

Apr. 10, 1923.

1,451,282

L. J. THON

MAGAZINE PHONOGRAPH

Filed June 16, 1921

7 sheets-sheet 1

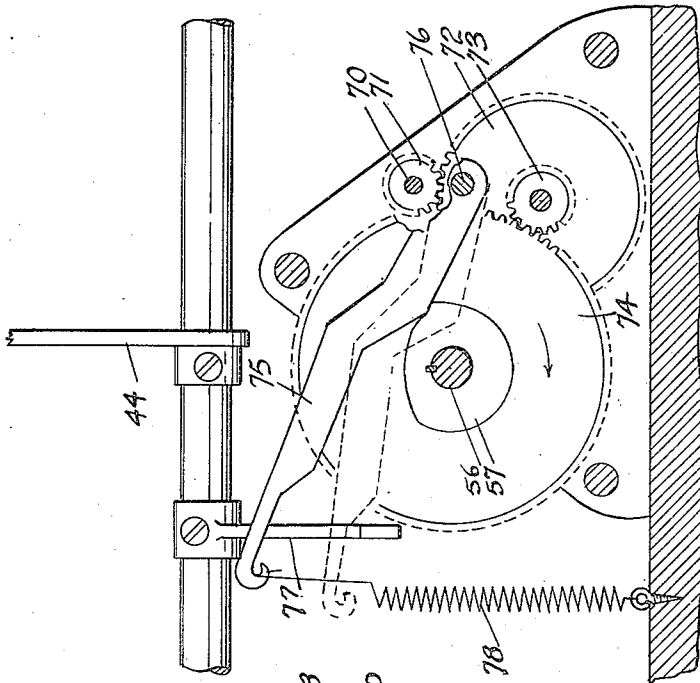


FIG. VIII -

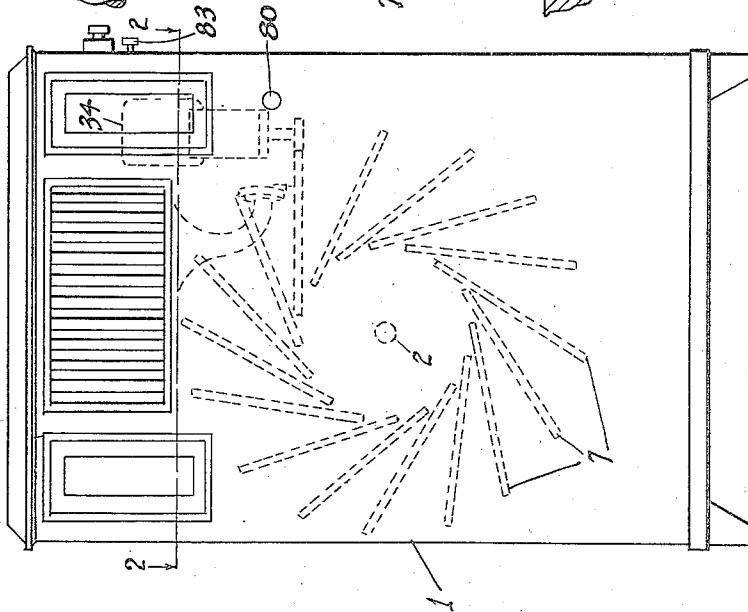


FIG. I.

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Apr. 10, 1923.

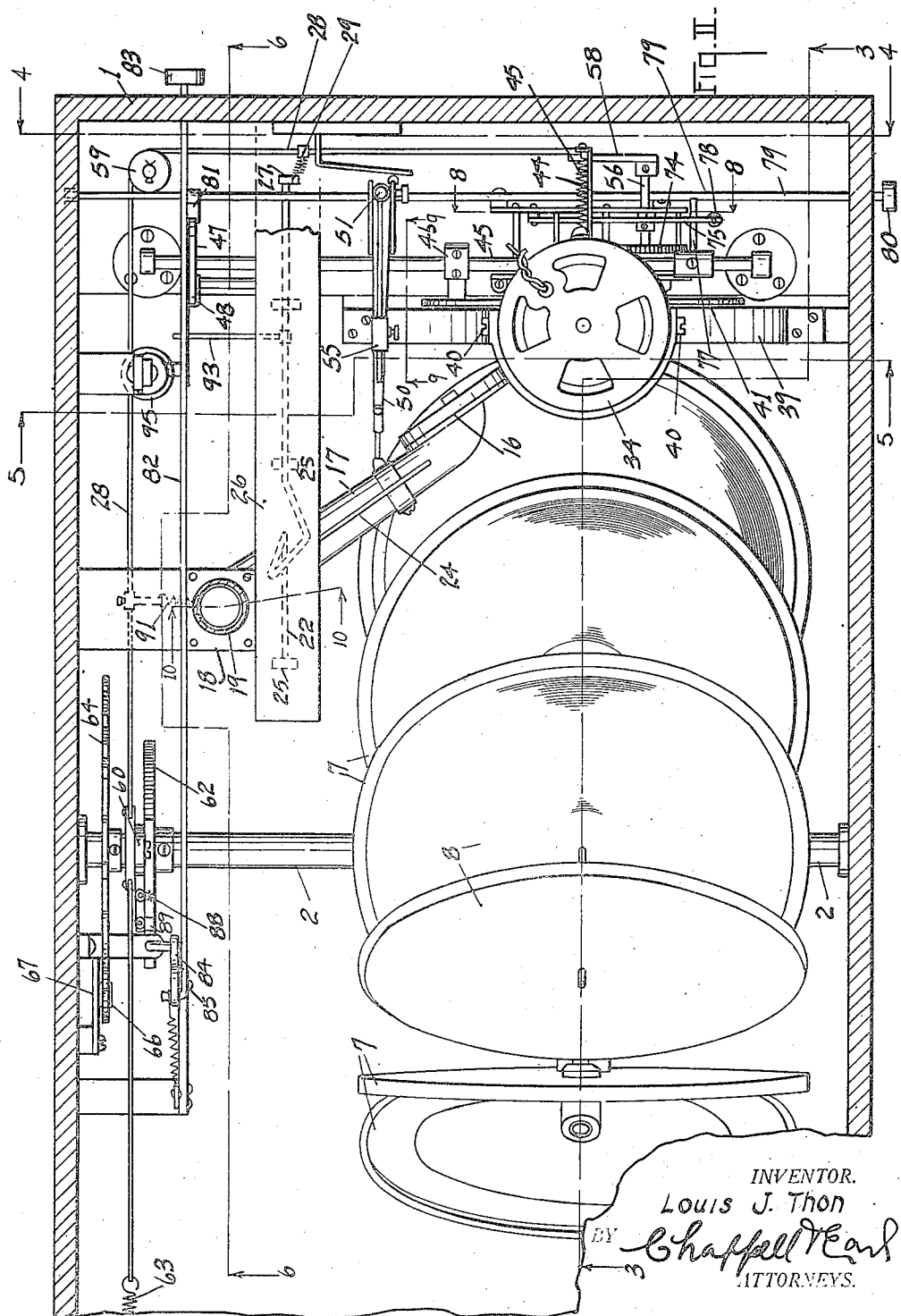
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7 sheets-sheet 3

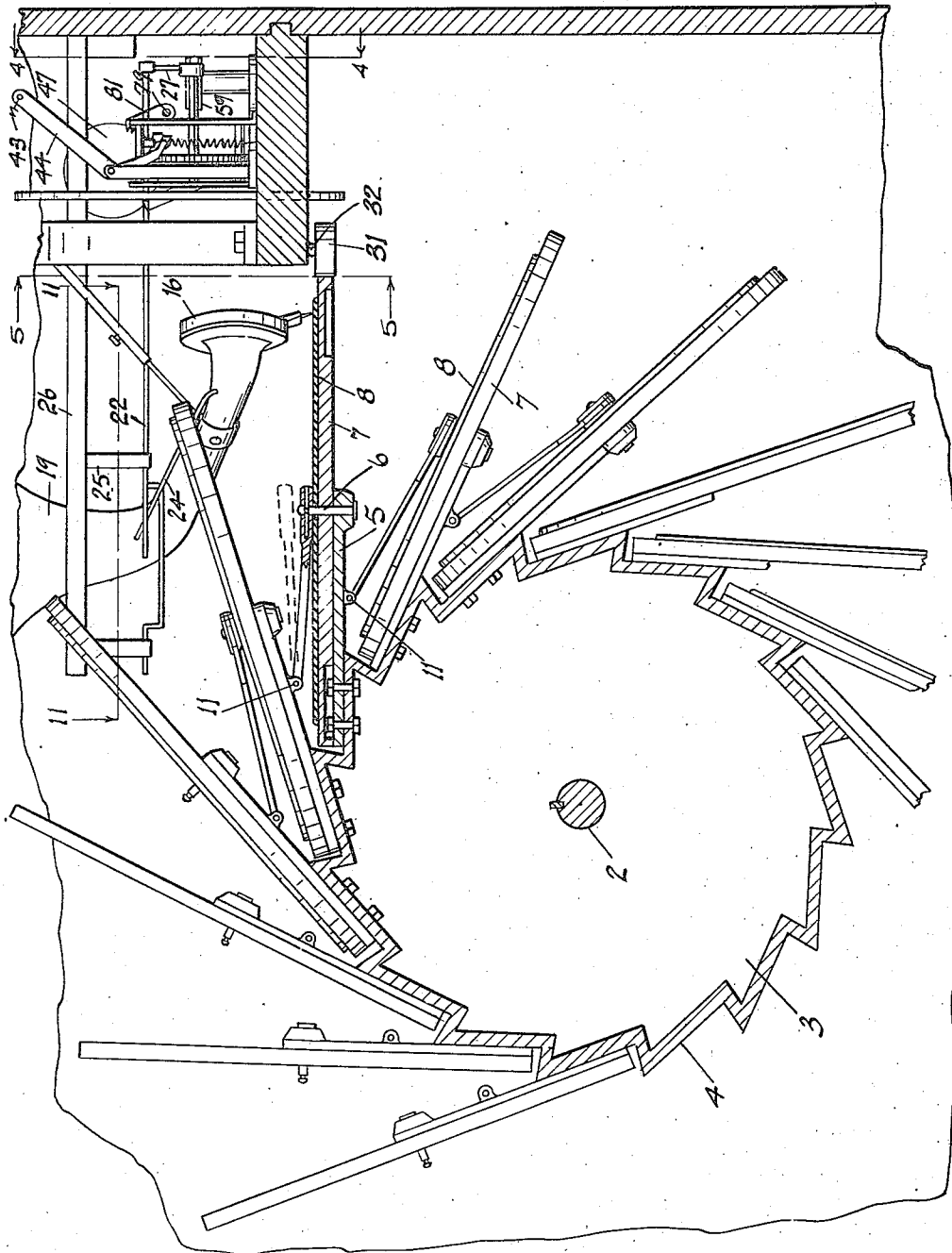


FIG. III.

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Apr. 10, 1923.

1,451,282

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7 sheets-sheet 4

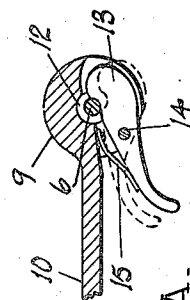
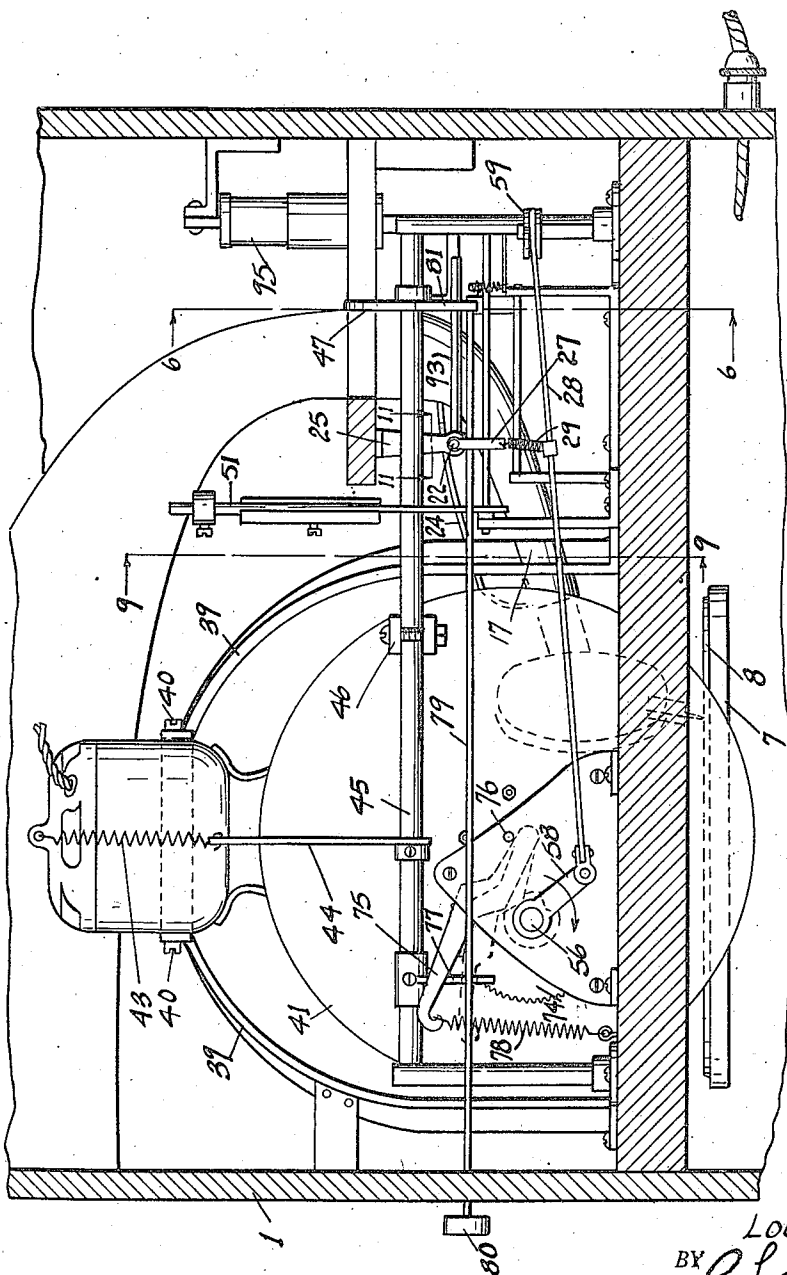


FIG. IIIA.

FIG. IV.

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Apr. 10, 1923.

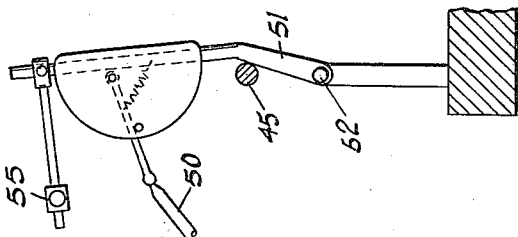
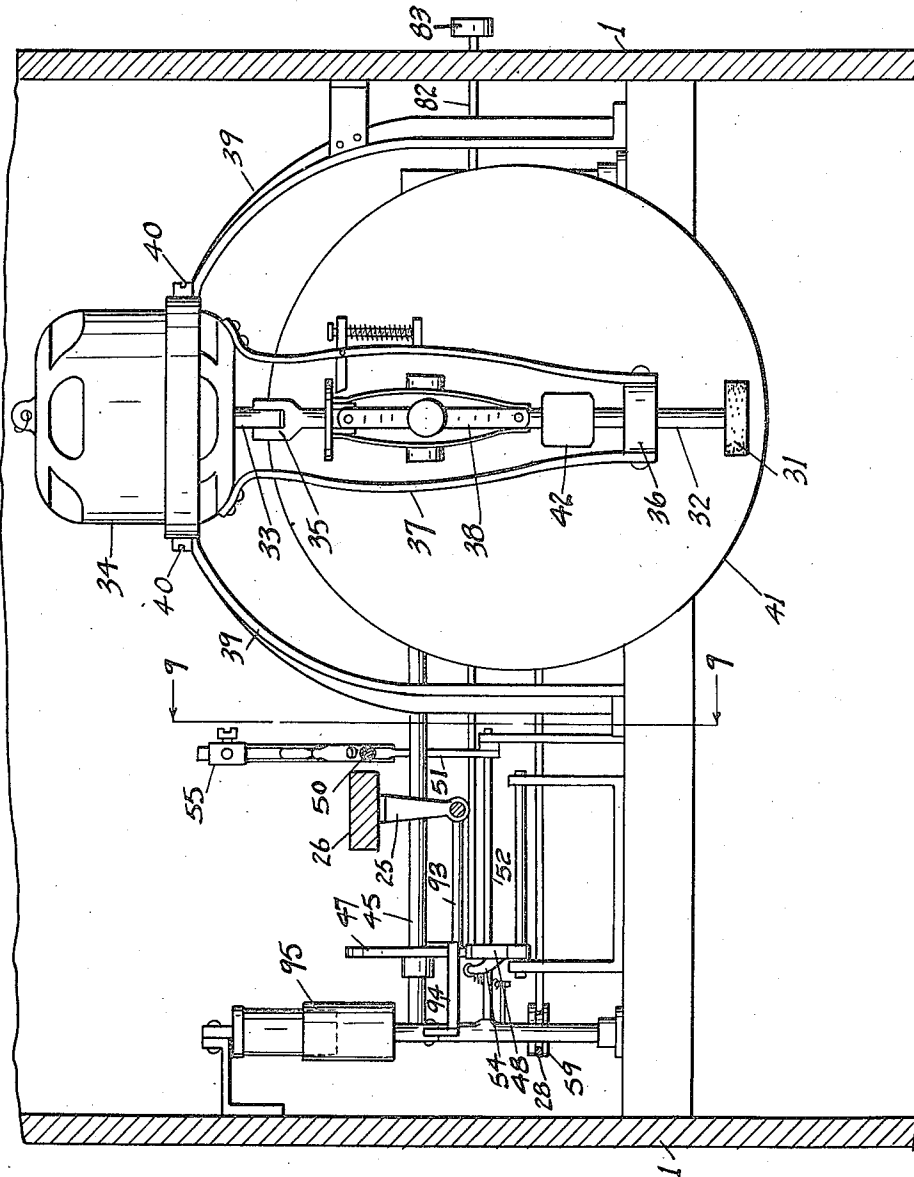
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L. J. THON

MAGAZINE PHONOGRAPH

Filed June 16, 1921

7 sheets-sheet 5



INVENTOR.

Louis J. Thon

BY

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Apr. 10, 1923.

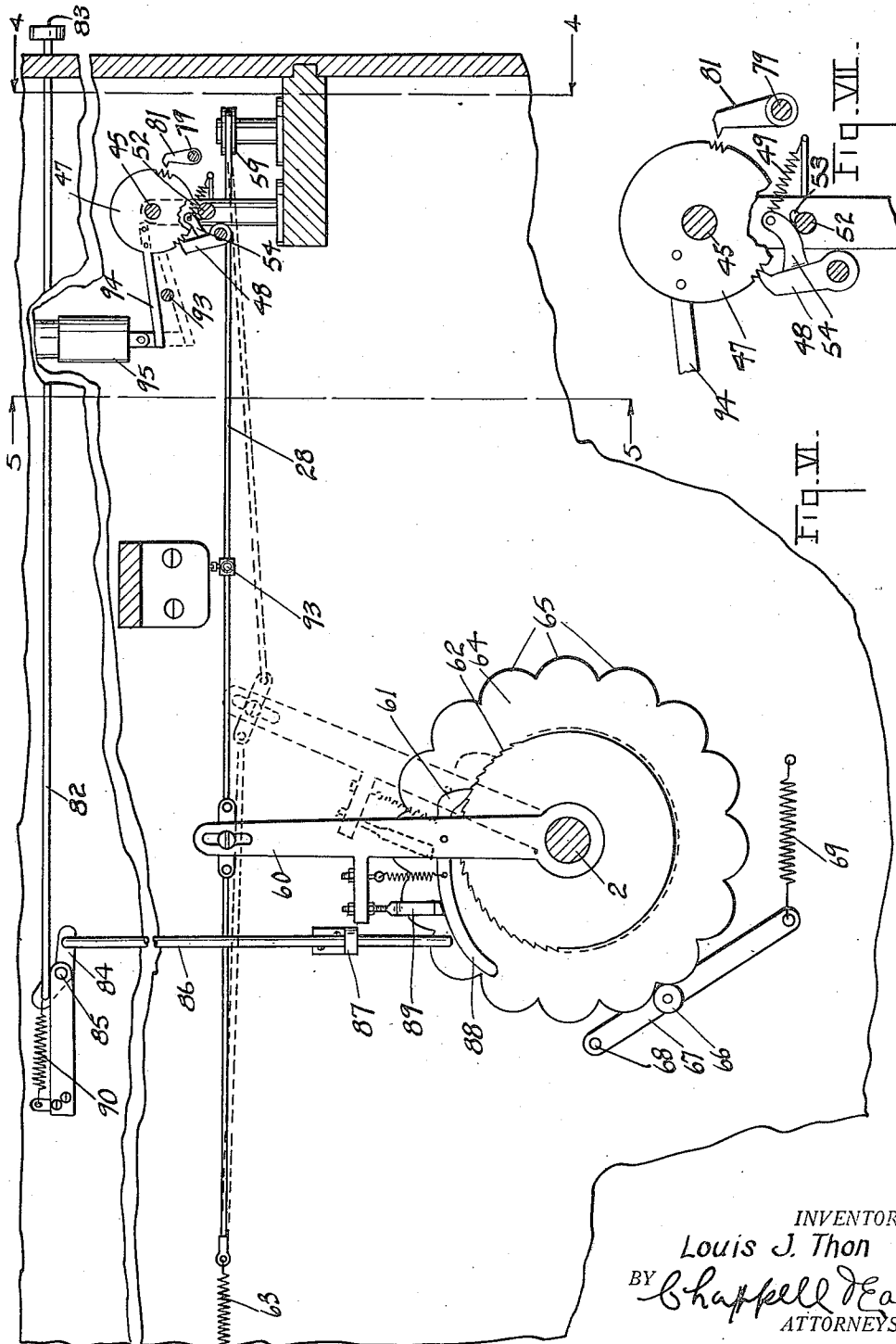
1,451,282

L. J. THON

MAGAZINE PHONOGRAPH

Filed June 16, 1921

7 sheets-sheet 6



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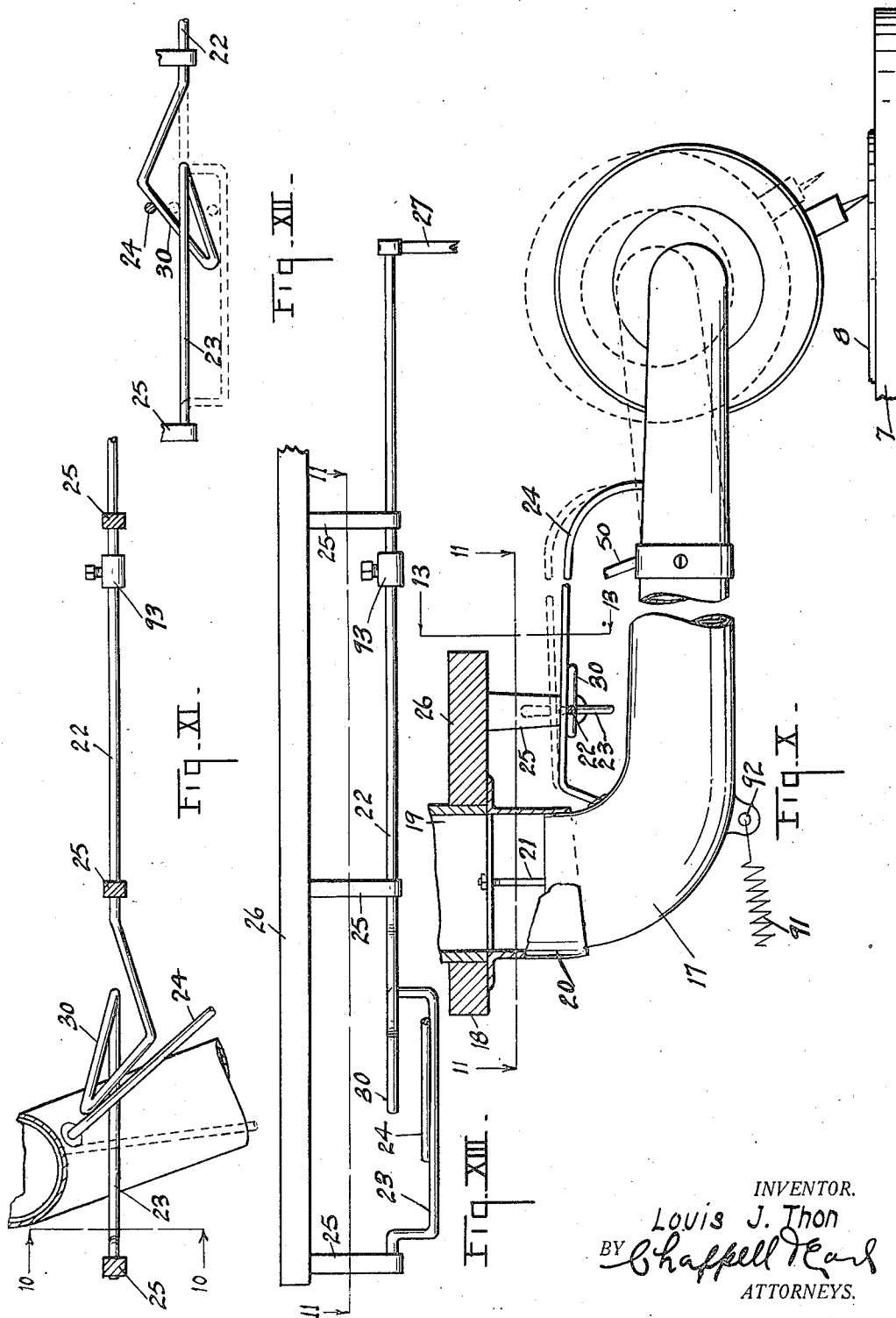
1,451,282

L. J. THON

MAGAZINE PHONOGRAPH

Filed June 16, 1921

7 sheets-sheet 7



INVENTOR.
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UNITED STATES PATENT OFFICE.

LOUIS J. THON, OF MARSHFIELD, WISCONSIN.

MAGAZINE PHONOGRAPH.

Application filed June 16, 1921. Serial No. 477,963.

To all whom it may concern:

Be it known that I, LOUIS J. THON, a citizen of the United States, residing at Marshfield, county of Wood, State of Wisconsin, have invented certain new and useful Improvements in Magazine Phonographs, of which the following is a specification.

This invention relates to improvements in magazine phonographs.

The main objects of this invention are:

First, to provide an improved magazine phonograph adapted for disk records.

Second, to provide an improved magazine phonograph in which the records are automatically brought to playing position.

Third, to provide an improved magazine phonograph in which the record may be repeated or any record of the magazine selected.

Fourth, to provide an improved magazine phonograph for disk records which is comparatively compact and simple in structure.

Further objects, and objects relating to structural details, will definitely appear from the detailed description to follow.

I accomplish the objects of my invention by the devices and means described in the following specification. The invention is clearly defined and pointed out in the claims.

A structure which is a preferred embodiment of my invention is clearly illustrated in the accompanying drawing, forming a part of this application, in which:

Fig. I is a front elevation of a structure embodying the features of my invention, the magazine and motor being illustrated by dotted lines.

Fig. II is a detail horizontal section on a line corresponding to line 2—2 of Fig. I, the motor being shown conventionally in full lines.

Fig. III is a detail view partially in vertical section on a line corresponding to line 3—3 of Fig. II.

Fig. III^A is an enlarged detail section on a line corresponding to line 3^A—3^A of Fig. III.

Fig. IV is a detail vertical section on a line corresponding to line 4—4 of Figs. II, III and VI.

Fig. V is a detail vertical section on a line corresponding to line 5—5 of Figs. II, III and VI, showing details of the control means.

Fig. VI is a detail vertical section on a

line corresponding to line 6—6 of Figs. II and IV, showing details of the magazine feed and control means.

Fig. VII is an enlarged detail section of certain parts appearing in Fig. VI on a section line corresponding to that of Fig. VI.

Fig. VIII is an enlarged detail section on a line corresponding to line 8—8 of Fig. II, showing further details of the motor control means.

Fig. IX is a detail vertical section on a line corresponding to line 9—9 of Figs. II, IV and V, showing still further details of the control means.

Fig. X is a detail section on a line corresponding to line 10—10 of Figs. II and XI, showing details of the tone arm control.

Fig. XI is a detail section on a line corresponding to line 11—11 of Figs. III, X and XIII.

Fig. XII is a detail view of the tone arm support shown in one position by dotted lines and in another position by full lines.

Fig. XIII is a detail section of the tone arm on a line corresponding to line 13—13 of Fig. X.

In the drawing similar reference characters refer to similar parts throughout the several views, and the sectional views are taken looking in the direction of the little arrows at the ends of the section lines.

Referring to the drawing, 1 represents the case or cabinet, which may be of any suitable design. Disposed transversely of the cabinet is a shaft 2 having a magazine wheel 3 thereon provided with step-like seats 4 to which are secured the record carrying arms 5. These record carrying arms are provided with spindles 6 for the turntables 7, the records 8 of the disk type being mounted on these turntables in the usual manner. The records are secured to the turntables by means of the clamps 9 carried by arms 10 pivoted at 11 on the under sides of the record carrying arms, so that the clamps may be swung down and engaged with the projecting ends of the spindles which have annular notches or recesses 12 adapted to be engaged by the fingers 13 pivoted at 14 and held yielding in engaging position by the springs 15.—see Fig. III^A.

The records are thus independently supported, each upon a turntable, which is successively brought to playing position as the record wheel is revolved, the seats and the

record supporting arms being tangentially disposed so that they are in a stepped overlapping relation, there being however sufficient space between each record holder to permit the swinging of the tone arm or to receive the tone arm as it is carried across the record.

The magazine is automatically actuated by means which will be hereinafter described.

The sound box 16 is carried by the tone arm 17 which is pivotally supported on the bracket 18 projecting from the rear wall of the cabinet.

The amplifier or horn 19 is supported above this bracket.

In Fig. X the end of the tone arm is swivelled within the collar 20 on the under side of the bracket, the arm being supported by a central hanger 21. The details for swivelling the arm are not further illustrated.

Means are provided for raising and lowering the tone arm to engage and disengage the stylus, such means consisting of the crank-like hanger 22 having a crank or offset 23 therein engaging the supporting rod 24 on the tone arm, the supporting rod being arranged longitudinally of the tone arm and engaged with the crank portion 23 of the hanger 22. This hanger 22 is journaled in the supporting arms 25 depending from the bracket 26.

The hanger 22 is provided with an arm 27 at one end connected to the cable 28 through a spring 29, so that when the cable is actuated the hanger or rock shaft is actuated, thereby raising the sound-box or lowering it to bring the needle or stylus into engagement with the record.

In order to swing the tone arm and sound box out of the path of the record holders the rock shaft 22 is provided with a cam projection 30 which is adapted to engage the rod 24 during the latter part of the movement of the crank shaft and further elevate the sound-box, that is, a further movement is provided than would be secured merely by means of the crank or offset 23. The relation of these parts is clearly shown in Figs. X-XIII, inclusive.

The turntables are driven from the friction driving wheel 31 on the shaft 32, which is connected to the shaft 33 of the motor 34 through the universal joint 35. The shaft 32 is carried by a bearing 36, the bearing being carried by brackets 37 on the motor casing. The joint 35 for the shaft 32 to the motor shaft is not intended to provide for any considerable movement, but merely to relieve the motor shaft of strain. The driving shaft 32 is provided with a governor 38,—see Fig. V.

The motor is supported on the yoke 39 by means of the pivot 40 so that the driving

shaft may be swung into position to engage and drive the turntables, as shown in Fig. III, or in engagement with the driving disk 41. The motor is mounted on its pivots, so that it normally swings to bring the wheel 31 into engagement with the disk 41, that is, it is not balanced on its pivots, the weight 42 being mounted on the shaft 32 to further this unbalancing.

The motor is connected by the spring 43 and arm 44 to a rock shaft 45. This rock shaft carries a brake 46 adapted to engage and stop the disk when the driving wheel 31 disengages the disk and engages one of the turntables. This rock shaft is controlled by the movement of the tone arm. This rock shaft 45 is provided with a holding or locking means comprising the ratchet disk 47 and the dog 48 held normally in engaging position by the spring 49. This dog 48 is released by the movement of the tone arm, the tone arm being connected by the link 50 to an arm 51 on the rock shaft 52,—see Figs. II, V and IX. This rock shaft 52 is provided with a cam projection 53 adapted to engage the arm 54 on the dog 48,—see Fig. VII, so that when the rock shaft 52 is actuated the dog is released allowing the rock shaft 45 to swing and therefore the arm 44 thereof to allow the driving wheel to engage the disk 41.

A weight 55 is provided to assist in actuating the arm 51 when the stylus reaches the end of the record.

In Fig. IX the parts are shown with the rock shaft in actuated position, the rock shaft 45 constituting a stop for limiting the swing of the arm 51. This releasing of the rock shaft, as stated, allows the driving wheel to engage the driven disk 41.

A shaft 56 is disposed transversely of the rock shaft 45 and provided with a cam 57 and a crank 58 to which the cable 28 is connected and through which it is actuated.

The cable 28 passes over a guide pulley 59 to the ratchet lever 60. This ratchet lever is provided with a pawl 61 coacting with the ratchet wheel 62 on the magazine shaft 2, so that as the crank 58 revolves the ratchet lever is actuated, thereby actuating the magazine shaft to advance the magazine. A spring 63 is connected to the ratchet lever for returning it to its initial position. The magazine shaft is provided with a stop wheel 64 having a series of uniformly spaced stop projections 65 which coact with the roller 66 carried by the lever 67 pivoted at 68 and held under spring tension by the spring 69. This serves to stop and hold the magazine with the record holders in position to coact with the driving wheel 31.

The shaft 70 of the driven disk 41 is connected to the shaft 56 by a train of gears 71, 72, 73 and 74,—see Fig. VIII.

Rock shaft 45 is actuated in one direction

by the lever 75 pivoted at 76 to coact with the cam 57,—see Fig. VIII, the rock shaft being provided with an arm 77 positioned to be engaged by the lever 75. The spring 78 holds the lever against the cam. To permit the selecting of a desired record, that is, to permit the magazine to present the desired record, I provide a rocker rod 79 with finger piece 80 at the outside of the casing, this rod having thereon a dog 81 adapted to be swung into engagement with the ratchet wheel 47 on the rock shaft 45, thereby holding the driving wheel 31 in engagement with the disk 41.

To provide for repeating a particular record as many times as desired, I provide a push rod 82 having a finger piece 83 at the outside of the casing. This push rod is connected to one arm of a bell crank lever 84 pivoted at 85, the other arm of the lever being connected to a rod 86 slidably supported at 87 to engage the tail 88 of the pawl 61, thereby holding the pawl out of engagement with the ratchet 62, so that when the ratchet lever 60 is oscillated it does not move the magazine shaft.

A bumper 89 tipped with felt or suitable material is provided for the pawl 61.

A spring 90 is provided for normally holding the rod 86 in inoperative position.

The tone arm is returned to its initial position when released by the means described by the spring 91, which is connected to the tone arm at 92, the rear end of the spring being connected to the cable 28.

To promptly release the sound box at the end of the record the rock shaft 22 is provided with an arm 93 positioned to be engaged by the arm 94 carried by the ratchet wheel 47 on the rock shaft 45.

A slight movement of the rock shaft is sufficient to disengage the stylus or needle, a further raising being effected through the means described.

A dash-pot 95 is operatively associated with the arm 94, thereby in a measure controlling the movement of the parts.

The link 50 is formed of adjustably connected sections, as illustrated, in order that it may be adjusted to accommodate records of different diameters.

With the parts thus arranged the operation is entirely automatic. Briefly it is as follows: The starting of the motor is through a coin controlled mechanism, not illustrated. The driving wheel 31 is, as stated, normally in engagement with the disk 41, which is connected through the train of gears 71, 72, 73 and 74, to the shaft 56 carrying the arm 58, which is connected by the cable 28 to the ratchet lever for advancing the magazine step by step. In automatic operation, however, the magazine may be advanced more than one step by manual manipulation of the detent 81 through the

rocker rod 79, which is provided with a fingerpiece 80 at the outside of the machine. When this detent is engaged it prevents the return of the parts and, therefore, the driving wheel 31 is maintained in continuous driving engagement with the disk 41. When it is desired to repeat a record the automatic step by step feed means is rendered inoperative by manually holding the dog 61 out of engagement with the ratchet wheel. This is accomplished through the rod 82 provided with a fingerpiece disposed at the outside of the casing. When the stylus reaches the end of the record it is released from the record by mechanism controlled through the link 50 which is connected to the arm 51 on the rock shaft 52, this rock shaft, in turn, controlling the dog 48 which coacts with the ratchet on the rock shaft 45, thereby freeing the rock shaft and, through the connections described, disengaging the driving wheel 31 from the record and engaging it with the disk 41. When the end of the record is reached the sound box is raised from the record, the initial lifting or actuation of the sound-box hanger 22 being through the arm 93 on the rock shaft, which is positioned to be engaged by the arm 94 on the ratchet 47. The further actuation of the hanger is effected through the connections of the hanger to the cable 28. When the sound-box is lifted free of the record by the crank hanger it is swung to its initial position by means of the coiled spring 91, one end of which is connected to the cable 28,—see Fig. II. These several movements are, of course, properly timed.

I have not illustrated or described coin control means which may be provided if desired.

The structure is well adapted for coin control means, that is, it is desirable for use in public places.

The disk records are supported so that they are entirely independent, that is, it is not necessary to move the records about as they are carried by the turntables with which they are revolved.

The records may be successively played or repeated or any desired record selected.

I have not attempted to illustrate or describe various modifications or adaptations which I contemplate, as I believe the disclosure made will enable those skilled in the art to which my invention relates to embody or adapt the same as may be desired.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is:—

1. In a phonograph, the combination of a disk record magazine comprising a wheel having a plurality of turntables thereon, a friction driving wheel adapted to be swung into and out of driving engagement with the peripheries of said turn tables, a swing-

ing tone arm, means for raising and lowering said tone arm and swinging it out of the path of said turn tables, an automatic feed means for advancing said magazine
 5 step by step, comprising a driven disk adapted to coact with said driving wheel when the same is disengaged from said turntables, means for controlling the shifting of said driving wheel including said tone arm, manu-
 10 ally controlled means for rendering said automatic feed means inoperative so that a record may be repeated, and manually controlled means for holding said driving wheel in engagement with said driven disk
 15 whereby said magazine may be rotated to bring a selected record into playing position.

2. In a phonograph, the combination of a disk record magazine comprising a wheel
 20 having a plurality of turn tables thereon, a friction driving wheel adapted to be swung into and out of driving engagement with the peripheries of said turn tables, a swinging tone arm, means for lowering said tone
 25 arm and swinging it out of the path of said turn tables, an automatic feed means for advancing said magazine step by step, comprising a driven disk adapted to coact with said driving wheel when the same is disen-
 30 gaged from said turn tables, and means for controlling the shifting of said driving wheel including said tone arm.

3. In a phonograph, the combination of a disk record magazine having a plurality of
 35 turn tables thereon, a driving wheel adapted to be swung into and out of driving engagement with said turn tables, a tone arm, an automatic feed means for advancing said magazine step by step, comprising a driven
 40 wheel adapted to coact with said driving wheel when the same is disengaged from said turn tables means for controlling the shifting of said driving wheel including said tone arm, manually controlled means for
 45 rendering said automatic feed means inoperative whereby a record may be repeated, and manually controlled means for holding said driving wheel in engagement with said driven disk whereby said magazine may be
 50 rotated to bring a selected record into playing position.

4. In a phonograph, the combination of a disk record magazine having a plurality of turn tables thereon, a driving wheel adapted to be swung into and out of driving engagement with said turn tables, a tone arm, an automatic feed means for advancing said magazine step by step, comprising a driven wheel adapted to coact with said driving wheel when the same is disengaged from said turn tables, and means for controlling the shifting of said driving wheel including said tone arm.

5. In a phonograph, the combination of a disk record magazine comprising a plu-

rality of turn tables, a driving means adapted to coact with said turn tables successively as the magazine is advanced, a swinging tone arm, means for raising and lowering said tone arm and swinging it out of the
 70 path of said turn tables, an automatic feed means for advancing said magazine step by step, comprising said turn table driving means which is operative when disengaged from said turn tables, means for
 75 controlling the shifting of said driving means including said tone arm, manually controlled means for rendering said automatic feed means inoperative, whereby a record may be repeated, and manually con-
 80 trolled means for holding said driving means in magazine driving positions, whereby said magazine may be rotated to bring a selected record into playing position.

6. In a phonograph, the combination of
 85 a disk record magazine comprising a plurality of turn tables, a driving means adapted to coact with said turn tables successively as the magazine is advanced, a swinging tone arm, means for raising and lowering
 90 said tone arm and swinging it out of the path of said turn tables, an automatic feed means for advancing said magazine step by step, comprising said turn tables driving means which is operative when disengaged
 95 from said turn tables, and means for controlling the shifting of said driving means including said tone arm.

7. A disk record magazine for phono-
 100 graphs, comprising a wheel having a series of tangentially disposed step-like seats on the periphery thereof, turn table supporting arms mounted on said seats, spindles having notches at their outer ends carried
 105 by said arms, turn tables on said spindles adapted to receive disk records, and record retaining members adapted to engage the notches of said spindles, said retaining members being carried by arms pivotally
 110 mounted on the succeeding turn table supporting arm.

8. A disk record magazine for phono-
 115 graphs, comprising a wheel having a series of tangentially disposed step-like seats on the periphery thereof, turn table supporting arms mounted on said seats, spindles carried by said arms, and turn tables on said spin-
 120 dles adapted to receive disk records.

9. A disk record magazine for phono-
 125 graphs, comprising a wheel having tangentially disposed turn table supporting arms thereon, turn tables on said spindles adapted to receive disk records, and record retaining members adapted to engage said spindle, said retaining members being carried by arms pivotally mounted on the succeeding turn table supporting arm.

10. A disk record magazine for phono-
 130 graphs, comprising a wheel having turn table supporting arms disposed on said 1

wheel in overlapping stepped relation thereon, and turn tables on said spindles adapted to receive disk records.

11. A disk record magazine for phonographs comprising a wheel and a plurality of turn tables mounted thereon in a tangential overlapping stepped relation.

12. In a phonograph, the combination of a magazine shaft, a magazine wheel on said shaft, a plurality of record holders mounted on said wheel, a stop disk on said shaft having a series of curved stop projections, a spring actuated roller coacting therewith, a ratchet wheel on said shaft, a ratchet lever provided with a pawl coacting with said ratchet wheel, and means for actuating said ratchet lever.

13. In a phonograph, the combination of a disk record magazine provided with a plurality of turn tables, driving means therefor comprising a motor mounted for tilting movement, a driving shaft swinging with said motor, a driving wheel on said shaft adapted to coact with said turn tables when the motor is in one position, and a magazine driving means comprising a driven wheel with which said driving wheel coacts when the motor is tilted to another position.

14. In a phonograph, the combination of a disk record magazine provided with a plurality of turn tables, driving means therefor comprising a swinging driving wheel adapted to coact with said turn tables when in one position, and a magazine driving means comprising a driven wheel with which said driving wheel coacts when in another position.

15. In a phonograph, the combination of a record magazine, a tone arm, a support therefor comprising a rock shaft provided with a crank-like offset and having a cam at one end of the offset, a rod-like hanger on said tone arm engaged over said offset to coact therewith and with said cam, and means for controlling said rock shaft including said tone arm.

16. In a phonograph, the combination of a record magazine, a tone arm, a support therefor comprising a rock shaft provided with a crank-like offset and having a cam at one end of the offset, a rod-like hanger on said tone arm engaged over said offset to coact therewith and with said cam.

17. In a phonograph, the combination of a record magazine, a tone arm, a support therefor comprising a rock shaft provided with a crank-like offset, a rod-like hanger on said tone arm engaged over said offset to coact therewith, and means for controlling said rock shaft including said tone arm.

18. In a phonograph, the combination of a record magazine provided with a plurality of record turn tables and with a shaft provided with a ratchet wheel, a ratchet lever coacting with said ratchet wheel, a tone

arm mounted for swinging and tilting adjustment, means for releasing said tone arm, a driven friction gear, a pivotally mounted motor, a driving gear swinging with said motor to coact with said driven gear when in one position and when in another position with a turn table of said magazine, a control rock shaft provided with an arm having a spring connection to said motor, a brake on said rock shaft coacting with said driven gear, a stop ratchet wheel on said rock shaft, a dog coacting with said stop ratchet, means for releasing said dog comprising a tripping shaft provided with an arm and with a cam coacting with said dog, a link connecting said tripping shaft arm to said tone arm, a crank shaft having driving connection with said driven gear and provided with a crank arm, operating connections for said crank arm on said crank shaft to said ratchet lever, a cam on said crank shaft, and an arm on said control rock shaft coacting therewith.

19. In a phonograph, the combination of a record magazine provided with a plurality of record turn tables and with a shaft provided with a ratchet wheel, a ratchet lever coacting with said ratchet wheel, a tone arm mounted for swinging and tilting adjustment, means for elevating said tone arm, a driven gear, a driving gear adjustably supported to coact with said driven gear when in one position and when in another position with a turn table of said magazine, a control rock shaft operatively associated with said driving gear, means for controlling the actuation of said control shaft including said tone arm, a crank shaft having driving connection with said driven gear and provided with a crank arm, operating connections for said crank arm to said tone arm elevating means and to said ratchet lever, a cam on said crank shaft, and an arm on said control rock shaft coacting therewith.

20. In a phonograph, the combination of a record magazine provided with turn tables, means for advancing said magazine with a step by step movement, a swinging tone arm, means for adjusting said tone arm to and from operative position, a driven gear, a driving gear adapted to coact with said driving gear when in one position and when in another position with said turn table, a shifting means for said driving gear, a control means for said driving shifting means including said tone arm, means for driving said magazine including said driven gear, manually controlled means for holding said driving gear in engagement with said driven gear, and manually controlled means for rendering said magazine driving means inoperative.

21. In a phonograph, the combination of a record magazine provided with turntables,

means for advancing said magazine with a
 step by step movement, a swinging tone arm,
 means for adjusting said tone arm to and
 from operative position, a driven gear, a
 5 driving gear adapted to coact with said
 driving gear when in one position and when
 in another position with said turn table, a
 shifting means for said driving gear, a con-
 10 trol means for said driving shifting
 means including said tone arm, means for
 driving said magazine including said driv-
 en gear, and manually controlled means for
 holding said driving gear in engagement
 with said driven gear.
 15 22. In a phonograph, the combination of
 a record magazine provided with turn
 tables, means for advancing said magazine
 with a step by step movement, a swinging
 20 tone arm, means for adjusting said tone
 arm to and from operative position, a driven
 gear, a driving gear adapted to coact with
 said driving gear when in one position and
 when in another position with said turn
 table, a shifting means for said driving gear,
 25 a control means for said driving shifting
 means including said tone arm, means for

driving said magazine including said driven
 gear, and manually controlled means for ren-
 dering said magazine driving means inoper-
 ative.

23. In a phonograph, the combination of
 a record magazine provided with turn
 tables, means for advancing said magazine
 with a step by step movement, a swinging
 30 tone arm, means for adjusting said tone
 arm to and from operative position, a driv-
 en gear, a driving gear adapted to coact with
 said driving gear when in one position and
 when in another position with said turn-
 35 table, a shifting means for said driving
 gear, a control means for said driving shift-
 ing means including said tone arm, and
 means for driving said magazine including
 40 said driven gear.

In witness whereof, I have hereunto set
 my hand and seal in the presence of two wit-
 45 nesses.

LOUIS J. THON. [L. S.]

Witnesses:

EDWIN J. HAHN,
 CHARLES HAHN.