No. 865,769. PATENTED SEPT. 10, 1907.

L. DEVINEAU.

PHONOGRAPH.

APPLICATION FILED JUNE 18, 1906.

3 SHEETS—SHEET 1.

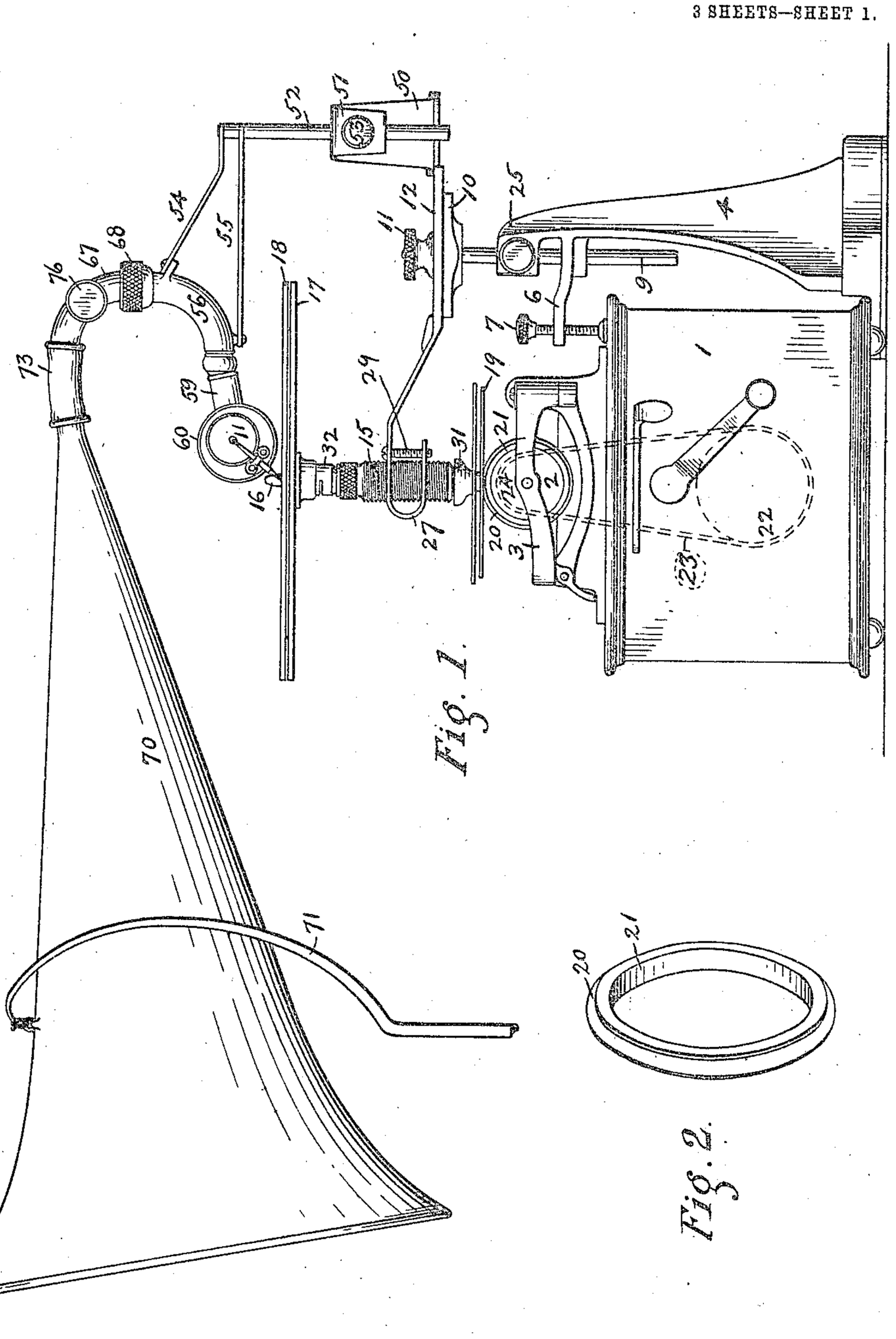

Fig. 1.

Fig. 2.

WITNESSES.

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3 SHEETS—SHEET 2.

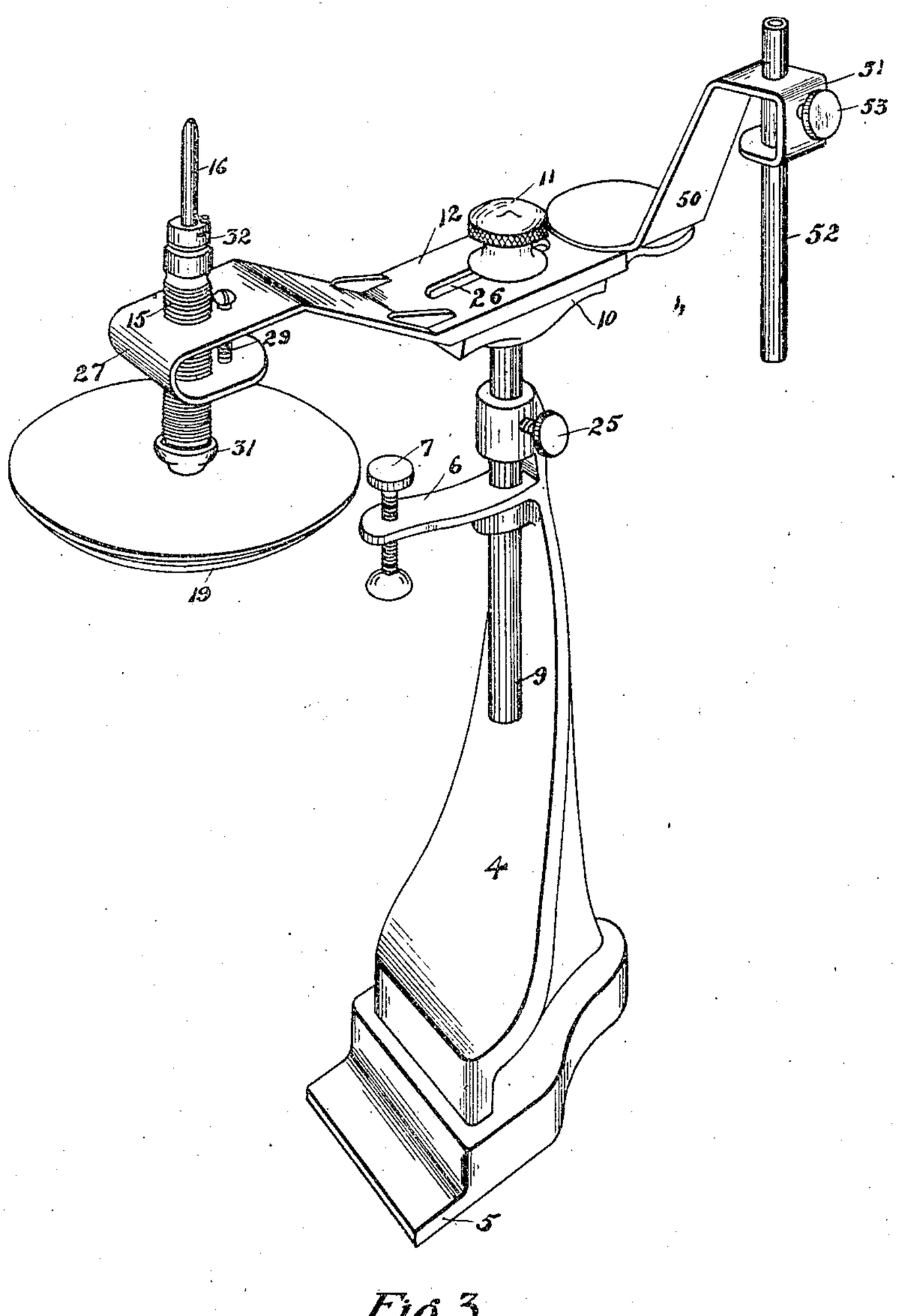

Fig. 3.

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3 SHEETS—SHEET 3.

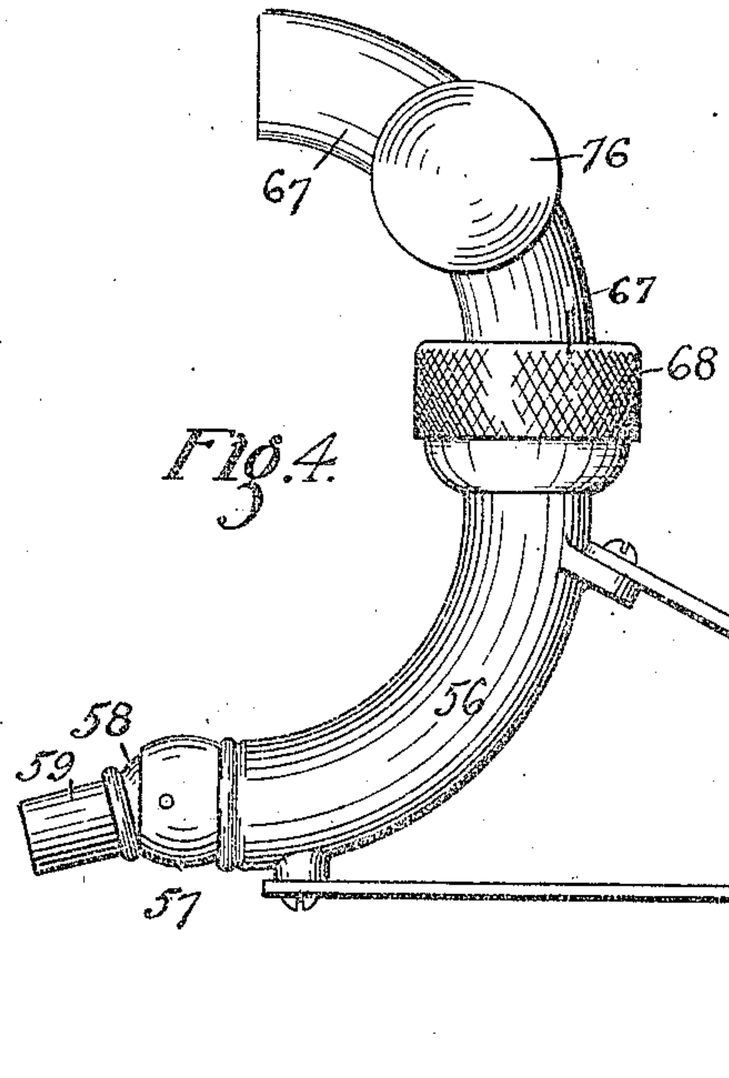

Fig. 4.

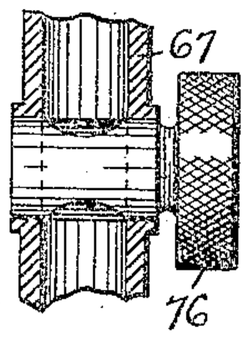

Fig. 5.

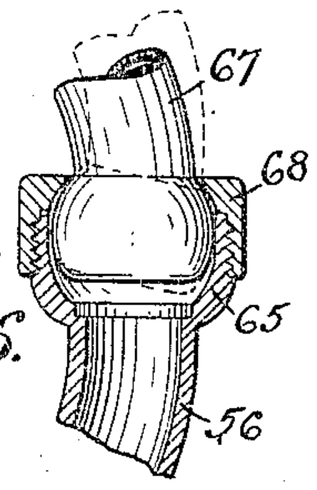

Fig. 6.

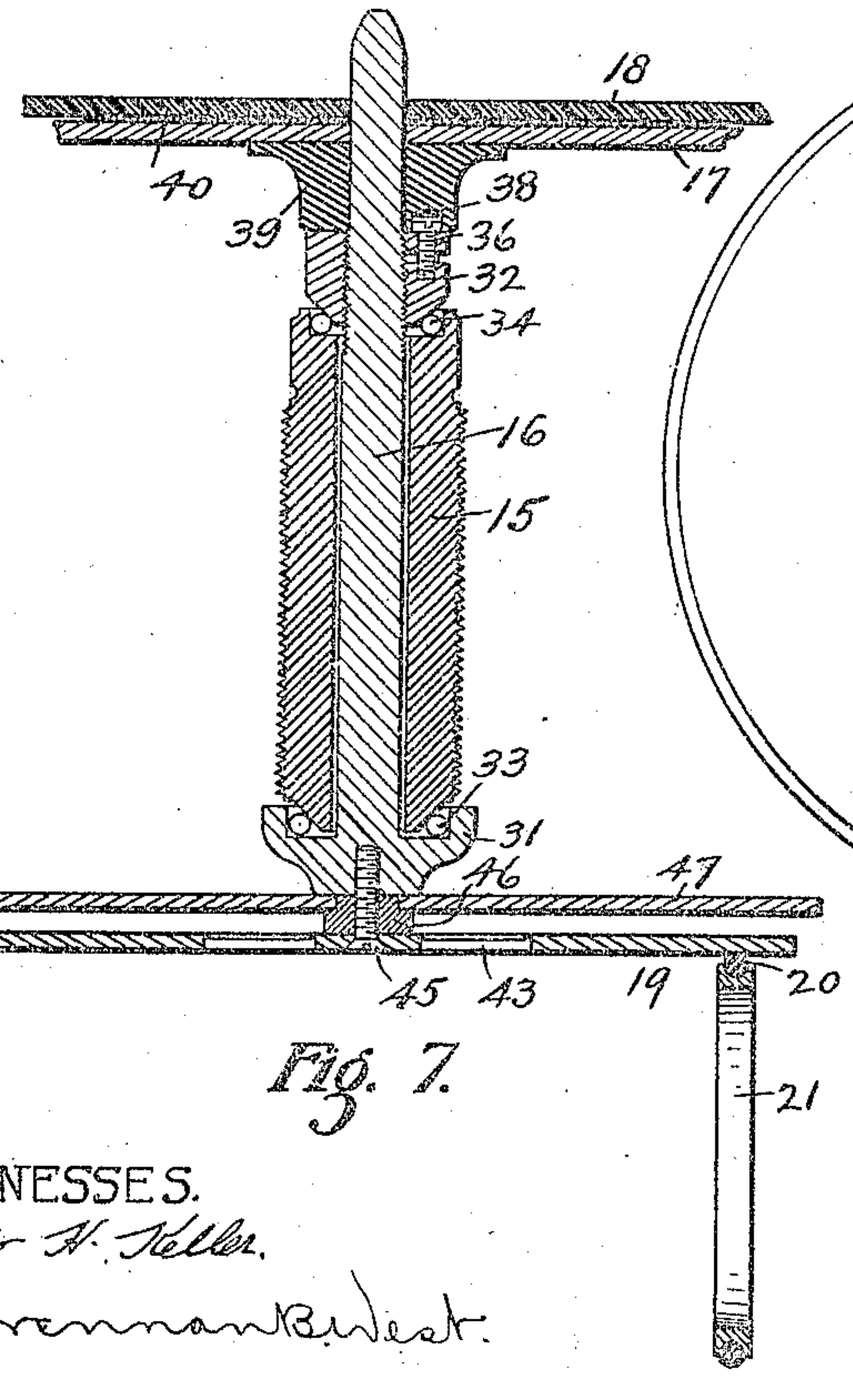

Fig. 7.

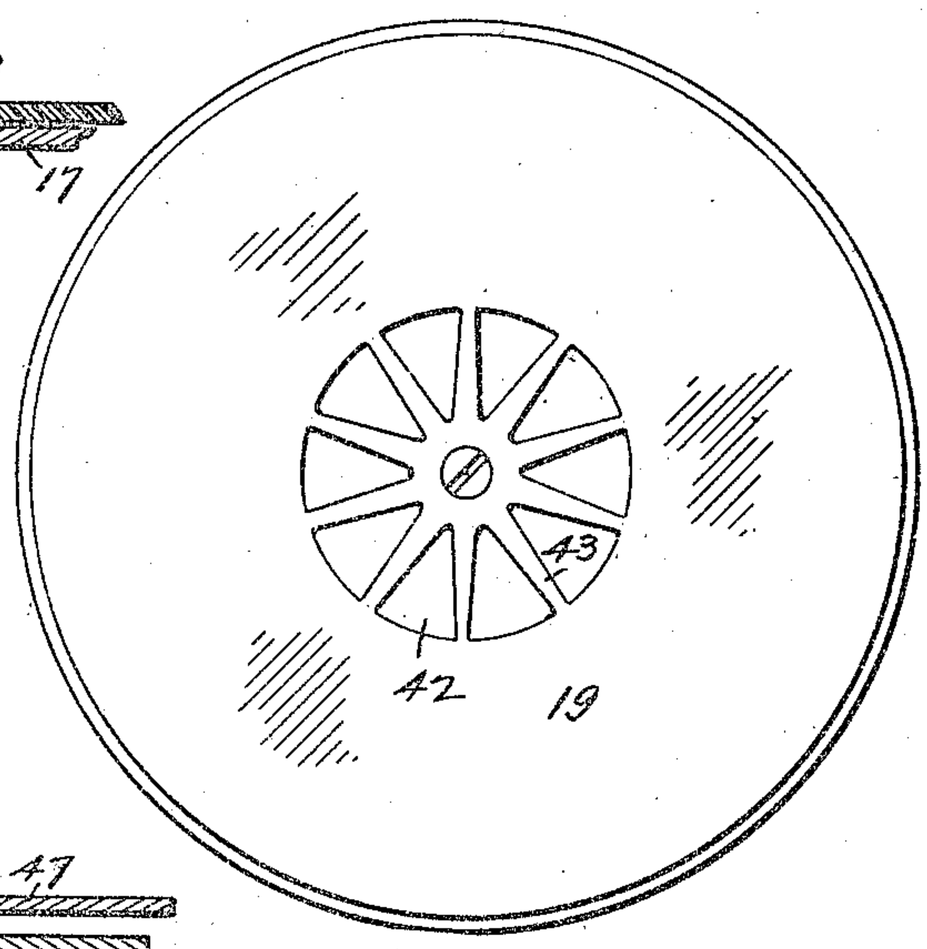

Fig. 8.

WITNESSES.

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UNITED STATES PATENT OFFICE.

LOUIS DEVINEAU, OF CLEVELAND, OHIO

PHONOGRAPH.

No. 865,769. Specification of Letters Patent. Patented Sept. 10, 1907.

Application filed June 18, 1906. Serial No. 322,243.

To all whom it may concern:

Be it known that I, LOUIS DEVINEAU, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented a certain new and useful Improvement in Phonographs, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings.

The object of this invention is to provide mechanism whereby either disk or cylinder records may be used on the same phonograph.

More particularly the invention comprises an attachment for a cylinder phonograph arranged to properly rotate disk records.

The invention, including this and other features, is hereinafter more fully described and the essential characteristics set out in the claims.

Figure 1 is an end view of a phonograph with my arrangement and with a suitably supported horn; Fig. 2 is a perspective of the driving ring; Fig. 3 is a perspective view of my disk-rotating mechanism detached; Fig. 4 is enlarged side view of the supporting pipe for the reproducer and horn; Fig. 5 is a section showing a valve in such pipe; Fig. 6 is a section showing a ball joint in the pipe; Fig. 7 is a vertical section through the disk-carrier and its shaft; Fig. 8 is a bottom plan of the horizontal driving disk.

The same letters of reference designate the same part in each figure.

Referring to the parts by numerals: 1 represents the box-like base of an ordinary cylinder phonograph on which is mounted the rotatable mandrel 2, supported at its free end by the hinged gate 3, and adapted to carry the ordinary cylinder record.

My mechanism is supported by a standard 4, which has a flange 5, extending under the box 1, and an arm 6, which carries a thumb screw 7, bearing down on the top of the box. This holds the standard firmly in place.

Slidingly carried on the standard is a rod 9, at the upper end of which is a head 10. Clamped on this head by thumb nut 11, is a plate 12, which carries a sleeve 15. Journaled within this sleeve is a shaft 16, the upper end of which carries a disk 17, adapted to support the record 18, while the lower end carries a disk 19, adapted to engage a rubber tire 20, on a ring 21, surrounding the mandrel and fitting tight thereon. By this means the disk record 18, is rotated by the mechanism which ordinarily rotates the cylinder record on the mandrel 2. The mandrel is driven by any suitable mechanism within the box as indicated by dotted lines in Fig. 1, where 22 represents a motor, from which runs a belt 23, onto a pulley 24, on the shaft of the mandrel.

There are various refinements and adjustments in the parts referred to which I will now describe. The rod 9, is clamped to the standard 4, by a set screw 25, which allows vertical adjustment as well as swinging on the rod as an axis. The clamping nut 11, screws onto the upper end of the rod 9, which extends through a slot 26, in the plate 12, wherefore this plate may be adjusted in and out. By this means the disk 19, may be located as desired over the driving ring 20, the speed of rotation of the disk being governed by the distance between its center and the point of engagement of the ring 20.

The plate 12, is bent near its end into substantially a U-shape as shown at 27, and the sleeve 15 has a screw thread on its outer side which screws through said openings in the two portions of the plate 12. This furnishes means for adjusting the sleeve up and down. Moreover a screw, 29 engaging the two portions of the plate 12, is adapted to move the free end toward or from the intermediate portion of the plate, thus causing the thread to bind and taking the place of a jam nut.

The shaft 16, is journaled within the sleeve 15, on a ball bearing provided by a cup 31, formed at the lower end of the shaft, and a nut 32, screw threaded on the shaft above the sleeve. Sets of balls 33 and 34, roll between the cup 31, and the lower end of the sleeve 15, and between the upper end of the sleeve and the nut 32 respectively. The nut 32, is jammed by having a portion 36, which is separated by a kerf from the rest of the nut and may be sprung by a nut 38, screwing through the portion 36, into the body of the nut. The disk 17, which supports the record has a hub 39, in the lower face of which is a recess to receive the head of the screw 38, thus compelling the disk to rotate with the shaft. A piece of felt or other suitable material 40, is secured to the upper face of the disk 17, and the record 18 rests thereon and is driven by friction.

In order to obtain the proper friction between the driving ring 20, and the disk 19, I give that disk a spring action by making it of thin metal and cutting out sector-shaped openings 42, to leave a series of spokes 43, carrying the disk. This allows the disk to bear on the ring with sufficient friction, the barrel 15, being screwed downwardly sufficiently to cause the disk 19, to be bent upward slightly on the side engaging the ring 20. The disk 19, is secured by a screw 45, screwing through it and through a washer 46, into the end of the shaft 16. An annular recess formed on this washer provides means for clamping the disk 47, between the washer and the end of the shaft. This disk 47, forms a guard over the friction drive preventing anything accidentally passing between the driving members or dropping into the openings 42.

The reproducing mechanism which coöperates with the disk is also carried by the plate 12. At its outer end this plate has an upturned portion 50, which is then turned horizontally and downward as at 51. A tube 52, fits in this horizontal web and is clamped by a set screw 53, in the downward flange 51. This tube may thus be adjusted up and down. Loosely mounted in the tube is a rod 53, rigid with which are arms 54 and

55, the outer ends of which are connected by screws with lugs on the tube 56, which is formed as an elbow, as shown. At the lower end of this tube is a portion 57, which is a segment of a sphere, and in this segment is pivoted the partially spherical end 58 of the neck 59 of the sound box. The sound box has a cylindrical extension 60, from this neck which carries the diaphragm 61, with which coöperates the reproducing needle 62. By reason of the pivot between the heads 57 and 58, this reproducing needle can play up and down, while the journaling of the rod 53 in the tube 52 allows the reproducer to swing laterally under the influence of the spiral groove on the record disk.

On the upper end of the elbow 56 is formed a partially spherical recess 65, in which seats the lower partially spherical head 66 of an upper elbow 67. This head is freely held in place by the nut 68, but is allowed movement to make an easy connection between the horn and the elbow 56. The horn, designated 70, is supported in any suitable manner, as indicated by the stand 71, which is selected as illustrative. On the inner end of the horn is a rubber section 73, which connects the horn with the upper end of the elbow 67.

To regulate the degree of sound, I provide a valve in the passageway from the sound box to the horn. This valve, as shown in the drawing, consists of a plug 75, seating in the elbow 67, and carrying a knurled head 76, by which it may be turned, there being a large cylindrical passageway through the plug so that it may leave the bore of the elbow 67, unobstructed, or reduce it as desired. The friction of the plug with the walls of the tube is sufficient to hold the plug in place.

To produce proper sound it is necessary not only that the disk be rotated and the reproducer supported in engagement therewith, but that such rotation be easy, and without jerk or irregularity. The reproducer needle must rest lightly and easily thereon and there mu be no scratching or scraping of any kind. These results are obtained by the various adjustments and refinements in my mechanism as above explained. Moreover my adjustments allow my mechanism to be attached to cylindrical phonographs of various sizes. There are a large number of such phonographs in existence and frequently it is desired to reproduce a record which does not exist in the cylinder form but does in the disk form. My mechanism enables the disk records to be operated by the cylinder phonograph whenever desired. At the same time it may be instantly removed to allow cylinder records to be used.

Having thus described my invention, I claim:—

1. The combination with the mandrel of a cylinder phonograph of a friction ring adapted to be carried thereby, a horizontal disk adapted to support the disk record, a vertical shaft carrying said disk, a second disk at the lower end of said shaft adapted to engage said ring, and a bearing for said shaft between the two disks.

2. In a driving mechanism for disk records, the combination of a horizontal disk, a vertical shaft connected therewith, a spring disk at the lower end of such shaft, and a rotatable driving member adapted to engage the lower disk.

3. In a driving mechanism for disk records, the combination of a horizontal record support, a vertical shaft connected therewith, a disk at the lower end of such shaft, a bearing for the shaft between the record support and disk, a rotatable driving member adapted to engage the lower disk, and a cylinder phonograph having means engaging the under side of said disk.

4. The combination of a suitable support, of a bracket adjustably carried thereby, a barrel screw-threaded in said bracket, a shaft journaled in said barrel, a disk supported on the upper end of said shaft, a driving disk on the lower end of said shaft, and a coöperative driving member adapted to engage such lower disk.

5. The combination with a suitable support adapted to be clamped to a phonograph box, a bracket adjustably carried by the support, a barrel adjustable within the bracket, a shaft journaled in the barrel, a disk on the upper end of the shaft, a disk on the lower end of the shaft, a phonograph and a friction member rotatable by the phonograph and engaging the disk on the lower end of the shaft.

6. The combination with a suitable support adapted to be clamped to a phonograph box, a bracket adjustably carried by the support, a barrel adjustable within the bracket, a shaft, journaled on ball bearings in the barrel, a disk on the upper end of the shaft, a disk on the lower end of the shaft, a phonograph mandrel, and a friction ring adapted to fit on said mandrel and engage the disk on the lower end of the shaft.

7. The combination with a bracket, a rod adjustably carried thereby, a plate supported by said rod and adjusted laterally thereon, a barrel carried by said plate, a shaft located in said barrel and having a ball bearing connection therewith, and means for supporting a record carried by said shaft.

8. The combination with a suitable support adapted to be clamped to a phonograph box, of a bracket adjustably carried by said support, a barrel adjustable within the bracket, a shaft journaled in the barrel, a record support carried by said shaft above the barrel, and means connected with said shaft below the barrel for rotating it.

9. The combination of a suitable support vertically adjustable, a horizontally adjustable plate carried by said support, a shaft carried by said plate, a record support adapted to be driven by said shaft, means for driving said shaft, a tube, a reproducer carried thereby for cooperating with the record, a vertically adjustable support for said tube, said support being carried by said plate.

10. The combination with a cylinder phonograph of a standard adapted to be clamped to the box of the phonograph, a bracket adjustably carried by the standard, a reproducer, an adjustable swivel support therefor carried by the bracket, a rotatable shaft carried by the bracket, and means at the upper end of said shaft adapted to carry a record coöperating with the reproducer.

11. The combination, with a cylinder phonograph having a mandrel, of a standard adapted to be clamped to the box of the phonograph, a bracket adjustably carried by the standard, a reproducer, an adjustable swiveled support therefor carried by the bracket, a rotatable shaft carried by the bracket, a disk at the upper end of said shaft adapted to carry the record coöperating with the reproducer, a disk at the lower end of the shaft, and a friction ring on the mandrel and engaging the last mentioned disk.

12. The combination, with a cylinder-phonograph having a mandrel, of a standard adapted to be clamped to the box of the phonograph, a vertical rod adjustably mounted in said standard, a cross plate carried by said rod, a sound tube and reproducer, an adjustable swiveled support therefor carried by the cross plate, an adjustable barrel carried by the cross plate, a shaft in said barrel, a disk at the upper end of said shaft adapted to carry the record coöperating with the reproducer, a disk at the lower end of said shaft, and a friction ring adapted to fit on the mandrel and engage the last mentioned disk.

In testimony whereof, I hereunto affix my signature in the presence of two witnesses.

LOUIS DEVINEAU.

Witnesses:
ALBERT H. BATES,
BRENNAN B. WEST.