

No. 697,969.

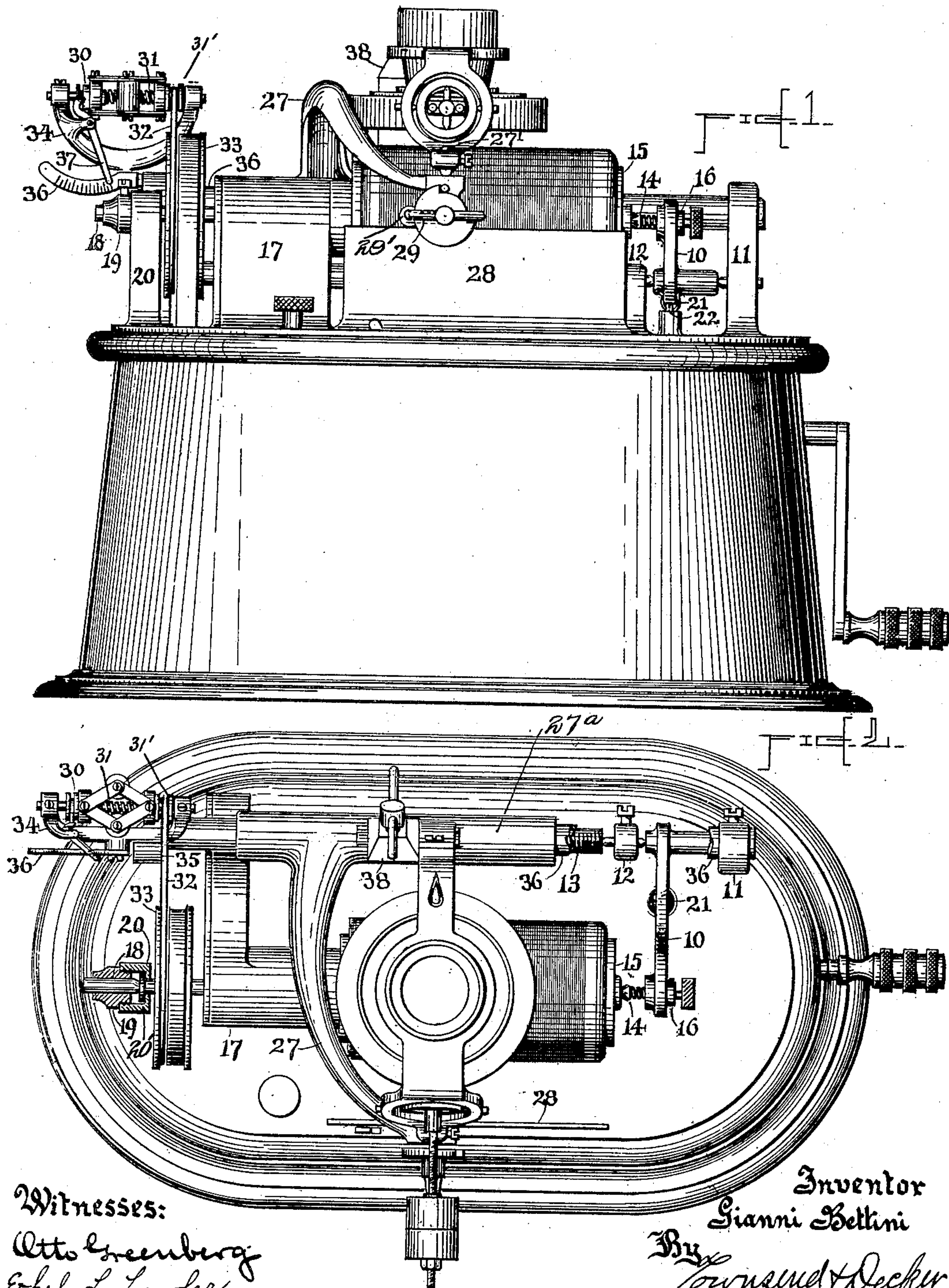
Patented Apr. 22, 1902.

G. BETTINI.
PHONOGRAPH OR GRAPHOPHONE.

(Application filed May 2, 1900.)

(No Model.)

2 Sheets—Sheet 1.



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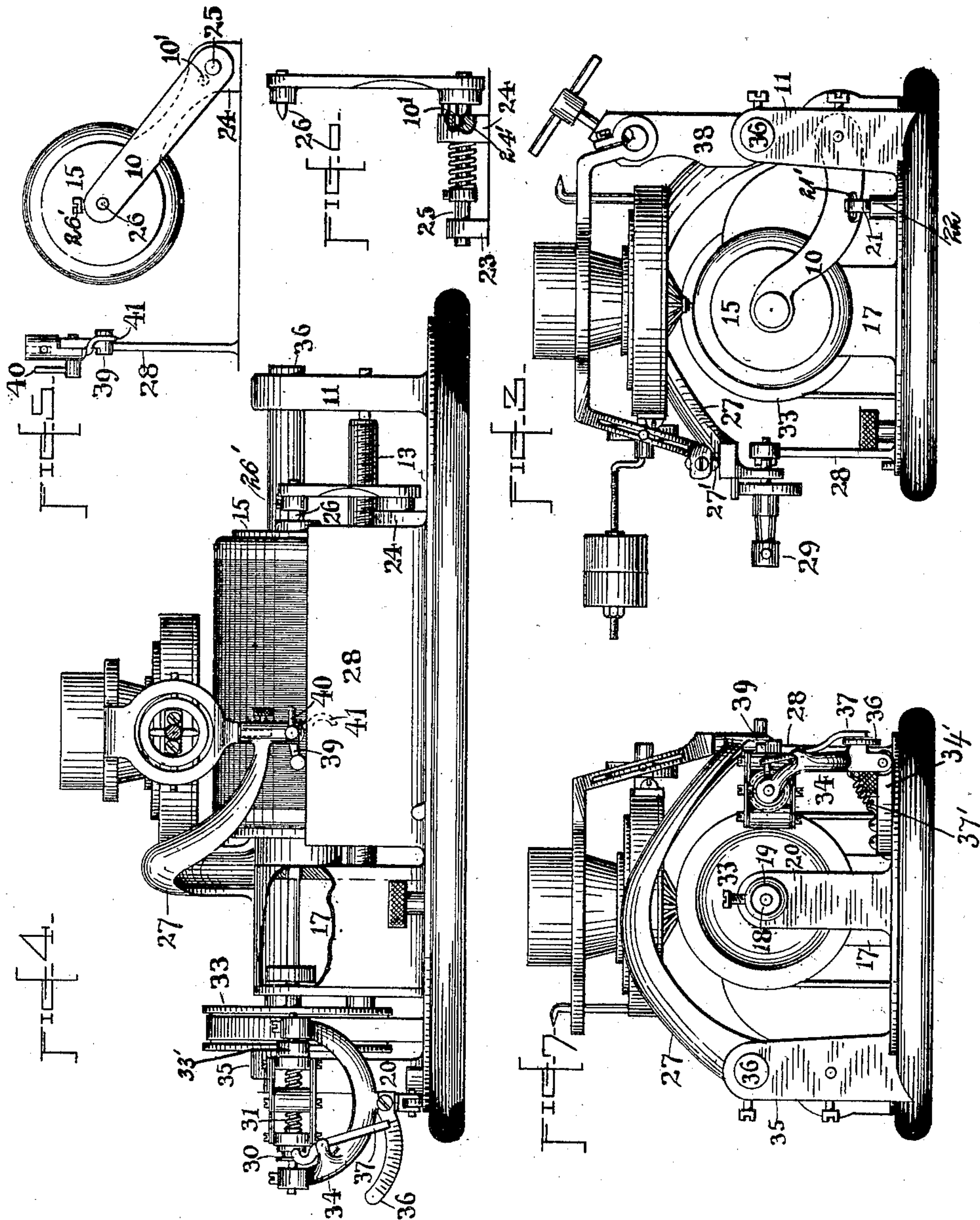
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UNITED STATES PATENT OFFICE.

GIANNI BETTINI, OF NEW YORK, N. Y.

PHONOGRAPH OR GRAPHOPHONE.

SPECIFICATION forming part of Letters Patent No. 697,969, dated April 22, 1902.

Application filed May 2, 1900. Serial No. 15,221. (No model.)

To all whom it may concern:

Be it known that I, GIANNI BETTINI, a citizen of the United States, and a resident of 110 Fifth avenue, New York city, in the county of New York and State of New York, have invented certain new and useful Improvements in Phonographs and Graphophones, of which the following is a specification.

This invention relates to improvements in phonograph and graphophone mechanism, and has for its objects improvements in the carrier for the recorder or reproducer, improvements in the manner of mounting the shaft carrying the record-cylinder, and improvements in the manner of regulating the speed at which the cylinder in the act of reproduction may be rotated in order to reproduce the recorded matter with the exact cadence in which it was recorded upon the cylinder.

A further object of the invention is the general simplification of the various adjuncts of a phonograph or graphophone.

With these objects in view the invention consists in the formation, construction, and combination of parts hereinafter described and claimed.

In the accompanying drawings, which form a part of this specification, Figure 1 represents in front elevation a phonograph embodying the features of my invention. Fig. 2 represents the same in plan view. Fig. 3 is an end view thereof. Figs. 4, 5, 6, and 7 represent modifications in details.

In phonographs and graphophones it is usual to provide for the mandrel which carries the cylinder a bearing at only one end thereof, so that the cylinder may be readily applied and removed from the other or free end. In this manner of mounting the cylinder it is next to impossible to prevent the movement of the free or unsupported end of the mandrel during operation. This defect is remedied in the present invention by providing a bearing for both ends of the mandrel. In this improved construction it is of course necessary that the bearing at what was formerly the free end of the mandrel should be removable in order that the cylinder may be applied to and removed from the mandrel. For this purpose said bearing is mounted in

a hinged or pivoted arm. Such an arm is illustrated at 10. This arm may be pivotally mounted upon the machine in any suitable way. It is shown in Fig. 1 as mounted by means of cone-bearings between a post, as 11, and an intermediate post 12. The diaphragm-carrier is moved from a feed-screw in a well-known manner. This feed-screw 13 in the form of machine shown is mounted in line with the bearings of the arm 10, and for this purpose the cone in the intermediate post 12 may be made double, serving as a bearing for the adjacent ends of both of these parts.

In the free end of the arm 10 is mounted a cone 14, which serves as a bearing for the end of the mandrel 15. This cone must be provided with a horizontal movement, by which it may be retracted from the mandrel when it is desired to swing the arm away from the end of the mandrel. For this purpose said cone is preferably mounted upon a rod extending through the arm 10 and provided at its end opposite the cone with a milled head. A spring is also placed upon this rod between the cone and the arm 10 for holding the cone in the bearing at the end of the mandrel. At the side of the arm opposite to the spring there is also placed upon said rod an adjustable collar, as 16, by which the pressure of the cone against the mandrel may be regulated. The opposite end of the mandrel passes through a support, as 17, which serves to hold the mandrel in its approximate position while the arm 10 is removed from the end thereof, but does not engage the mandrel when in operation, since it is held free from said support between the cone-bearing just described and the cone-bearing 18 at its opposite end. The latter cone is adjustably mounted in a sleeve 19, removably secured in the post or upright 20, said cone being fixed in position after adjustment by means of a set-screw, as indicated. The end of the mandrel supported by this cone is preferably provided with a head 20', seated in said upright 20, as indicated. This head prevents any accidental displacement of the mandrel while the bearing-in arm 10 is out of engagement therewith. This head might also serve as a means of holding the mandrel in substantially normal position during the removal

of the cone 14 therefrom, in which instance the supplemental support 17 may be dispensed with.

To insure the maintenance of the bearing 5 carried by the arm 10 in alinement with the mandrel and its opposite bearing, said arm may rest upon the abutment, as 22, provided therefor on the pedestal. It may be retained upon said abutment by means of a U-spring, 10 as seen at 21, the curved ends of said spring taking into slight depressions on the sides of arm 10, as indicated at 21' in Fig. 3.

In mounting the mandrel in bearings at both ends, substantially in the manner described, and especially by the use of cone-bearings therefor, it will never vary from a fixed position, thereby materially aiding in the production of a perfect record and in a perfect reproduction thereof.

Another mode of construction for the removable bearing and another manner for mounting the same is illustrated in Figs. 4, 5, and 6. Therein said arm 10 is shown as mounted, by means of a shaft 25, in a couple 25 of posts 23 24 near the back of the machine. Upon the shaft 25 is a spring mounted between a collar on the shaft and the post 24. This is intended to hold the cone 26, carried by the free end of the arm, into engagement 30 with the bearing in the end of the mandrel. This cone is adjustable in said arm by means of set-screw 26' to regulate its engagement with said bearing. The stop for limiting the movement of this arm consists of a pin, as 35 10', which when the cone is in the bearing rests in an aperture 24' in the post 24, but which rides upon the face of said post when the cone is disengaged from said bearing and the arm is thrown back for the application 40 of a cylinder to the mandrel or the removal thereof.

The speaker-arm or that by which the recorder and reproducer are, in effect, carried is in the present invention formed in such a way as to provide a ready application there- 45 to of either the recorder or reproducer and the ready replacement of one by the other and also for its own speedy removal from the vicinity of the cylinder. This arm is illustrated at 27. It has at its rear end a sleeve 50 27^a, termed the "back-rod" sleeve. Thence it arches over the cylinder toward the front of the machine and is curved to the right and forms at its free end a support or rest 55 for the forward end of the frame carrying the diaphragm and appurtenances of the recorder and reproducer. This frame is removably supported in the projection 38, extending upwardly from the back-rod sleeve. Through 60 this end of said frame passes an adjustable pin 27', held in place by a set-screw. This pin engages said rest, and by it said frame may be adjusted with respect to said arm. The forward end of the arm 27 is provided 65 with any suitable form of lifting lever mechanism, which in turn rests and rides upon the straight edge 28.

There is no novelty claimed for the lifting lever mechanism seen in Figs. 1 and 2 nor 70 for the manner of attachment of the reproducer-frame to the projection 38, since they form parts of the device disclosed in Patent No. 643,183, granted to me February 13, 1900. Said lifting mechanism consists of a cam provided with an antifriction-roller 29' and is 75 shifted, by means of the T-head 29, to raise or lower the stylus of the diaphragm with respect to the cylinder.

An improved form of lifting-lever is seen in Figs. 4, 5, and 7. Therein the roller that 80 rides on the straight edge is mounted in the end of a lever, as 39, which is pivoted in the end of the arm 27 under the rest. A handle, as 40, serves to throw the lever to bring the roller under the rest, as in Fig. 5, thereby 85 raising the stylus from the cylinder, or to throw it to the side, as seen in Fig. 4, to lower the stylus upon the cylinder. The curved projection 41 supports the lever in the former position. 90

As already suggested, it is essential for the perfect reproduction of a record that the speed of the record when being reproduced shall be identical with that of the cylinder during the act of recording. To effect this, 95 an indicator has been devised. One form thereof is illustrated and one mode of application is indicated in Figs. 1 and 2 and another in Figs. 4 and 7. This indicator consists in the main of a ball-governor mechanism whose sliding collar is indicated at 30, 100 and the spring against which said collar operates is indicated at 31. The shaft of this governor is shown in Figs. 1 and 2 as receiving its rotation by means of a small belt or 105 cord 32, which passes from the sheave 31' thereon around the pulley 33 on the mandrel 15. The shaft of the indicator is mounted in a frame, as 34, which in turn may be suitably supported upon any part of the machine, as upon the post 35 or upon the end 110 of the rod 36, which is mounted in the upper ends of the posts 35 and 11, and upon which the back-rod sleeve is guided. This manner of mounting is seen in Figs. 1 and 2. To the 115 frame 34 is attached a suitable scale, as 36^x, over which travels a pointer 37 of the indicator. This pointer is pivoted to the frame 34 and has a pin or projection therefrom extending into a groove in the sliding collar 30. 120 Thus it will be seen that as the balls of the governor move out and in the pointer will be made to travel the scale 36^x, and by regulating the speed of the mechanism which drives the mandrel in any of the well-known 125 ways the pointer may be made to stand at exactly the same position during the reproduction of a record that it occupied during the act of recording.

The preferred form of combining the indi- 130 cator with the phonograph is illustrated in Figs. 4 and 7. Therein the frame 34 is hinged to the base of the phonograph by means of a plate 34', and for the sheave 31' on the gov-

ernor-shaft is substituted a friction-pulley 33', which engages the pulley 33 on the mandrel. These pulleys are maintained in engagement by means of a spring 37', Fig. 7. Obviously this frictional pulley may be maintained in engagement with pulley 33 by means of a weight, if desired.

Attention is also called to the standard or pedestal of the machine in which the motor is mounted. This has been restricted in extent from the usual form of pedestal and is no larger than is necessary to furnish the required area of top for the support of the superstructure carried thereby. It is ellipsoidal in plan and horizontal section and tapers from its base to its top. Its restricted dimensions and rounded corners reduces the cost of manufacture and expense in shipping and at the same time furnishes a pedestal more pleasing in appearance and less cumbersome.

Other modifications than those already mentioned may be made in the features embodying the present invention without departing therefrom.

The invention claimed is—

1. In a phonograph or like mechanism the combination with the mandrel for carrying the record-cylinder, of a fixed bearing for one end thereof, a movable bearing for the other end, an arm carrying said movable bearing, a post 11, a bearing for said arm in the post 11, a post 12, a second bearing for said arm in the post 12, said latter bearing serving also for the propelling-screw 13, so that the bearing carried by this arm may be swung out of the way of the cylinder in a plane at right angles to the axis of the mandrel, and a spring for holding said movable bearing in engagement with the mandrel, substantially as set forth.

2. In a phonograph or like mechanism the combination with the mandrel for carrying the record-cylinder, of a fixed bearing for one end thereof, a movable bearing for the other end, an arm carrying said movable bearing, a post 11, a bearing in said post for said arm, a post 12, a bearing for said arm in the post 12, said latter bearing serving also for the propelling-screw 13, so that the bearing carried by this arm may be swung out of the way of the

cylinder in a plane at right angles to the axis of the mandrel, a spring for holding said movable bearing in engagement with the mandrel, said arm being provided with depressions in the side thereof, an abutment on the pedestal to receive said arm, and springs upon said abutment between which the arm rests and which enter the said depressions to hold the arm in place.

3. In a phonograph or like mechanism, the combination with the back-rod sleeve, of the speaker-arm formed integrally therewith and projecting forwardly therefrom in an arch over the record-cylinder and then curved to the right and terminated in a rest or support for the recorder or reproducer, a projection arising from said sleeve, a frame carrying the diaphragm and appurtenances movably secured in said projection, an adjusting-pin in the forward end of said frame resting freely upon and unattached to said support, for the purpose set forth.

4. In a phonograph or like mechanism the combination with the mandrel of the record-cylinder having a driving-pulley thereon, of a speed-indicator consisting of a ball-governor mechanism hinged to the base of the phonograph, a friction-wheel on the arbor carrying the balls of the indicator, a spring for holding said wheel in engagement with the pulley on the mandrel of the record-cylinder, a scale, and a pointer actuated by the sliding sleeve of the ball-governor mechanism, for the purpose set forth.

5. The combination with the diaphragm and appurtenances, of the speaker-arm provided with the back-rod sleeve on its rear end and with a rest upon its forward or free end, the frame carrying the diaphragm and appurtenances and movably secured to the back-rod sleeve, and an adjusting-pin in the forward end of said frame by which said forward end is supported freely upon said rest and unattached thereto.

Signed at New York, in the county of New York and State of New York, this 25th day of April, A. D. 1900.

GIANNI BETTINI.

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