermost end of the stud 19 and is anchored to the main plate 14 by projecting a free end thereof through an aperture 36 therein and turning the free end 37 of the spring over the upper surface of the plate 14.

A cylindrical hub or small step diameter portion 27 of said idler wheel 34 is journaled upon the upper end of the drive disc stud 19 and over the bearing bushing 28 drive fitted over the upper end of the stud 19. A machine screw 29 is screw-threaded into an internally threaded bore 30 in the stud 19 and a washer 31 is disposed between the head of the screw and the upper surfaces of the stud and the bearing bushing 28.

The idler wheel 34 is preferably formed in two parts integrally secured together and the rubber peripheral tread 18 is carried within a groove 18'

formed on the outer periphery on said joined parts.

The pulley 33 disposed between the idler wheel 34 and the flange 30 is mounted upon an L-shaped bracket 50, said bracket being pivotally secured at one end thereof by a stud 51 to the main plate 14, the stud being disposed through aligned perforations in each of the legs of said bracket. At its free end the bracket 50 supports the small idler wheel 33, the hub 52 of the wheel 33 being secured to said free end of the bracket. The wheel 33 is provided with a peripheral tread 53.

In operation, upon rotation of the rotor shaft 11, motion is communicated through the idler roller 34 to the pulley 33, the tread 53 of which communicates rotary motion to the downwardly turned flange 30 of the turntable 10.

The cylindrically formed aperture 21 in the plate 14 and the off center positioning of the hub 27 with respect thereto and the spring connection by means of the tension spring 35 with the stud 19 and the constant pull of the spring causes the wheel 34 to continue to make proper bearing engagement with the rotor shaft 11 and the peripheral tread 53 of the pulley 33 and said roller 33 with the flange 30; the permitted movement of the idler wheel 34 with the roller and its movement within the aperture 21, as best shown in dotted lines in Fig. 1, thereby compensates for possible irregularities in the manufacture of the flange of the turntable from the true cylindrical form which is desirable in such construction.

A further use of my invention, other than the rotation of phonograph turntables, is best illustrated in Fig. 1, wherein in double dotted lines is shown a tape, which may be of the well-known magnetizable type for recording and reproducing, and which is disposed between the small idler pulley and the hub of the larger idler wheel, thus gaining capstan drive for the tape in a tape recording mechanism.

In such instance, the turntable flange will operate as a fly-wheel to dampen vibrations and to give the tape more constant velocity.

Although I have described my invention in connection with a certain preferred embodiment thereof, I am aware that numerous and extensive departures may be made therefrom without thereby departing from the spirit of my invention and the scope of the appended claims.

I claim:

1. In a phonograph turntable drive mechanism of the class described wherein an idler wheel makes peripheral friction contact with a driving roller of relatively small diameter to drive said turntable, said turntable having a peripheral turntable flange, a main mounting plate for the phonograph motor, the driving roller comprising the rotor shaft of the motor projected through an aperture in said motor supporting plate, the idler wheel being mounted above said mounting plate, the hub portion of said idler wheel projecting upwardly therefrom, a relatively smaller idler wheel pivotally secured to said mounting plate and interposed between said relatively

larger first named motor driven idler wheel and the inner cylindrical surface of the peripheral turntable flange, said relatively smaller idler wheel being driven by the upwardly projecting hub portion of said relatively larger idler wheel.

2. In a phonograph turntable drive mechanism of the class described wherein an idler wheel makes peripheral friction contact with a driving roller of relatively small diameter to drive said turntable, said turntable having a peripheral turntable flange, a main mounting plate for the phonograph motor, the driving roller comprising the rotor shaft of the motor projected through an aperture in said motor supporting plate, mounting means adapted to secure said idler wheel to said mounting plate and to support the said idler wheel above said mounting plate, the hub portion of said idler wheel projecting upwardly therefrom, a relatively smaller idler wheel pivotally secured to said mounting plate and interposed between said relatively larger first named motor driven idler wheel and the inner cylindrical surface of the peripheral turntable flange, said relatively smaller idler wheel being driven by the upwardly projecting hub portion of said relatively larger idler wheel, spring means secured to said mounting plate and to said mounting for said larger idler wheel whereby limited lateral movement of said wheel is permitted.

3. In a phonograph turntable drive mechanism of the class described wherein an idler wheel makes peripheral friction contact with a driving roller of relatively small diameter to drive said turntable, said turntable having a peripheral turntable flange, a main mounting plate for the phonograph motor, the driving roller comprising the rotor shaft of the motor projected through an aperture in said motor supporting plate, the idler wheel being mounted above said mounting plate, the hub portion of said idler wheel projecting upwardly therefrom, a relatively smaller idler wheel, a bracket pivotally secured at one end to the mounting plate and having the relatively smaller idler wheel rotatably secured to its opposite end, said smaller idler wheel being disposed between said relatively larger first named motor driven idler wheel and the inner cylindrical surface of the peripheral turntable flange, said relatively smaller idler wheel being driven by the upwardly projecting hub portion of said relatively larger idler wheel.

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