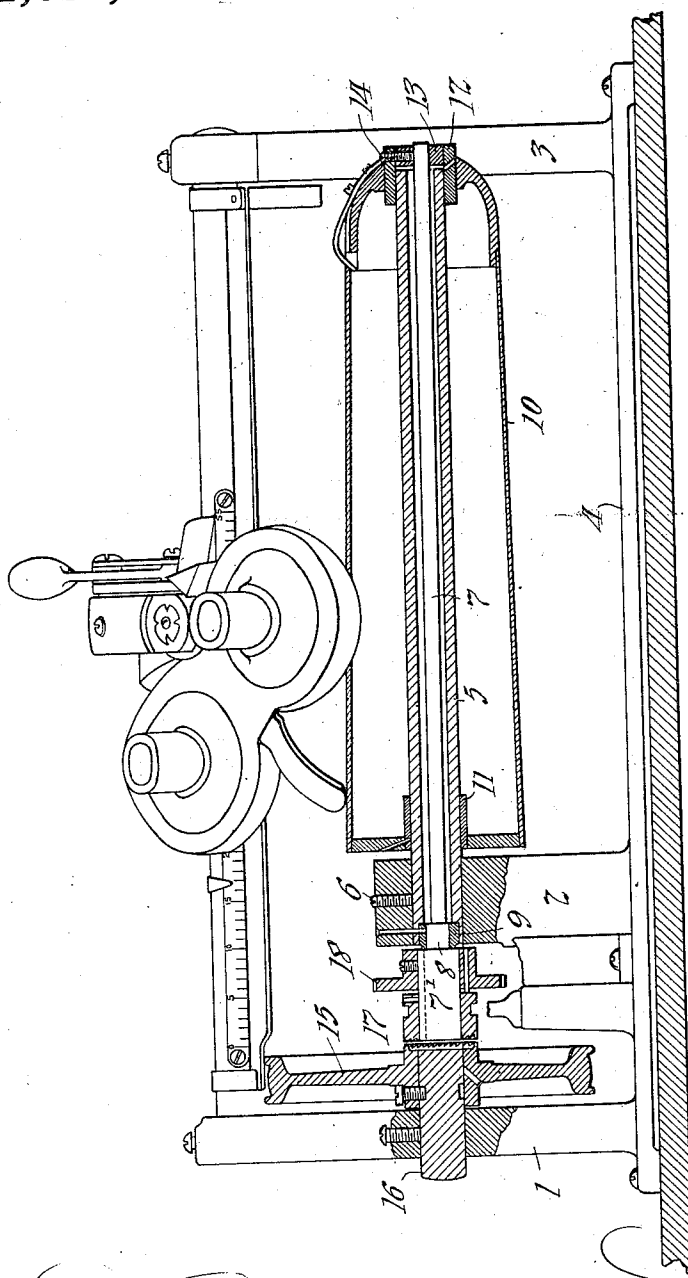


C. L. HIBBARD.
 PHONOGRAPH.
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Patented Dec. 3, 1912.



Witnesses.
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UNITED STATES PATENT OFFICE.

CHARLES L. HIBBARD, OF EAST ORANGE, NEW JERSEY, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THOMAS A. EDISON, INCORPORATED, OF WEST ORANGE, NEW JERSEY, A CORPORATION OF NEW JERSEY.

PHONOGRAPH.

1,046,188.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, CHARLES L. HIBBARD, a citizen of the United States, and a resident of East Orange, in the county of Essex and State of New Jersey, have made a certain new and useful Invention in Phonographs, of which the following is a description.

My invention relates to phonographs, and more particularly to that type of phonograph in which the use of an end gate is dispensed with.

The principal object of my invention is the provision of novel and efficient means for supporting the mandrel of a phonograph with sufficient rigidity without the use of an end gate. In conformity with this object, a rigid stationary tube is supported outside the mandrel of the phonograph and extends therethrough, the mandrel being rotatably supported upon the periphery of said tube, while at the same time the driving shaft to which power is applied to rotate the mandrel extends through the stationary tube and is connected to the mandrel rigidly or otherwise to drive the latter preferably beyond the outer end of the stationary tube.

Other objects of my invention consist in the construction of parts and combinations of elements, as will be hereinafter more particularly described and pointed out.

Referring to the accompanying drawing, forming part of this specification, the figure represents a vertical longitudinal section through the mandrel of a phonograph equipped with my invention, certain parts of the phonograph being shown in side elevation.

Referring to the drawing, the standards 1, 2 and 3 rise from the bed plate 4. The stationary tube or sleeve 5 is supported at one end in standard 2, the set screw 6 or equivalent device securing it rigidly in position. The tube 5 is supported only at the one end, as described, and accordingly, should be formed of such a material as to insure its absolute rigidity, steel being preferred. The driving shaft 7 for the phonograph is mounted to extend through the tube 5, the shaft 7 being provided adjacent its left hand end as shown in the drawings, with a portion of enlarged diameter 8, which is adapted to rotate within the bearing sur-

face 9 within the left hand end of the tube 5. It is, however, obvious that this bearing surface might equally well be provided beyond the left hand end of the tube 5 in the standard 2.

The mandrel 10 is mounted to rotate upon the periphery of stationary sleeve 5, the mandrel being provided at its two ends with short bearing surfaces 11, 12 mounted upon the periphery of the sleeve 5. The bearing surface 12, which is secured to or integral with the outer end of the mandrel 10, has secured thereto or integral therewith the disk 13, within the center of which the right hand end of shaft 7 is supported, set screw 14 securing the shaft 7 rigidly to the members 12, 13 and the mandrel 10 to which the latter is secured. It is, however, obvious that any connection by which power might be transmitted from shaft 7 to mandrel 10 is sufficient for the purpose. The shaft 7 is supported by its bearing in bearing surface 9 and by its connection with disk 13 in the axis of sleeve 5, the diameter of shaft 7 being considerably less than that of the bore of sleeve 5.

Power is transmitted to the driving shaft of the phonograph from a usual motor by means of a belt, neither the belt nor the motor being here shown, the belt encircling the pulley 15 on the shaft 16 which is supported in upright 1. Shaft 16 is axially in line with the left hand end of shaft 7 to which it is adapted to be connected by the clutch 17, which is adapted to be slid back and forth upon the enlarged diameter 7' at the extreme left of the driving shaft 7. The gear 18 is also mounted upon the portion 7' of the driving shaft 7, and from this gear by connections not shown, the feed screw of the phonograph is driven in the usual manner. Lubricant may be supplied to the various bearing surfaces by the oil holes shown.

Having now described my invention, what I claim and desire to protect by Letters Patent is as follows:

1. In a phonograph, the combination with a rotatable mandrel, of a mandrel shaft secured thereto to drive the same and extending therethrough, means connecting said mandrel to said shaft adjacent the outer end of the latter, a stationary sleeve surrounding said shaft, and means exterior of said

mandrel for supporting said sleeve and shaft, said mandrel being formed with bearing surfaces rotatably mounted upon the exterior of said sleeve, and said shaft being
5 of less diameter than the bore of said sleeve, substantially as described.

2. In a phonograph, the combination with a rotatable mandrel, of a mandrel shaft secured thereto to drive the same and extending
10 ing therethrough, means connecting said mandrel to said shaft adjacent the outer end of the latter, and a stationary sleeve surrounding said shaft, said mandrel being
15 formed with bearing surfaces rotatably mounted upon the exterior of said sleeve, and said shaft being of less diameter than the bore of said sleeve, substantially as described.

3. In a phonograph, the combination with
20 a rotatable mandrel, of a mandrel shaft secured thereto to drive the same and extending therethrough, means connecting said mandrel to said shaft adjacent the outer end of the latter, a stationary sleeve surrounding said shaft, and means exterior of
25 the said mandrel for supporting said sleeve and shaft, said mandrel being formed with short bearing surfaces adjacent its ends rotatably mounted upon the exterior of said
30 sleeve, and said shaft being of less diameter than the bore of said sleeve, substantially as described.

4. In a phonograph, the combination with a rotatable mandrel, of a mandrel shaft secured thereto to drive the same and extend-

ing therethrough, means connecting said mandrel to said shaft adjacent the outer end of the latter, a stationary sleeve surrounding said shaft and supporting said
40 mandrel upon the exterior surface of said sleeve, said sleeve having a bore of greater diameter than the diameter of said shaft, and means exterior of said mandrel for supporting said sleeve, said sleeve being provided with a bearing surface at one end
45 thereof within which said shaft is rotatably mounted, substantially as described.

5. In a phonograph, the combination with a rotatable mandrel having short bearing surfaces at the ends thereof, of a mandrel
50 shaft secured thereto to drive the same and extending therethrough, means connecting said mandrel to said shaft adjacent the outer end of the latter, a stationary sleeve surrounding said shaft and engaged within
55 said bearing surfaces to rotatably support said mandrel, said sleeve having a bore of greater diameter than the diameter of said shaft, and means exterior of said mandrel for supporting said sleeve, said sleeve being
60 provided with a bearing surface at one end thereof within which said shaft is rotatably mounted, substantially as described.

This specification signed and witnessed this 29th day of July 1909.

CHARLES L. HIBBARD.

Witnesses:

JOHN M. CANFIELD,
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