

E. R. JOHNSON.
TALKING MACHINE.
APPLICATION FILED SEPT. 25, 1901.

2 SHEETS—SHEET 1.

Fig. 1.

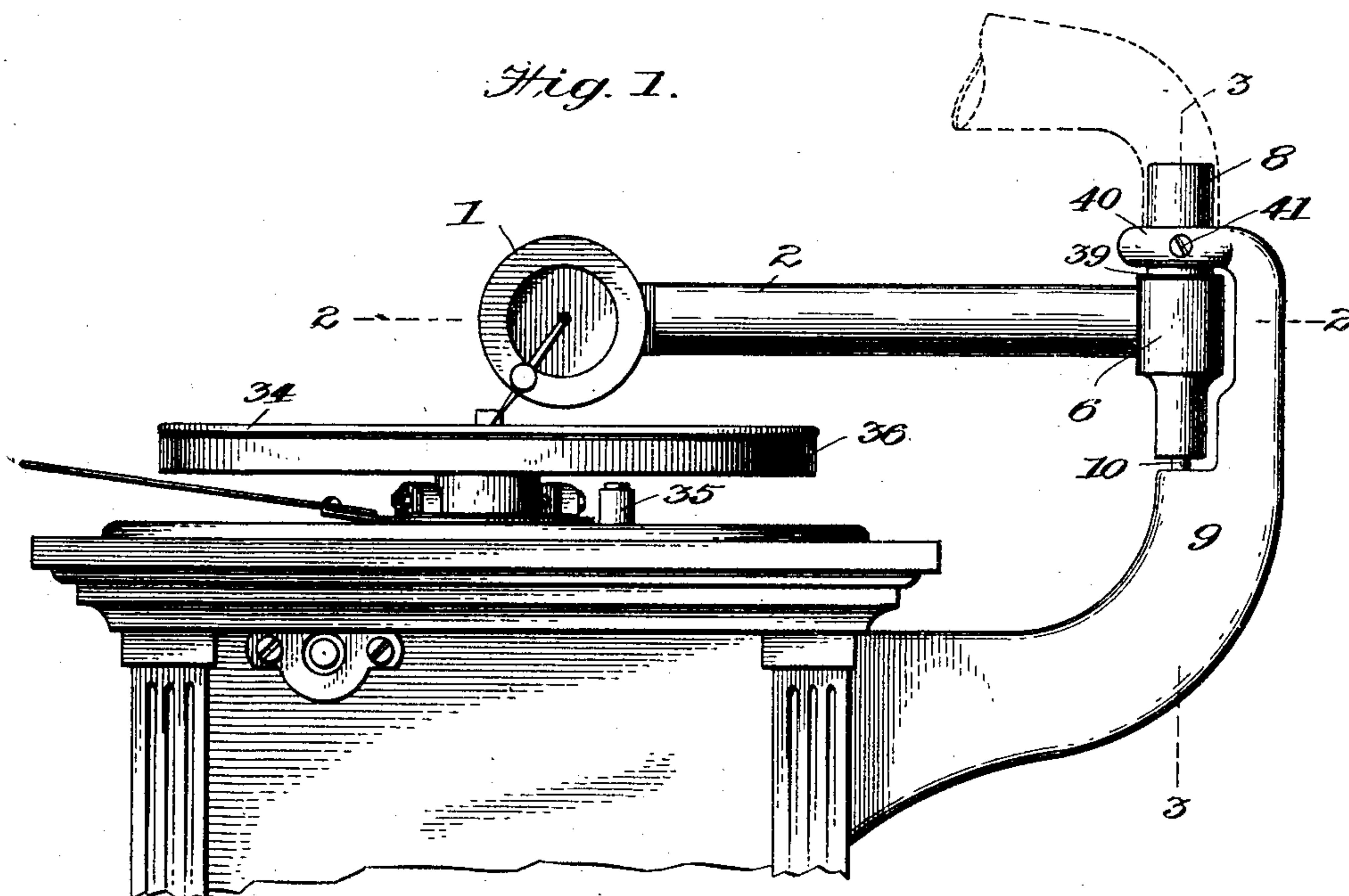


Fig. 3.

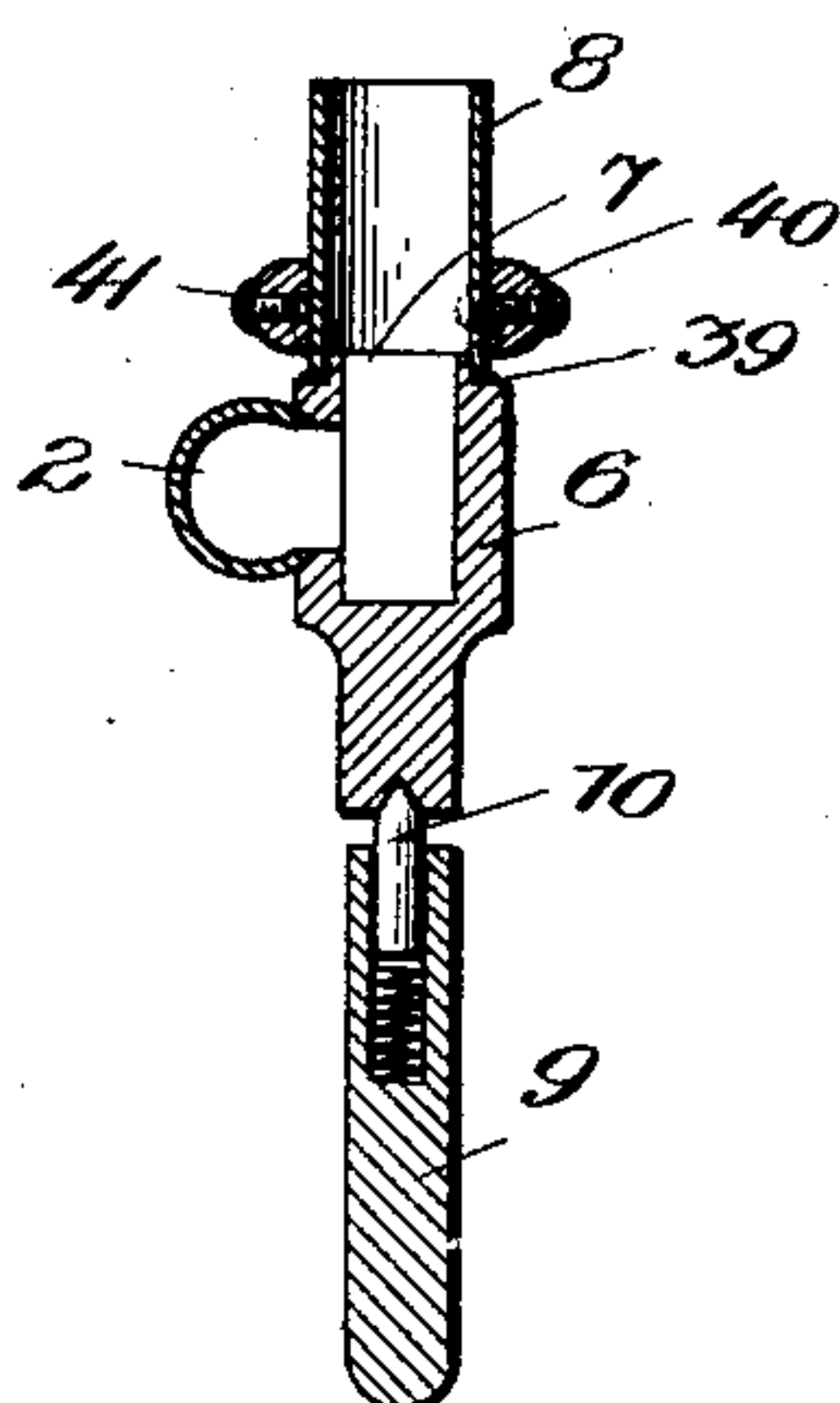


Fig. 2.

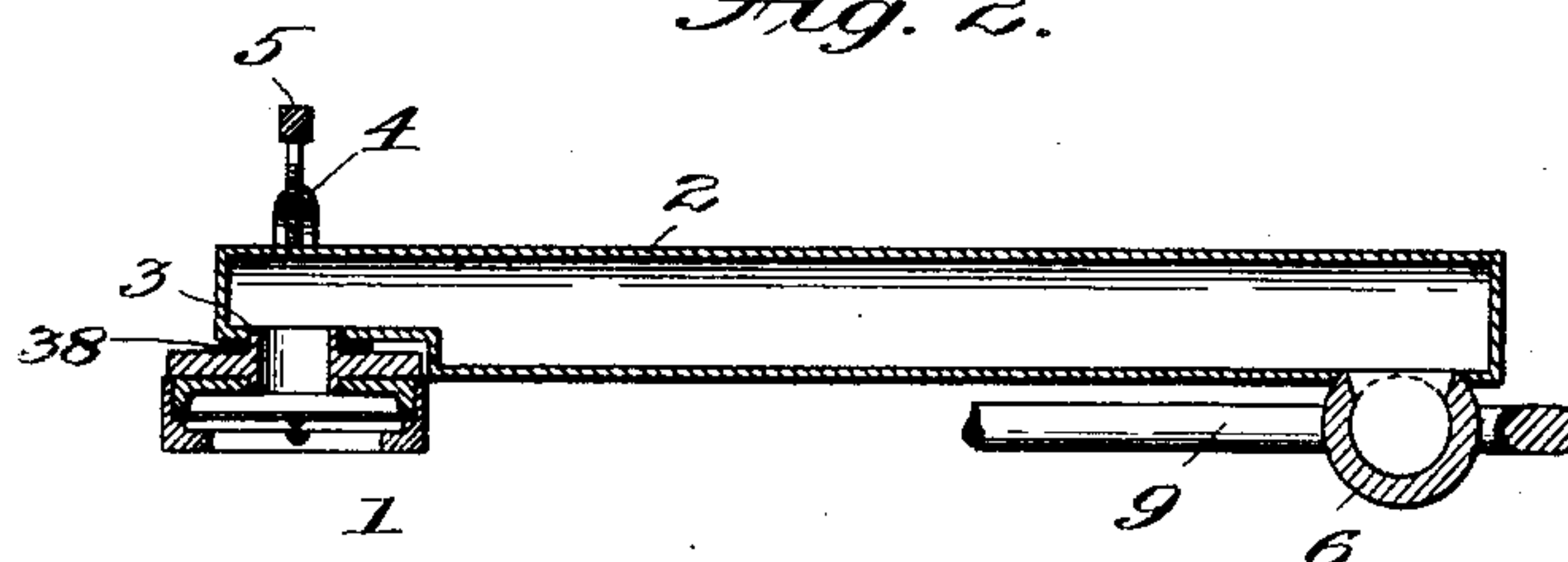
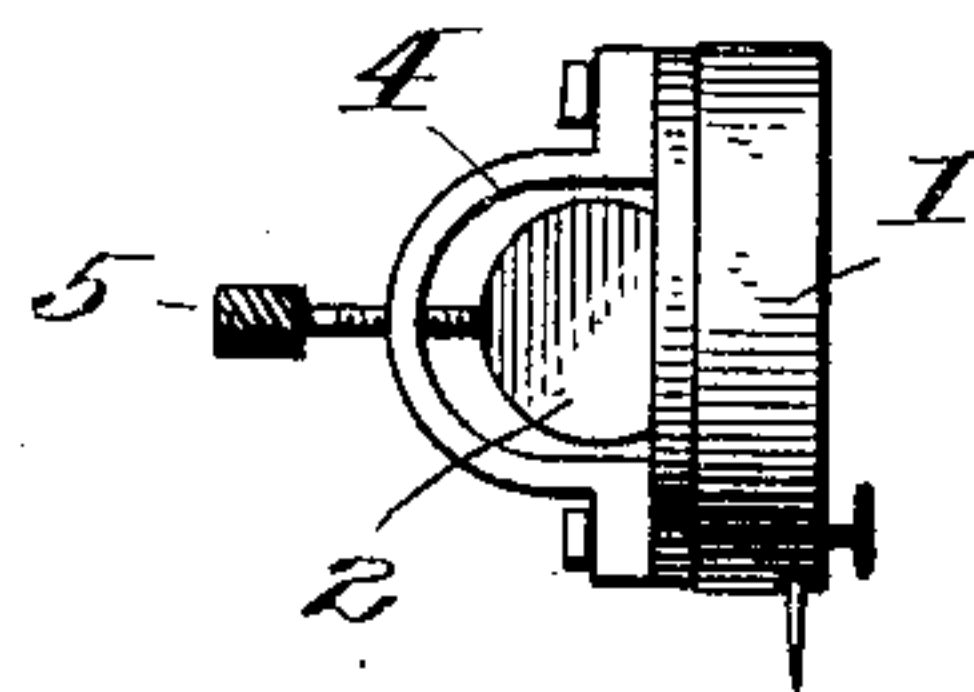


Fig. 4.



Witnesses.

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2 SHEETS—SHEET 2.

Fig. 5.

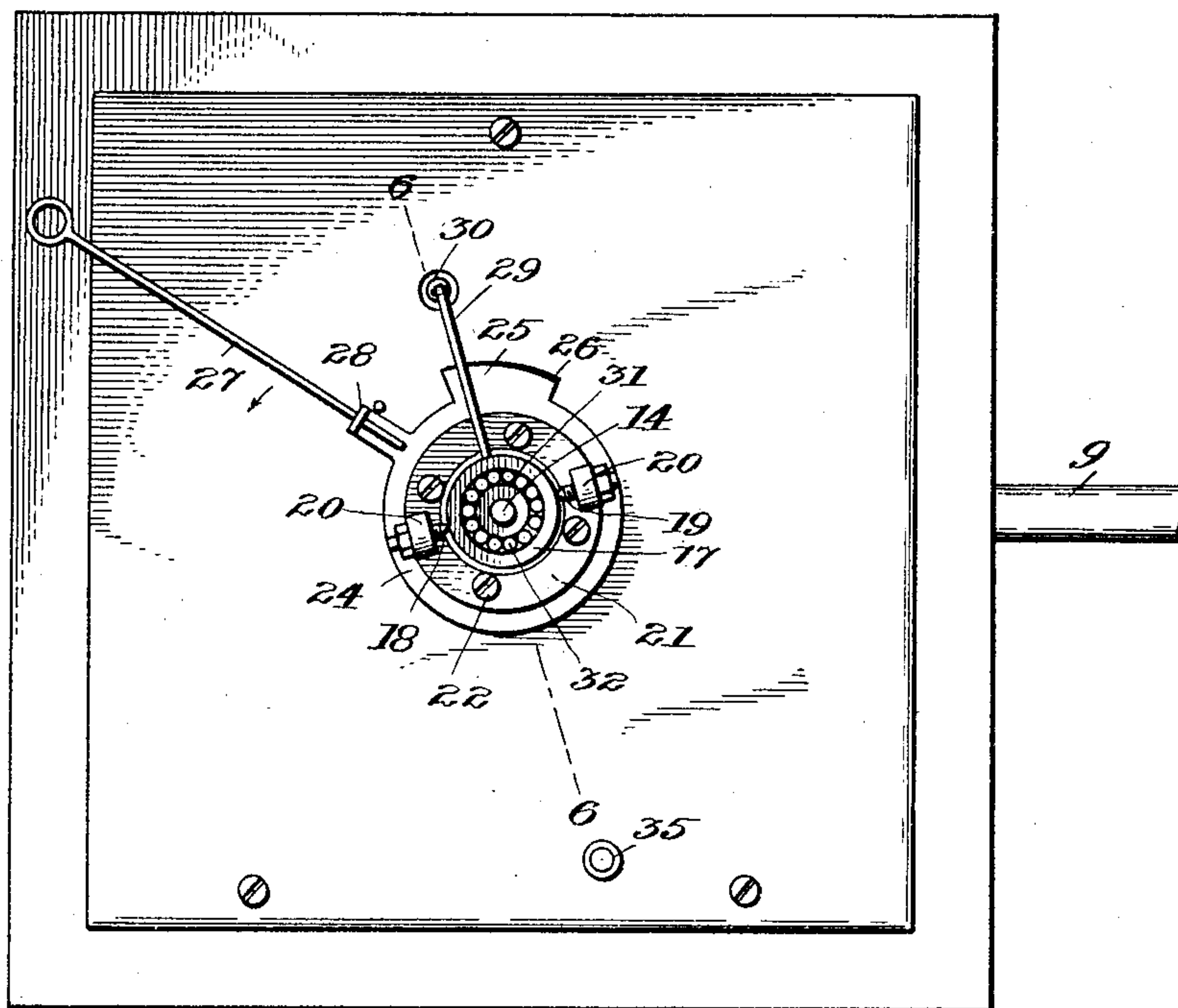
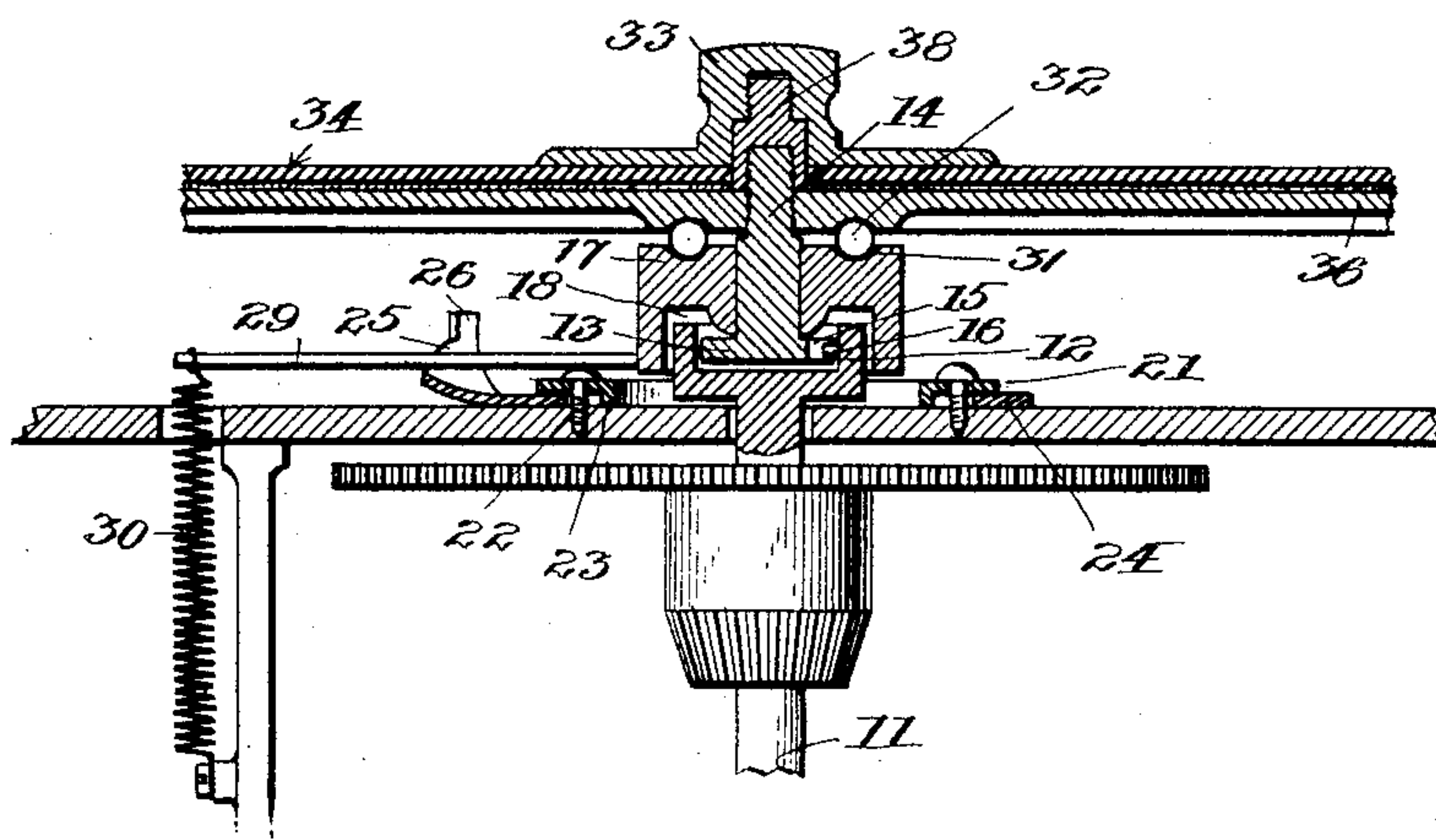


Fig. 6.



Witnesses.

John T. Cross.
J. Henderson.

Inventor,
Eldridge R. Johnson
by *Home Patis,*
his Attorney

UNITED STATES PATENT OFFICE.

ELDRIDGE R. JOHNSON, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR
TO VICTOR TALKING MACHINE COMPANY, A CORPORATION OF NEW
JERSEY.

TALKING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 785,362, dated March 21, 1905.

Application filed September 25, 1901. Serial No. 76,443.

To all whom it may concern:

Be it known that I, ELDRIDGE R. JOHNSON, a citizen of the United States, and a resident of the city of Philadelphia, State of Pennsylvania, have invented certain new and useful Improvements in Talking-Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to certain improvements in talking-machines, and more particularly to the type wherein the flat record-disks are employed.

The objects of my invention are to generally improve the construction of this class of machines with the view of obtaining clearer and more perfect reproductions and increasing or amplifying the sound-waves transmitted from the sound-box or reproducing device.

With these objects in view my invention resides mainly in providing a rigidly-mounted hollow reproducing-arm capable of a lateral movement, having the sound-box rigidly secured to the free end of said arm and having a sound-conveying tube secured to the other end of the arm which is connected with a rigidly-mounted horn, the said horn being supported independently of the reproducing-arm, thereby taking the weight of the same off of the reproducer and its stylus.

My invention further resides in providing improved mechanism for yieldingly mounting the turn-table or record-support and in providing means for throwing and keeping the record-tablet in yielding contact with the stylus during the reproduction, also in providing means for removing the said record from its contact with the stylus and simultaneously stopping the operation of the machine.

In machines of this character where the horn is secured directly to the sound-box and supported by the sound-box-carrying arm a portion of the weight of said horn is thrown on the stylus-point, which unless the arm and horn be very nicely adjusted will hurt the quality of the reproduction by causing harsh and grating sounds. This increased weight

also causes the record-grooves to wear out more quickly, and thus lose their effectiveness, and, further, in such a construction if it is desired to use a larger horn a longer reproducer-arm must be provided, and consequently a longer supporting-bracket. In my improved construction, as herein set forth, these difficulties are entirely obviated, as the weight of the horn is supported entirely upon the bracket which supports the reproducer-arm, and any-sized horn may be used without in any manner affecting the operation of the reproducing mechanism.

My invention is thoroughly illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of a talking-machine embodying my improvements, the lower portion of the motor-casing being broken away. Fig. 2 is a section taken longitudinally through the carrying-arm about on the line 2 2 of Fig. 1. Fig. 3 is a vertical section taken on the line 3 3 of Fig. 1. Fig. 4 is an end view of the carrying-arm, showing the sound-box and the manner of securing it to said arm. Fig. 5 is a plan view with the turn-table and reproducing mechanism removed. Fig. 6 is an enlarged sectional elevation taken about on the line 6 6 of Fig. 5, the greater part of the motor mechanism being omitted.

Referring more particularly to the sound-conveying mechanism which is shown in Figs. 1 to 4, inclusive, 1 designates the sound-box or reproducing device, which may be of any of the well-known constructions. The supporting-arm 2 comprises a hollow tube closed at both ends, having an opening in its forward end adapted to receive a boss 3, which is formed in the frame of the sound-box. The sound-box is secured firmly in front of this opening by any effective means, but preferably by means of a stirrup 4, which passes around the end of the tube 2, as shown in detail in Fig. 4. A set-screw 5 passes through a threaded aperture in the stirrup and its end bears against the arm 2, and thereby securely holds the sound-box in its proper position. Adjacent to the outer end of the supporting-

arm 2 is a tubular section 6, closed at its bottom and communicating on one side with the interior passage in the arm 2. The upper end of the section 6 is provided with an annular shoulder which forms a boss 7, which fits into a stationary section 8, secured in the bracket 9. The lower end of the section 6 is provided with a pivot-bearing 10, the said pivot being yieldingly mounted in the bracket 9, as illustrated in Fig. 3 of the drawings, the purpose of this being to provide a yielding bearing which is self-adjustable. To the stationary section 8 is secured the small end of the amplifying-horn, a portion of which is illustrated in dotted lines in Fig. 1. I have found it preferable to have the arm 2 extend slightly beyond the entrance of the opening into the section 6, as better results are obtained from such a construction.

Referring particularly to Figs. 5 and 6 of the drawings, 11 designates the driving-spindle of the motor, which is propelled by the well-known spring-propelled gearing, which it has not been deemed necessary to illustrate. The upper end of this driving-spindle projects through the casing and has formed upon the said projecting end a cup 12, into which loosely fits a circular head 13, formed on the end of a short shaft 14. A slot 15 is provided in the head 12, into which fits a pin 16, carried by the inner wall of the cup 12, so that the said shaft 14 will revolve with the driving-spindle 11. A circular hub 17, having an annular recess 18 formed in its lower end, fits loosely over the top of a cup 12, and is provided with a central aperture through which the short shaft 14 passes. This hub 17 is supported on two oppositely-disposed pivot-bearings 18 and 19, which are set transversely or substantially transversely to the line of travel of the stylus-point during the lateral movement of the reproducer-supporting arm. These pivot-bearings 18 and 19 are threaded through lugs 20, formed on a ring 21, which is secured to the motor-casing by means of the screws 22. It will thus be seen that the hub 17 is capable of a swinging movement in a direction transversely to its pivotal axis. The ring 21 has provided on its inner peripheral edge a downwardly-projecting flange 23, which bears against the motor-casing, thus leaving an annular space under said ring into which is fitted a ring 24, which is provided with a cam portion 25, which is curved upwardly from the surface of the ring, as shown in Fig. 6. A projection 26 is formed at the upper end of the cam, which limits the movement of the ring 24 when it is turned by the handle 27. This handle 27 is secured to an upturned lip 28, formed on the said ring 24, and is of a length sufficient to extend beyond the periphery of the turn-table, so it can be easily reached by the operator. Extending from the hub 17 in a line at right angles to its pivotal axis is an arm 29, having its outer

free end secured to a coiled spring 30, which is secured to the machine-casing. This arm 29 normally rests in a substantially horizontal plane and bears against the lower edge of the upwardly-turned cam 25, this normal position being shown in Fig. 6. The upper surface of the hub 17 is provided with a ball-race 31, adapted to receive a set of balls 32. The lower side of the turn-table is also provided with a ball-race which fits over the said balls when the turn-table is in position on the short shaft 14. A threaded nut 38 is screwed over the upper end of the shaft 14 after the turn-table is placed in position, which draws the said shaft up slightly, so as to bring the bottom surface of the head 13 slightly away from and out of contact with the cup-socket 12. A cap 33 may be threaded over the end of the nut 38 for the purpose of firmly securing the record 34 on its supporting-table. A boss 35 is secured to the motor-casing directly under the outer edge of the turn-table and about in line with the arm 29, as shown in Fig. 1. The upper end of this boss is provided with a leather teat, which will contact with the turn-table when the same is tilted to remove the record from contact with the stylus-point.

In operation the stylus-point is in contact with the grooves of the record when the parts are in the position shown in Figs. 5 and 6, the spring 30 having a tendency to pull down on the free end of the arm 29, which brings that portion of the record under the stylus-point in constant but yielding contact with said stylus-point. After the reproduction has been completed the handle-arm 27 is moved in the direction of the arrow shown in Fig. 5, and the cam 25, bearing against the under side of the arm 29, raises the said arm, which tilts the hub 17 and the turn-table 36 and removes the record from contact with the stylus-point. This tilting movement also throws the lower edge of the turn-table into contact with the projecting boss 35, thereby stopping the revolution of the turn-table. In starting again the arm 2 is moved until the stylus-point is directly over the beginning of the record-groove, when the handle 27 is then moved to the left, which allows the arm 29 to drop under the action of the spring 30, which action throws the record into contact with the stylus-point by tilting the turn-table, while at the same time removing the said table out of contact with the brake-boss 35. The shaft 14, which is provided with a circular head 13, adapted to fit loosely in a socket-piece 12, carried by the driving-spindle of the motor, permits of the turn-table yielding slightly in any direction as the bottom of the head 13 is held slightly away from the bottom of the cup or socket 12. The ring 24, which carries the cam 25, fits loosely under the ring 21, the screws 22 serving to center the same.

The passage-way between the sound-box

and the horn is air-tight or sound-proof, a rubber gasket 38 being provided around the opening into which the boss of the sound-box fits, and a gasket 39 being provided around the connection between the tube-sections 6 and 8, so that none of the sound-waves can escape except through the horn. The bracket-arm 9 is provided with a ring 40 at its upper end, into which the stationary section 8 is fitted, the said section being held therein by means of the screws 41.

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

1. In a talking-machine, the combination a hollow arm limited to move only in a direction parallel to the record, a sound-box fixed to one end of said arm, an amplifying-horn connected with the other end of said arm, and means to allow of a separation of the sound-box and record.

2. In a talking-machine, the combination, a hollow arm pivoted to move only in a direction parallel to the record, a sound-box fixed to one end of said arm, an amplifying-horn connected with the other end of said arm, and means to allow of a separation of the sound-box and record.

3. In a talking-machine, the combination, a hollow arm pivoted at one end to move only in a direction parallel to the record, a sound-box fixed to the free end of said arm, an amplifying-horn connected with the pivoted end of said arm, a record-support and means for withdrawing the record and record-support from the sound-box.

4. In a talking-machine, the combination, a hollow arm pivoted at one end to move only in a direction parallel to the record, a sound-box fixed to the free end of said arm, an amplifying-horn connected with the pivoted end of said arm, a record-support, and means for withdrawing the record and record-support from the sound-box.

5. In a talking-machine, the combination of a hollow arm pivoted at one end to move only in a direction parallel to the record, a sound-box fixed to the free end of said arm, a bracket carried by the machine-casing, a rigid connecting-piece carried by said bracket adapted to communicate with the pivoted end of said arm, and a turn-table separable from the sound-box.

6. In a talking-machine, the combination of a hollow arm pivoted at one end to move only in a direction parallel with the record, a sound-box fixed to the free end of said arm, a bracket carried by the machine-casing, a vertical hollow hub pivotally mounted in said bracket and communicating with the inner end of said arm, a hollow stationary section also carried by said arm and communicating with said hub and means to allow a separation of the sound-box and record.

7. In a talking-machine, the combination of a hollow arm pivoted to move only in a direction parallel to the record, a sound-box fixed to the free end of said arm, a bracket rigidly secured to the machine-casing, a hollow hub carried by said bracket and communicating with the interior of said arm, a stationary tube rigidly secured in said bracket and communicating with said hub, sound-conveying means attached to said tube and means to allow a separation of the sound-box and record.

8. In a talking-machine, the combination of a hollow arm pivoted at one end to move only in a direction parallel to the record, a sound-box fixed to the free end of said arm, a bracket rigidly secured to the machine-casing, a tubular section rigidly secured to said bracket, a hollow hub pivotally mounted in said bracket and connecting with said tubular section and having communication with the interior of said arm, an amplifying-horn pivotally connected to said tubular section and means to allow of the separation of the reproducer and record.

9. In a talking-machine, the combination of a hollow arm pivoted at one end to move only in a direction parallel to the record, a sound-box fixed to the free end of said arm, a bracket carried by the machine-casing in which the inner end of the hollow arm is pivoted, a tubular section carried by said bracket, and a part telescoping with said tubular section and having communication with the interior of the hollow arm, and an amplifying-horn carried by said tubular section and means for holding the record in yielding contact with the sound-box and allowing the same to be separated from the sound-box.

10. In a talking-machine, the combination of a hollow arm closed at both ends and pivotally mounted to move in a direction parallel with the record and having an opening adjacent its free end, a sound-box mounted on the free end of said arm and having communication with said opening, a hollow hub secured adjacent the pivoted end of said hollow arm and having communication with the interior thereof, a support in which said hub is vertically pivoted, a fixed tube carried by said support and telescoping with said hub, means for holding said hub in telescoped relation with said tube, a horn pivotally carried by said tube and means to allow separation of the sound-box and record.

11. In a talking-machine, the combination of a hollow arm, a sound-box connected to one end thereof, a vertical hollow hub connected to the opposite end thereof, a fixed support, a vertical tube carried by said support, and spring-actuated means for keeping said hub in operative connection with one end of said tube.

12. In a talking-machine, the combination with a rigidly-mounted reproducer, of a yield-

ingly-mounted record-support, a hub pivotally mounted on the machine-casing, a driving-shaft having a cup-shaped top, a stub-shaft having an enlarged head adapted to fit loosely in the cup portion of the driving-shaft, the said stub-shaft passing through the pivoted hub, means for connecting the stub-shaft head with driving-shaft so as to revolve therewith, and a nut adapted to the end of the stub-shaft for clamping the record-support thereto, substantially as described.

13. The combination with a vertically-rigid reproducer of a revolving driving-spindle, an enlarged head formed on the upper end of said spindle having a socket formed therein, a hub-piece adapted to fit loosely over the head, pivotal bearings carried by the machine-frame in which the hub-piece is mounted, a stub-shaft passing through the hub, a head formed on said shaft adapted to fit loosely in the socket of the driving-spindle, means for coupling the said head to the driving-spindle head, a turn-table secured on the upper end of the stub-shaft, ball-bearings between the turn-table and

the hub-piece, and means for tilting the hub-piece, for the purpose described.

14. The combination with a vertically-rigid reproducer the driving-spindle having a socket formed in its upper end, a hub-piece pivotally mounted on the machine-casing over the driving-spindle socket, a stub-shaft passing through said hub, an enlarged head formed on the end of the stub-shaft adapted to the socket in the driving-spindle, a coupling-pin between the stub-shaft and driving-spindle, a turn-table secured on the upper end of the stub-shaft, an arm secured to the pivoted hub and extending radially therefrom, a spring for holding said arm down, and a cam located adjacent the arm, adapted to act on the same to raise said arm and tilt the turn-table, substantially as described.

In witness whereof I have hereunto set my hand this 24th day of September, A. D. 1901.

ELDRIDGE R. JOHNSON.

Witnesses:

CHARLES H. SPECKMAN,
J. HENDERSON.