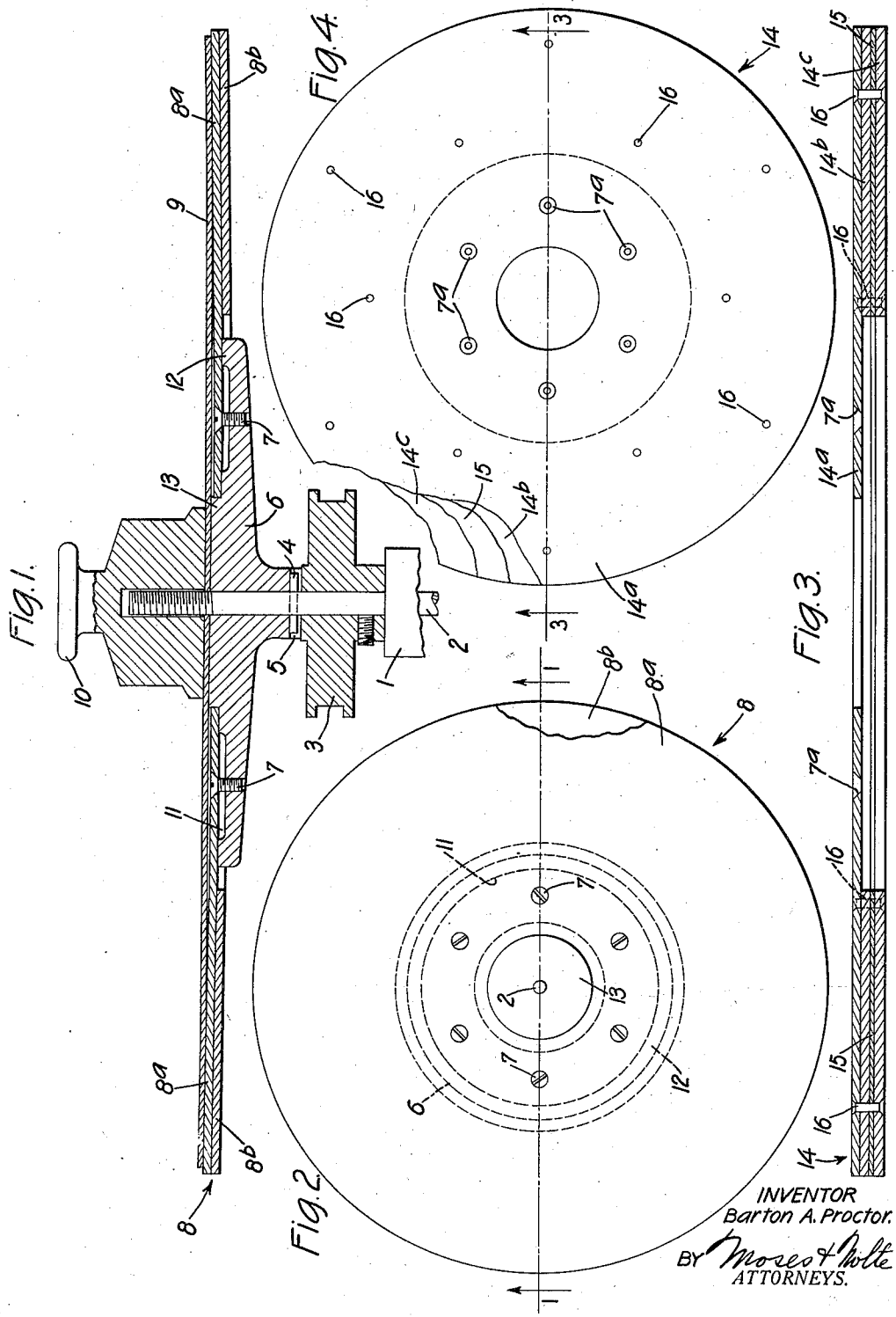
Jan. 4, 1938. B. A. PROCTOR 2,104,241

PHONOGRAPHIC TURNTABLE

Filed July 5, 1934



INVENTOR
Barton A. Proctor.
BY Moses & Wolfe
ATTORNEYS.

Patented Jan. 4, 1938 2,104,241

UNITED STATES PATENT OFFICE

2,104,241

PHONOGRAPHIC TURNTABLE

Barton A. Proctor, Larchmont, N. Y., assignor to B. A. Proctor Company, Inc., New York, N. Y., a corporation of New York

Application July 5, 1934, Serial No. 733,728

6 Claims. (Cl. 274—39)

This invention relates to turntables for supporting and rotating phonograph disks while sound records are being made thereon or reproduced therefrom.

One object of the invention is the provision of a turntable having an improved resonance characteristic.

Another object is the provision of a turntable of such construction that the likelihood of distorting and warping is reduced.

A further object is the provision, in such a turntable, of adjusting means to correct any distorting or warping which may occur.

A still further object is the provision, in such a turntable, of means for flexing the phonograph disk in order to correct any distortion inherent therein and to insure good driving contact between the turntable and the disk.

Other objects and advantages will hereinafter appear.

Phonograph turntables are customarily made either in the form of metal stampings or in the form of machined metal castings—the former type being used on reproducing phonographs, and the latter type on apparatus for recording sound on such disks.

Metal turntables are open to the objection that, when employed on reproducing phonographs, their inherent resonance causes overtones. In order to minimize this resonance effect, the top surface of stamped metal turntables is ordinarily covered with some textile material, such as felt.

Stamped metal turntables are usually provided with integral ribs to prevent distortion and to insure that the table shall run true.

Turntables made from machined castings and employed on recording apparatus are open to the objection that, regardless of the care with which the machining is done, there is always more or less warping. This warping continues as the casting ages, and it is necessary from time to time to re-machine the top surface.

Warping of the top surface of the turntable causes distortion of the disk, and this distortion prevents accurate recording and/or faithful reproduction.

Phonograph disks are often inherently distorted to a greater or less extent, and such distortion likewise interferes with accurate recording and faithful reproduction. In turntables of the conventional type, no means are provided for correcting such inherent distortion in the disk.

The present invention provides a turntable formed of wood-fiber composition or other like material which is substantially non-resonant—thereby obviating the production of objectionable overtones during the reproducing process, without the necessity for covering the top surface of the turntable with sound-deadening material. In order to minimize the likelihood of warping, the present invention provides a turntable which is preferably made of two disks of such wood-fiber composition, with their respective grains at right angle, and adhered together to constitute a laminated structure. The invention also provides means for compensating for any distortion of the laminated structure which may occur, and for flexing said laminated structure in order that the phonograph disk may be similarly flexed to correct any distortion inherent in said disk.

The invention will best be understood by reference to the accompanying drawing, wherein like reference characters indicate like parts, and wherein

Fig. 1 is a transverse sectional view of the turntable, with a phonograph disk mounted thereon for reproduction of the record, the view being taken on the line 1—1 of Fig. 2 and showing certain parts which are omitted from said Fig. 2.

Fig. 2 is a top plan view of the turntable without the phonograph disk, a portion of the table top being broken away to indicate its laminated construction.

Fig. 3 shows a modified form of the invention, the view being a transverse section on line 3—3 of Fig. 4.

Fig. 4 is a top plan view of the modified form shown in transverse section in Fig. 3.

Referring to the drawing: Rotatably mounted in a frame 1 (Fig. 1) is a spindle, 2, driven by suitable mechanism (not shown). Attached to this spindle is a pulley, 3, adapted to drive through a belt an overhead cutter carriage mechanism for recording (said belt and recording mechanism not being shown).

Axially mounted in spindle 2 is a driving pin, 4, operatively seating in a radial slot, 5, formed in the lower end of a supporting base, 6, whereby spindle 2 rotates said supporting base 6 and the turntable and phonograph disk, hereinafter to be described in detail. Formed in the top of the supporting base 6 is an annular recess, 11. Attached to this supporting base by screws such as 7 is a table-top or platen, designated generally by the reference numeral 8, and preferably formed of two disks, 8a and 8b, of wood-fiber composition

or other similar material, positioned with their respective grains at right angle to each other, and adhered together to constitute them a laminated structure. By employing this material and construction, the likelihood of the table-top or platen warping or distorting is minimized. Should such warping or distorting occur, it may be corrected by turning said screws 7, thereby flexing downwardly or upwardly with reference to the recess 11 the adjacent portion of the upper member 8a of the laminated structure 8. The annular portion 12 of the supporting base, which defines the periphery of the annular recess 11, thus functions as a fulcrum with reference to which any segmental portion or portions of the annulus outside said ring 12 may be raised or lowered to bring it into plane with the remaining portion. It is thus possible readily to correct any such warping or distorting of the table-top or platen and to insure that it shall not run "out of true." This, in turn, insures that the phonograph disk 9 shall run true with reference to the cutting instrument which, during the recording operation, forms the sound grooves therein; and with reference to the needle which, during the reproducing operation, follows such grooves.

As hereinbefore stated, distortion is often inherent in the disk itself, and means are provided whereby this distortion also may be corrected. The table-top or platen 8 is normally so flexed as to be slightly concave or dished, as appears from Fig. 1. It is contemplated that the weight 10 shall so flex the disk 9 that the lower surface of the disk near its periphery shall bear upon the table-top or platen 8 at or near the rim of its concavity—the area of the disk which is adjacent the center bearing upon a hub portion, 13, of the supporting base 6. Not only does this flexure of the disk correct any inherent warping or distorting therein, but it assures contact between the lower surface of the disk and the rim portion of the concavity produced in the table-top or platen, thus producing therebetween frictional engagement which is adequate to prevent slippage of the disk during its rotation by the table-top or platen.

Referring now to Figs. 3 and 4, wherein there is illustrated a modified form of the invention for use in connection with apparatus which records sound waves upon the disk: The table top or platen, here designated generally by the reference numeral 14, is comprised of a wood-fiber composition member 14a, a second wood-fiber composition member 14b, and a third wood-fiber composition member, 14c. The members 14a and 14b are preferably united, in the manner hereinbefore described in referring to table top or platen 8, to form a laminated structure. Between the lower side of member 14b of this laminated structure and the upper side of member 14c there is mounted an annulus 15, preferably formed of lead or other heavy material. The purpose in thus weighting the table top or platen is to give the turntable a desirable fly-wheel effect in order to overcome its tendency to slow down under the cutting action of the instrument which forms the sound grooves in the record. The four members, 14a, 14b, 14c and 15 are preferably held together by means of rivets, such as 16. This modified form of the invention is provided with adjusting screw holes, such as 7a, the purposes and functions of which are to receive screws, such as those at 7, employed in the form of the invention shown in Figs. 1 and 2 and hereinbefore described in detail.

The spindle 2 is threaded at its upper end to receive a nut (not shown), which nut is substituted for the weight 10 to draw the disk down onto the turntable when the latter is used in connection with a recording operation.

It is to be understood that the present preferred embodiments of the invention shown in the drawing and described in the specification are merely illustrative; and that, without departing from the spirit of the invention, it may be incorporated in divers other forms and structures.

I claim:

1. The combination with a phonograph turntable comprising a flexible platen and means for effecting a fixed adjustment of the platen fixing the margin of the platen in a different plane from the central portion thereof, of a phonograph disk, and pressing means cooperative with the platen for flexing said disk to effect a planar adjustment of said disk.

2. A non-resonant phonograph turntable characterized by a rotatable supporting base, and a platen of fibrous material mounted thereon; said platen being further characterized by having its peripheral margin reinforced at its lower face by an added thickness of fibrous material, leaving a central attachment area of lesser thickness attached to said supporting base.

3. A non-resonant phonograph turntable characterized by a rotatable supporting base, and a platen of fibrous material mounted thereon; said platen being further characterized by having its peripheral margin reinforced at its lower face by an added thickness of fibrous material, leaving a central attachment area of lesser thickness and greater flexibility attached to said supporting base.

4. In a phonograph turntable, the combination of a rotatable supporting base having an annular channel in the upper face thereof, of a flexible, non-metallic platen bearing on the base at the inner and outer sides of said channel, and adjustable means for pressing the platen into said channel to flex the platen and effect a fixed adjustment of the platen, said means exerting a cantilever force upon said platen over an edge of said channel.

5. In a phonograph turntable, the combination of a rotatable central supporting base having a recess in its upper face, a platen mounted thereon, and means located at various points around the center of the turntable, being suitably spaced to permit pressing of portions of said platen into said recess locally along different radial areas thereof, and thereby to correct distortion thereof, and effecting a fixed adjustment of the platen.

6. In a phonograph turntable, the combination of a rotatable supporting base having a recess, a platen mounted thereon and extending outwardly therebeyond, a platen supporting wall defining the circumferential boundary of said recess, and adjustable means for pressing a portion of the platen toward the base of the recess, said means cooperating with said supporting wall to exert a cantilever force for flexing said platen, to effect and maintain a fixed adjustment of the platen.

BARTON A. PROCTOR.