No. 657,280.

Patented Sept. 4, 1900.

W. BOHNE.

PHONOGRAPH.

(Application filed Mar. 20, 1900.)

(No Model.)

4 Sheets—Sheet 1.

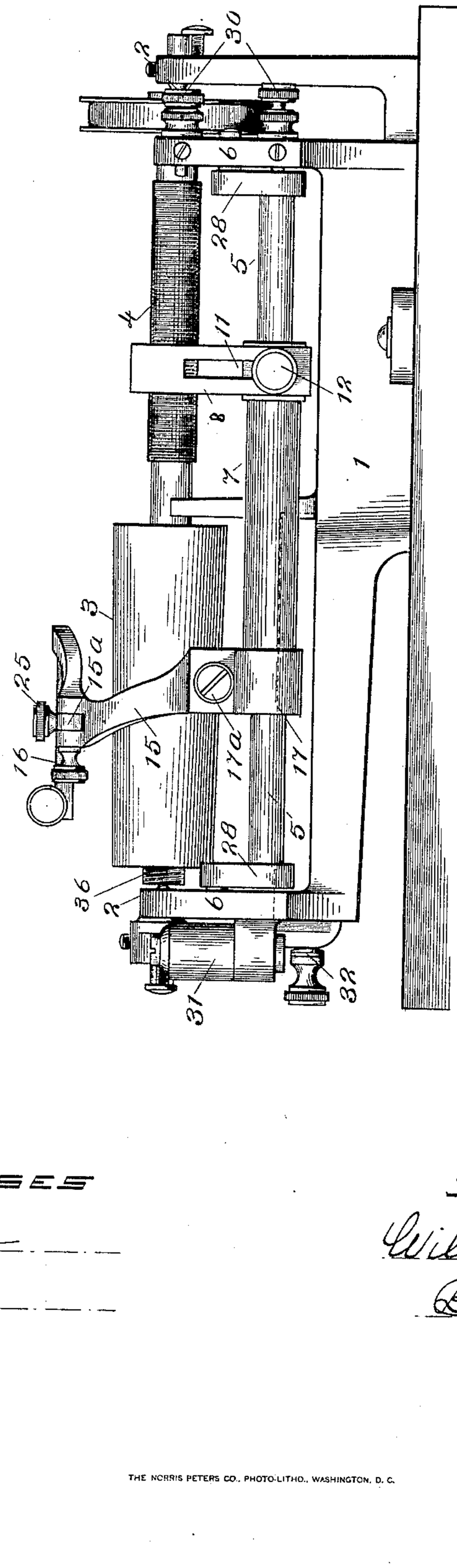

FIG. 1.

WITNESSES

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(No Model.) 4 Sheets—Sheet 2.

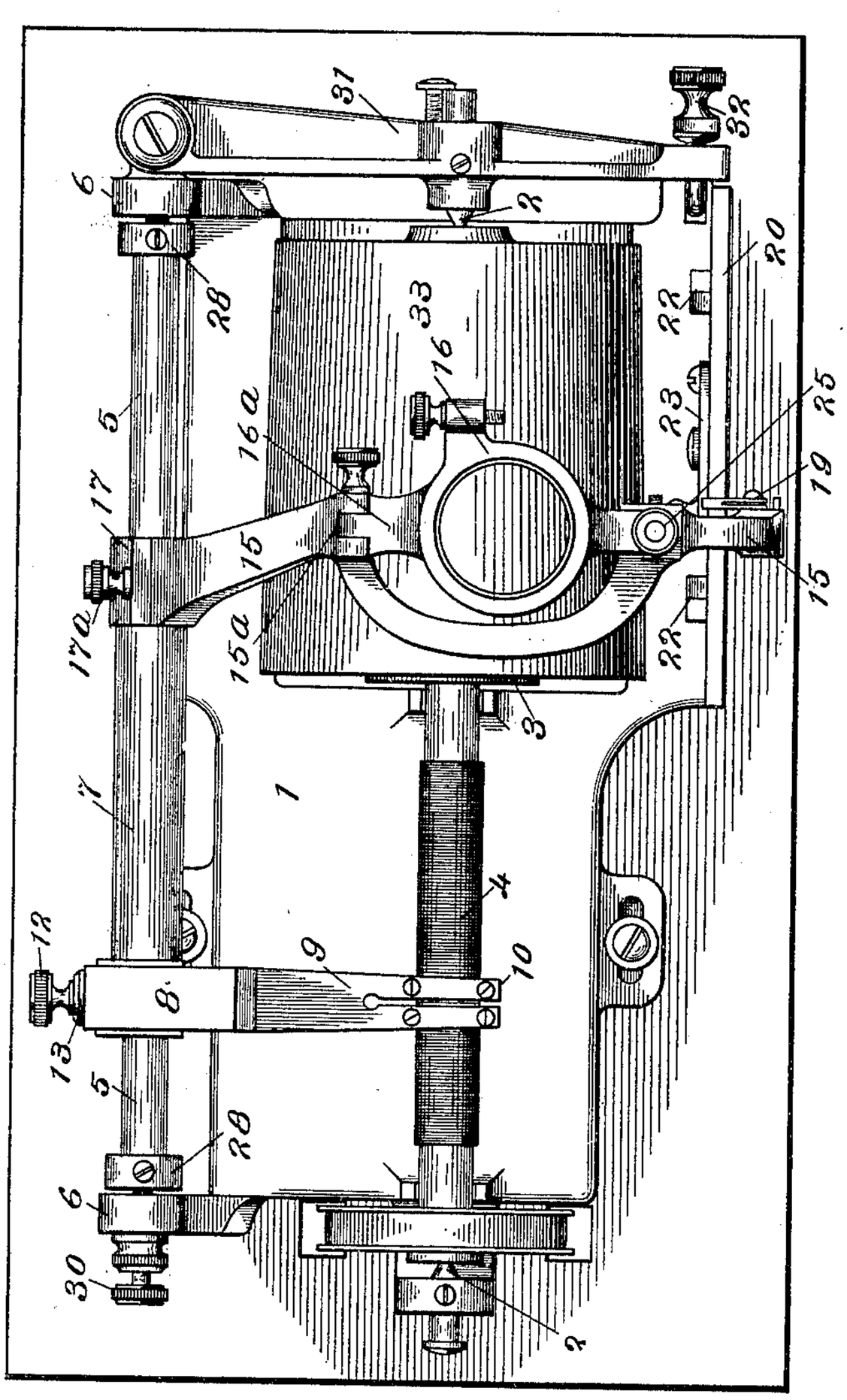

Fig. 2.

WITNESSES

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(No Model.) 4 Sheets—Sheet 3.

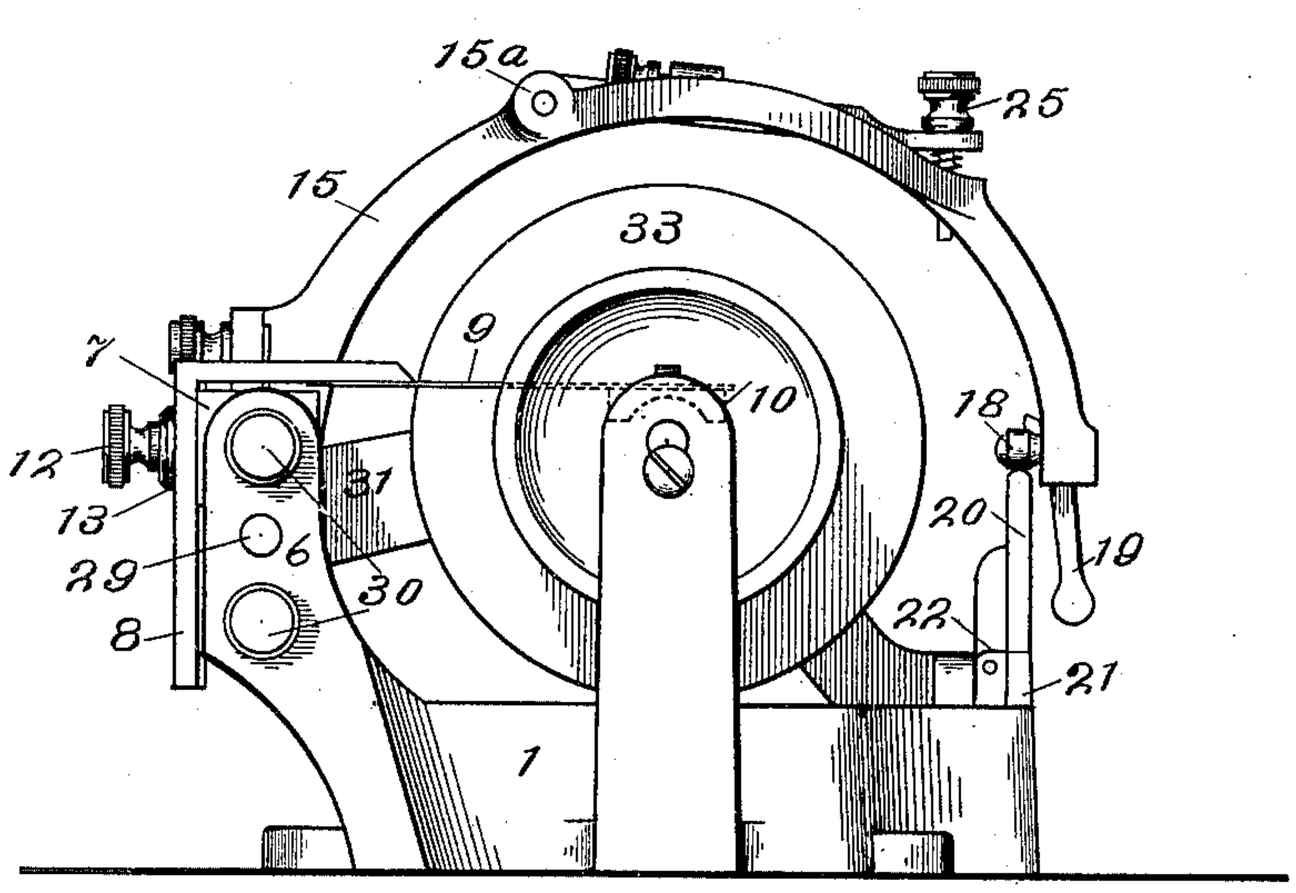

FIG. 3.

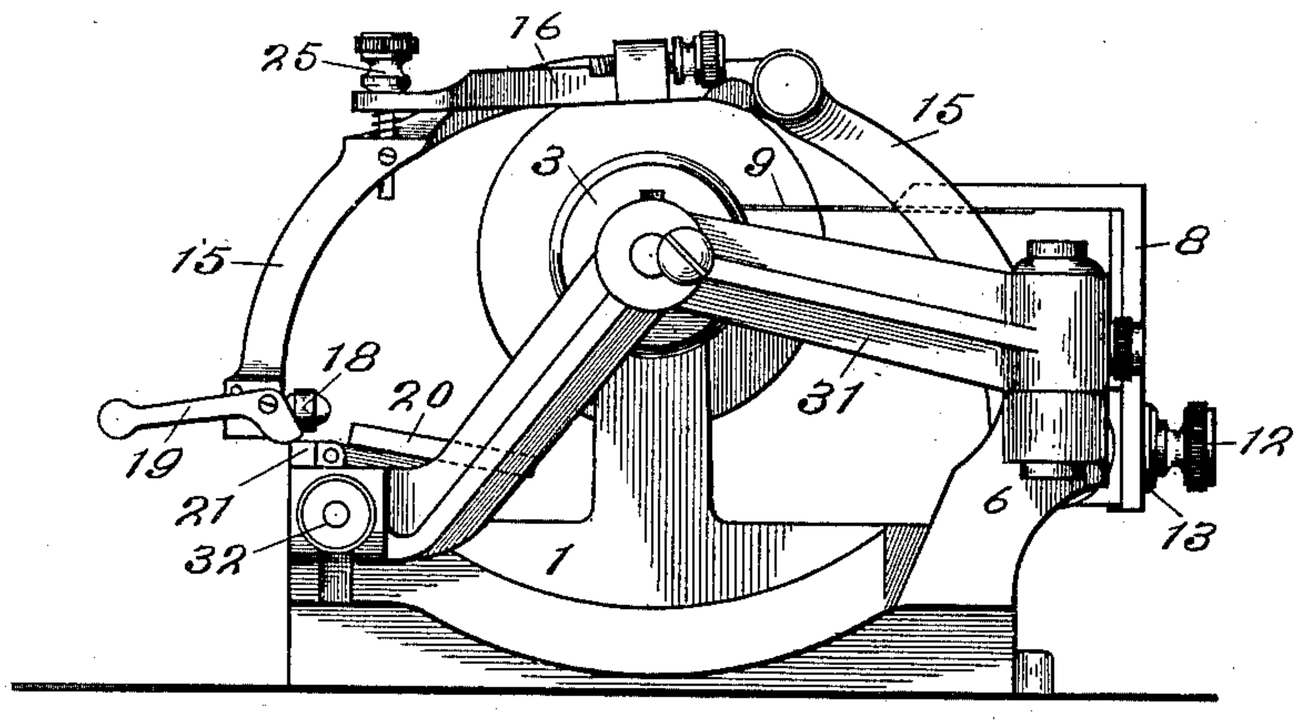

FIG. 4.

WITNESSES

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(Application filed Mar. 20, 1900.)

(No Model.) 4 Sheets—Sheet 4.

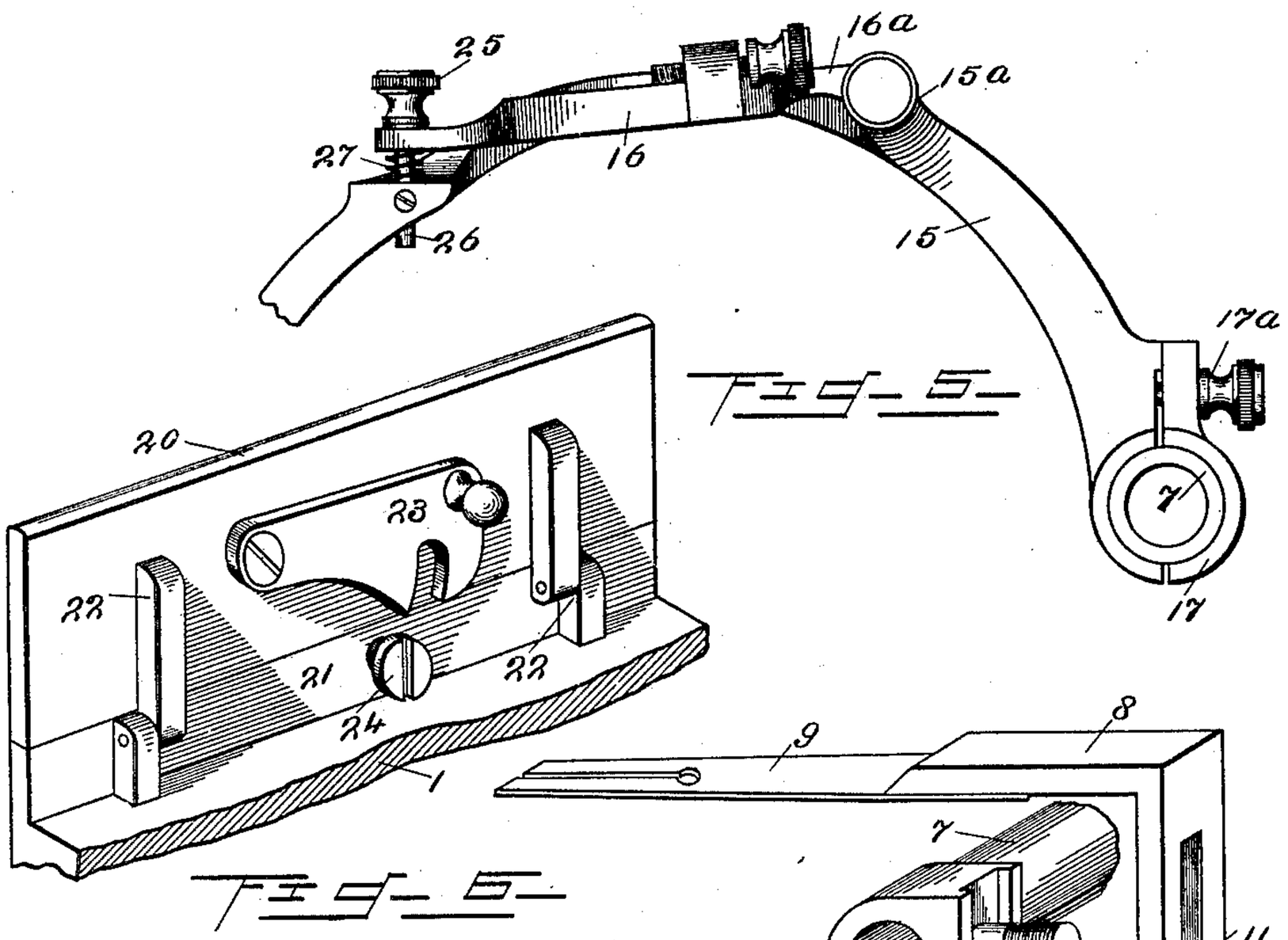

FIG. 5.

FIG. 5.

FIG. 7.

FIG. 9.

FIG. 8.

WITNESSES

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UNITED STATES PATENT OFFICE.

WILLIAM BOHNE, OF TORONTO, CANADA.

PHONOGRAPH.

SPECIFICATION forming part of Letters Patent No. 657,280, dated September 4, 1900.

Application filed March 20, 1900. Serial No. 9,467. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM BOHNE, of the city of Toronto, in the county of York and Province of Ontario, Canada, have invented certain new and useful Improvements in Phonographs; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, which form part of this specification.

My invention relates particularly to that class of phonographs in which cylindrical phonogram-blanks of either small or large diameter can be employed both for recording and reproducing and pertaining not to the manner in which the same may be driven, and is applicable for either electromotive power or spring-motor with the usual controlling devices as employed with such motors and mounted on the case or receptacle in which the above motors may be located. The support for the recorder or reproducer can be adapted for any of the well-known recorders or reproducers and operate with equal efficiency. For convenience I have shown the said support adapted for the Edison recorder or reproducer; and the object of the invention is to simplify the construction and reduce the number of operations when preparing the phonograph to receive the phonogram-blanks on changing from large to small, or vice versa, thereby increasing the utility of the same without sacrificing the efficiency.

The invention consists of an improved mechanism for vertically raising and lowering the recorder or reproducer carrying arm and retaining the same angle of contact with phonogram-blanks of different diameters.

The invention consists also of an improved bushing for supporting the enlarged phonogram-blanks and the manner in which the same is secured to the mandrel or small phonogram-blank holder.

To such ends the invention consists in the construction and combination of parts, hereinafter particularly described and claimed, reference being had to the accompanying drawings, forming part thereof, in which similar figures of reference refer to like parts throughout.

Figure 1 is a side elevation of a phonograph embodying the said improvements. Fig. 2 is a plan view of the same machine. Fig. 3 is an end elevation of the driving side, showing the same prepared for phonogram-blanks of large diameter. Fig. 4 is an elevation of the opposite end of the machine, showing the same prepared for phonogram-blanks of small diameter. Fig. 5 is a detail view of the recorder or reproducer carrying arm. Fig. 6 is a view in perspective of the carrying-arm track or front rest. Fig. 7 is a detail perspective view of the adjustable angle-bracket and feed-arm with a portion of the sleeve. Fig. 8 is a partial view in perspective of the guide-rod, showing the crank and pivot; and Fig. 9 is a longitudinal sectional view of the large mandrel or cylindrical bushing, showing the manner in which the same is secured to the small mandrel.

Upon and supported above the body 1 and on the usual point-bearings 2 are the phonogram-blank mandrel 3 and feed-screw 4 and eccentrically-pivoted guide-rod 5, supported on standards 6 and carrying the sleeve 7. At one end of sleeve 7 is a vertically-adjustable angle-bracket 8, with flexible extension 9, carrying the feed-nut 10, which has a bearing on the feed-screw 4.

In the upright portion of the angle-bracket 8 is an elongated slot 11, operating in which and for the purpose of securing the bracket to the sleeve is a knurled-headed screw 12 or nut and stud with washer 13. To retain the angle-bracket 8 in a vertical position and to permit the same to be raised or lowered when the screw 12 is slackened a portion of the said bracket enters an elongated groove of guide 14, formed in the flattened portion of the sleeve 7. On the upper portion of the said bracket 8 and secured to the same is the flexible extension 9, having secured thereto the feed-nuts 10. At the opposite end of the sleeve 7 and extending over the mandrel 3 in the form of a semicircle is the recorder or reproducer carrying arm 15, supporting at its center the recorder or reproducer adjustable holder 16. This arm at its base is secured to the sleeve 7 by a split collar or clamp 17 with knurled-headed screw 17ª, the only object of which is to permit of regulating the pressure of the feed-nut 10 when in contact with the feed-screw 4 and is accomplished by a slight canting of the angle-bracket 8. On the op-

posite end of the arm 15 and supporting the same is, preferably, a roller 18 and key-lever 19, operating on the elevated track 20 or lower track 21. When it is desired to raise the recorder or reproducer carrying arm 15 and disengage the recorder or reproducer point from contact with the phonogram-blank and also raise and disengage the feed-nut 10 from the feed-screw, the key-lever 19 is raised, as shown in Fig. 4, and vice versa, as shown in Fig. 3.

The track 21 is an integral part of the body 1 and of a lower elevation and directly below the track 20. To allow the track 20 to be displaced and removed from over the track 21, the same is hinged to the body 1 with hinges 22, as shown. To retain the track 20 in a vertical position and hold the same secure a latch 23, fulcrumed on the track 20, and catch 24 on the body 1 are employed, as shown.

To compensate for the difference in thickness of phonogram-blanks and maintain the recorder or reproducer point when in contact with the blank at the proper angle, the holder 16 is vertically adjustable and raised or lowered by the knurled nut 25, traveling on the threaded pin 26. Encircling the pin 26 and below the projecting lug of the holder 16 and resting on the arm 15 is a spiral spring 27 for the purpose of maintaining the holder in contact with the adjusting-nut 25. The opposite end 16^a of the said holder is hinged to the said arm 15 by the hinge 15^a. This portion of the said arm 15—namely, the holder 16—can be readily removed and replaced by a holder suitable for any of the well-known recorders or reproducers and use the said adjustment.

When it is desired to change the machine and operate with large phonogram-blanks in place of small ones, the following changes are made. The sleeve 7, supporting the recorder or reproducer carrying arm 15 is raised by the rotating of the eccentrically-pivoted guide-rod 5 and elevated track 20. The difference in elevation of the said track 20 above the track 21 is equal to half the difference of the diameters of the different-sized phonogram-blanks. At the extremities of the guide-rod 5 are secured cranks 28, with wrist-pins 29, fulcrumed in the standards 6 and having a radius equal to one-quarter of the aforesaid difference in diameter of the blanks. To retain the said guide-rod when elevated or lowered and hold the same secure, a spring-actuated plunger 30 is forced by a spiral spring into the hole or recess 30^a within the center of the guide-rod 5. The plungers 30 are two in number and preferably at one end of the guide-rod and supported by the said standard 6. To facilitate the withdrawing of the plungers, an enlarged knurled head is formed on one end. To compensate for the elevating of the sleeve 7 and maintain the feed-nut in operative contact with the feed-screw, the bracket 8 is lowered and in the position shown in Fig. 3. To increase the size of the mandrel 3 and prepare the same to receive the large phonogram-blanks, the gate 31, carrying the point-bearing 2, is released by the lock 32 and swings back, allowing free access to the mandrel 3.

The large mandrel 33 consists of a large cylinder with internal annular flanges secured to its ends. The opening in the end 34 coincides with the large diameter of the mandrel 3, while the opening in the end 35 is considerably smaller in diameter and threaded to correspond with the thread 36, projecting from the small end of the mandrel 3. To place the large mandrel 33 on the machine, it is passed over the small mandrel 3, enveloping the same, and wound on in the reverse direction to that in which the machine operates, and thereby preventing the same from becoming loose.

Should it be found desirable to dispense with the end 34, the mandrel may be supported by the end 35 and thread 36 solely.

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

1. In a phonograph, the combination of a rotating support adapted to receive phonogram-cylinders of different diameter, a recorder or reproducer carrying arm, a vertically-adjustable guide-rod, a sleeve traveling longitudinally on said guide-rod and supporting said arm, a vertically-adjusted feed-arm supported on said sleeve, and means for supporting the free end of said arm and at different elevation to correspond with the vertical adjustment of said guide-rod, substantially as set forth.

2. In a phonograph, the combination of a rotating support adapted to receive phonogram-cylinders of different diameter, a recorder or reproducer carrying arm, an eccentrically-pivoted guide-rod carrying a longitudinally-traveling sleeve, means for maintaining said guide-rod at its different elevations, said sleeve supporting said arm and a vertically-adjustable feed-arm, means for maintaining said feed-arm vertical when adjusting and at different elevations when adjusted, and a plurality of supports for the free end of said arm and of different elevations to correspond with the vertical adjustment of said sleeve, substantially as set forth.

3. In a phonograph, the combination of a recorder or reproducer carrying arm adapted to travel longitudinally over the phonogram-cylinders, tracks of different elevations for supporting the free end of said arm, the upper track hinged and swinging into a vertical position over the lower track, means for retaining the said upper track in a vertical position over the lower track, whereby the arm is adjusted for cylinders of different diameters, substantially as set forth.

4. In a phonograph, the combination of a movable arm traveling longitudinally over the phonogram-cylinders, an independent recorder or reproducer holder supported by said

arm, said holder fulcrumed on said arm, a pin screw-threaded at its upper end and passing freely through the said holder, but fastened to the said arm, a nut screwing on the threads of the said rod and bearing on the top of the said holder to adjust the vertical, pivotal position of the latter, and a spring interposed between the said arm and holder, whereby any difference in the thickness of phonogram-blanks is compensated for, and whereby the point of the recorder or reproducer is maintained at the proper angle of contact, substantially as set forth.

5. In a phonograph, the combination of a rotating mandrel for phonogram-cylinders of small diameter, a cylindrical bushing enveloping the said mandrel for phonogram-cylinders of large diameter, an internal annular flange adapted to support the cylindrical bushing upon said mandrel, a threaded projection extending from the small end of said mandrel, a threaded opening in said annular flange corresponding with the threaded projection on said mandrel, substantially as shown and described.

In witness whereof I have hereunto set my hand in presence of two witnesses.

WILLIAM BOHNE.

Witnesses:
C. W. AVERY,
H. DIXON.