

No. 752,682.

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E. R. JOHNSON.

REMOVABLE TURN TABLE FOR SOUND RECORDING MACHINES.

APPLICATION FILED OCT. 1, 1902.

NO MODEL.

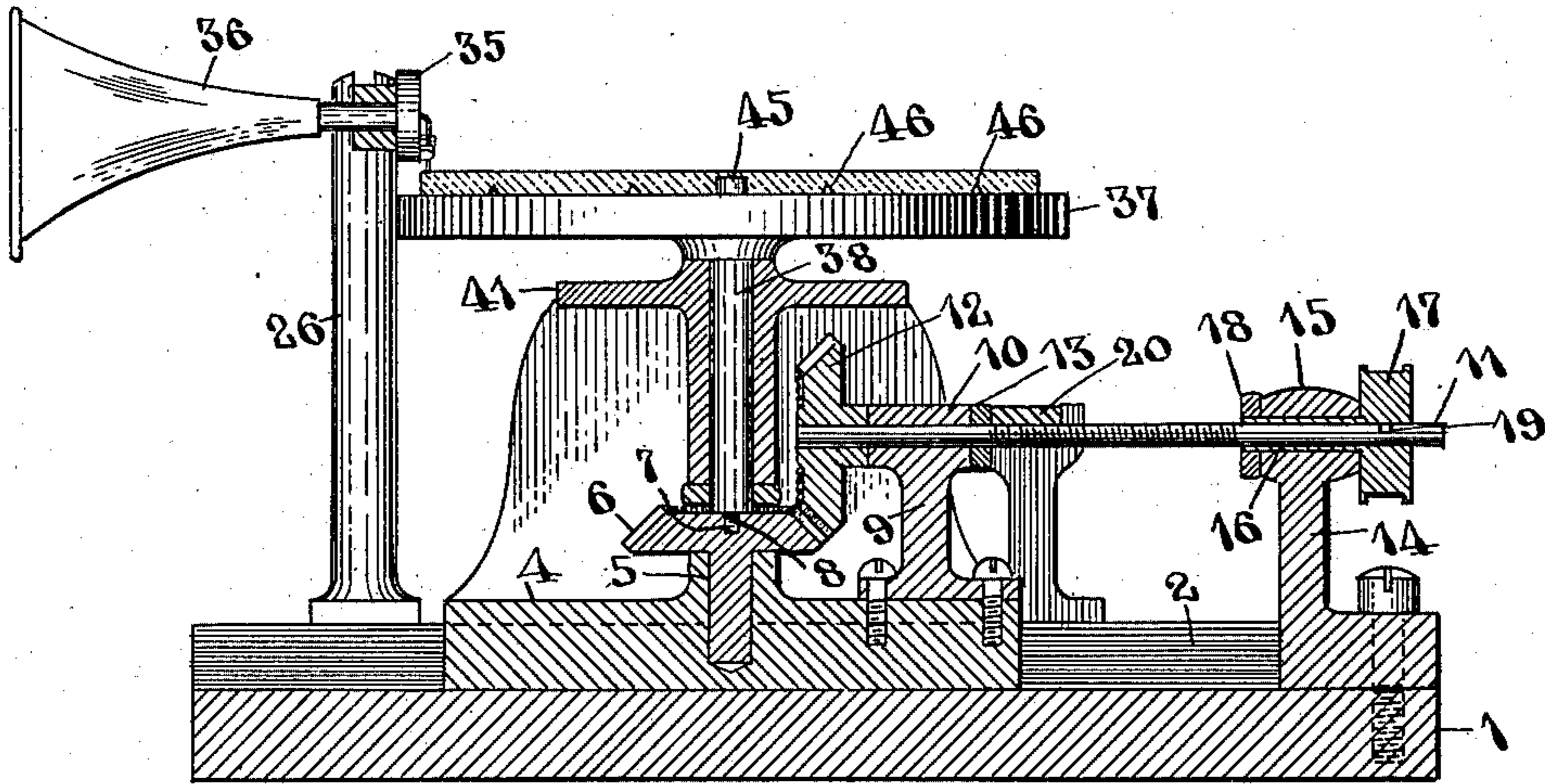


Fig 1.

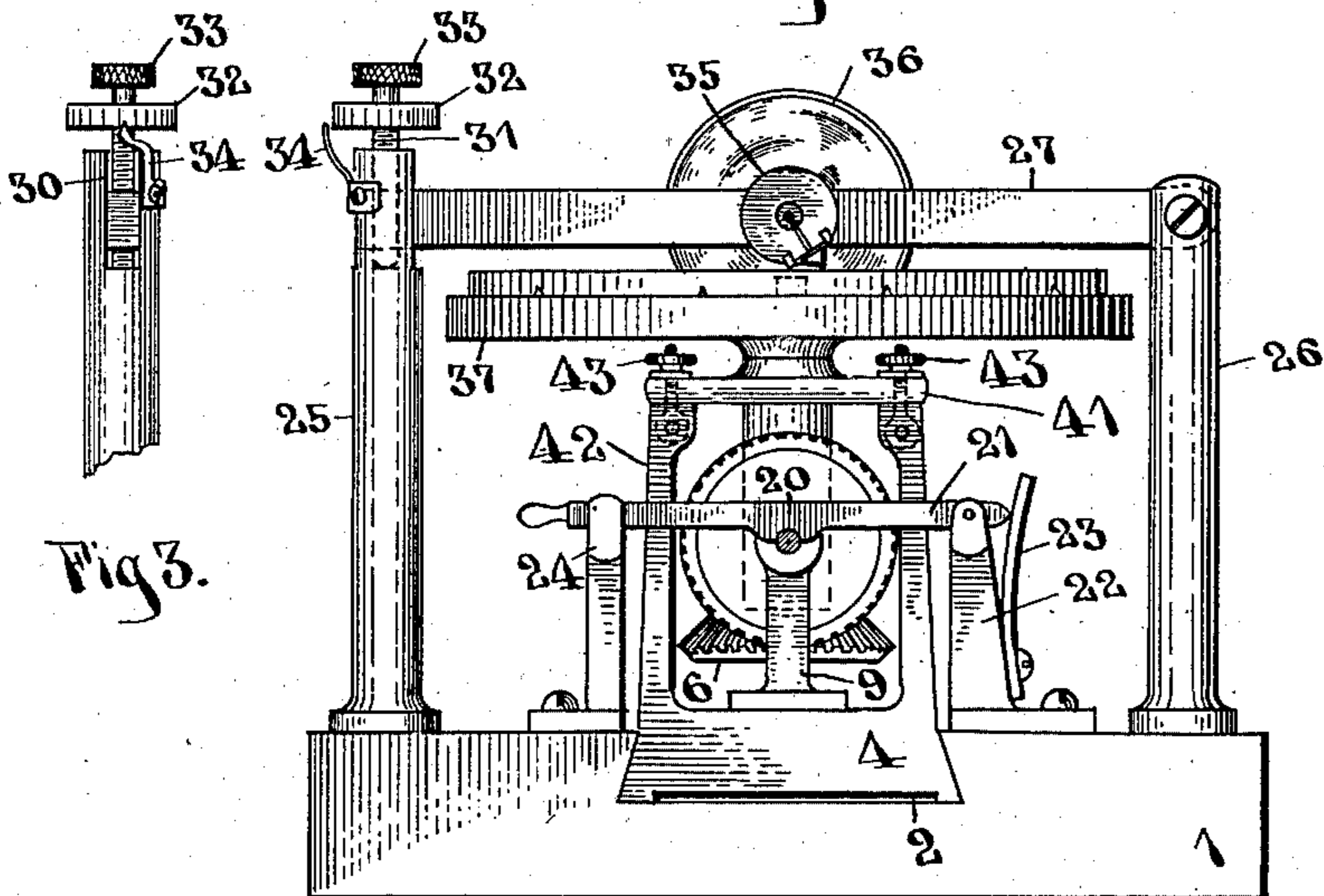


Fig 2.

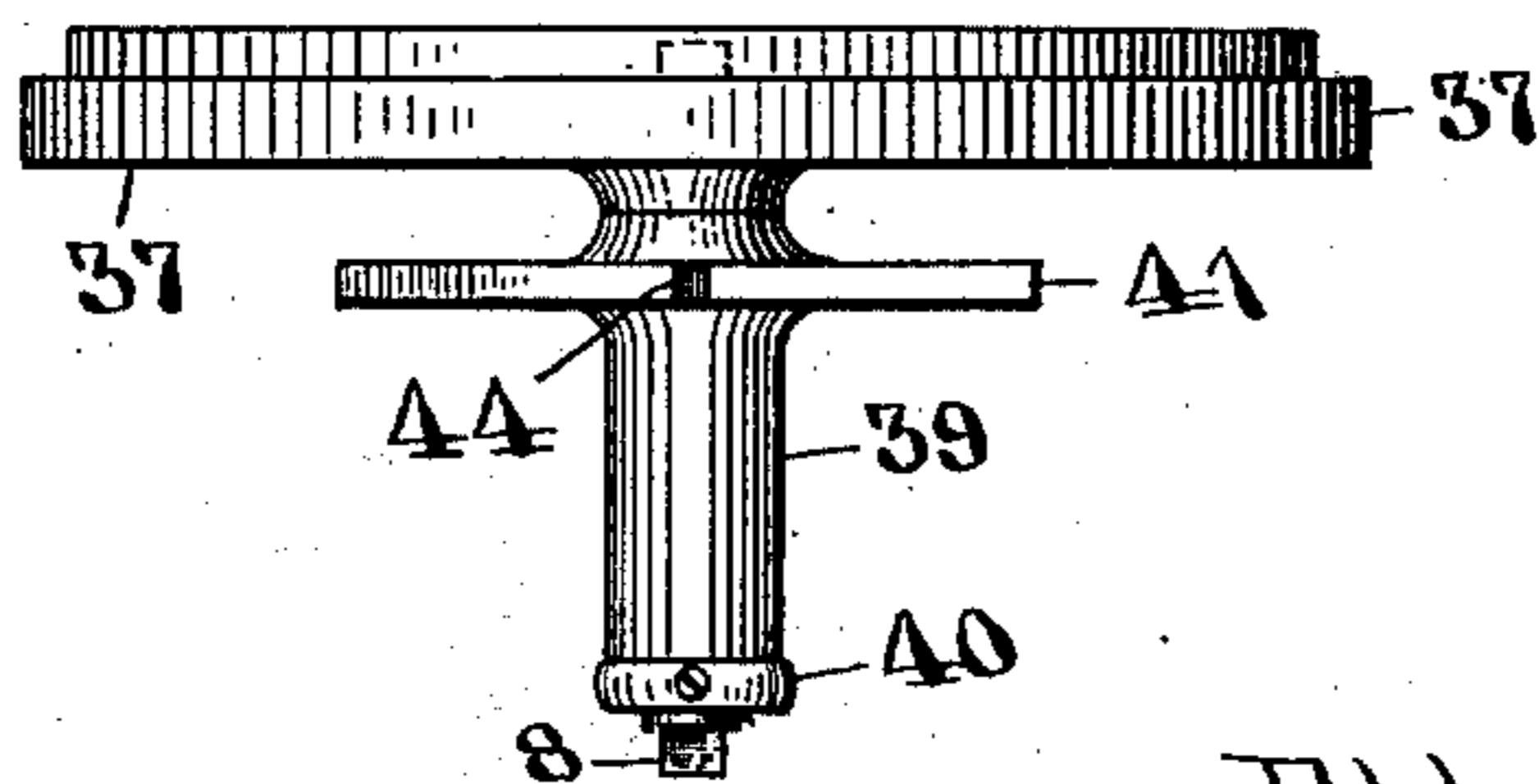


Fig 3.

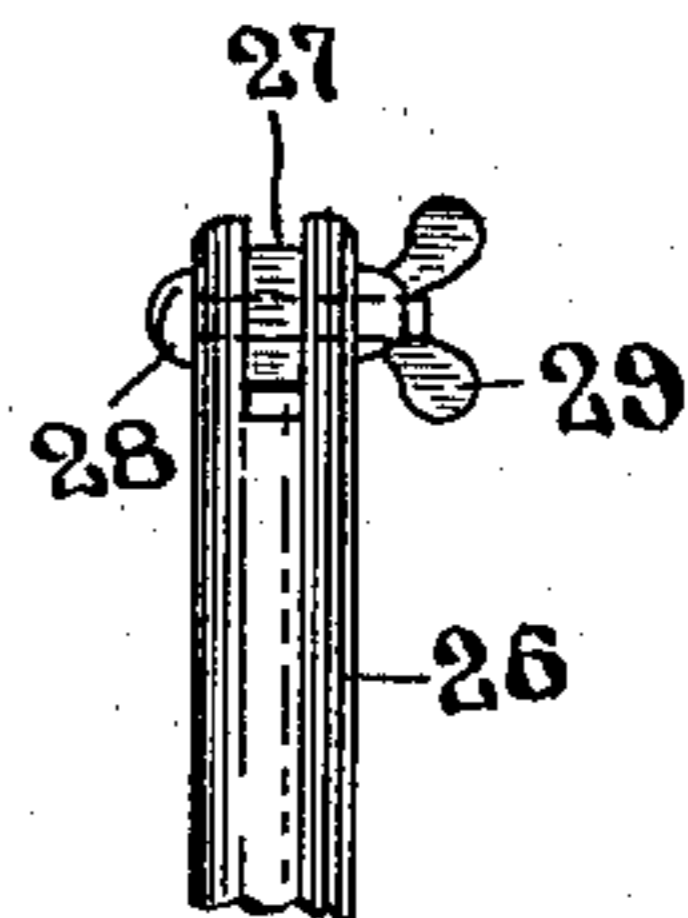


Fig 4.

WITNESSES:

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UNITED STATES PATENT OFFICE.

ELDRIDGE R. JOHNSON, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR
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REMOVABLE TURN-TABLE FOR SOUND-RECORDING MACHINES.

SPECIFICATION forming part of Letters Patent No. 752,682, dated February 23, 1904.

Application filed October 1, 1902. Serial No. 125,501. (No model.)

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 Removable Turn-Tables for Sound-Recording Machines, of which the following is a full, clear, and complete disclosure.

My invention has for its object the production of a turn-table for sound-recording machines which will not only be more simplified in construction, efficient in operation, but will produce a record of greater accuracy, uniformity, and quality of tone than has heretofore been possible.

In the production of metallic matrices for use in reproducing sound-records the wax disk or plate is first turned down in a suitable turning-machine, so as to have an exactly plain and uniform surface. The wax disk or plate is then engraved by means of a recording-stylus, so as to have upon its surface the usual spiral sound-groove characteristic of talking-machines. This engraving may be done in the same machine in which the surface has been turned by merely substituting a sound-recording box for the original turning-tool; but I find it more convenient and advantageous to have the turning-tool and sound-recording box upon separate machines and to change the wax disk, with its turn-table, from one machine to the other. Heretofore in handling the wax disk when transferring them from one machine to the other the records have sometimes become more or less warped or bent out of their original perfectly plain condition. This warping or bending causes the recording-stylus to enter the surface of the wax disk at varying and uneven depths, which greatly impairs the character of the matrix, and therefore of the final record produced therefrom. This disadvantage I entirely obviate by keeping the wax disk at all times upon a single turn-table, which turn-table is provided with accurately-turned surfaces or bearings, which keep its axis and plane of rotation always the same in relation

to the working surface without regard to which machine the same is being used upon. To accomplish this, I mount the turn-table rotatably upon a member removable from the machine, and thus the relation of the working face of the turn-table and the face upon which it rotates is the same both when turning the wax disk or plate and when recording. Preferably I employ for this purpose the mechanism described in the accompanying specification, and illustrated in the drawings forming a part thereof, of which—

Figure 1 is a vertical longitudinal sectional view taken upon the line 1 1, Fig. 2. Fig. 2 is an end elevation of the same, the end bearing for the driving-shaft being removed. Fig. 3 is a side elevation of the supporting-post for the bar which carries the sound-box and shows the adjusting means therefor. Fig. 4 is a side elevation of the supporting-post at the opposite end of the side bar. Fig. 5 is a side elevation of the turn-table and its bearing detached from the machine.

In the drawings the numeral 1 indicates a suitable base-plate, having in its upper surface a suitable guideway 2, within which the frame 4, carrying the turn-table and its driving mechanism, is adapted to travel. Upon a vertical bearing 5, at about the center of the base of this frame, is provided a bevel-gear 6. This bevel-gear has upon its upper side a suitable socket 7, which is adapted to receive the rectangular end 8 of the turn-table shaft. Also mounted upon the base of said frame 4 is a standard 9, which carries at its upper end the horizontal bearing 10. Through this bearing passes a screw-shaft 11, upon the inner end of which is mounted a second bevel-gear 12, which is adapted to mesh with the first bevel-gear 6. The collar 13 is also fixed upon said shaft, so as to keep the bearing 10 confined between said gear and said collar. Adjacent one end of the base 1 of the machine is mounted a second upright standard 14, which carries at its upper end a second bearing 15, which is in alinement with the bearing 10, mounted upon the frame 4. A suitable bushing 16 surrounds the shaft 11, is contained within said

bearing, and carries at its outer end a grooved driving-pulley 17, while on its inner end is an adjustable collar 18. This sleeve and collar serve to hold the pulley 17 in position adjacent the end of the stationary bearing. The shaft 11 is provided with a suitable groove or keyway which is engaged by a pin or key 19, carried by the pulley 17. This construction allows the shaft 11 to slide longitudinally within the bearing 15 and the sleeve 16, while at the same time it is caused to revolve when the pulley 17 is revolved. The shaft 11 is screw-threaded for that portion of its length included between the collar 13 and the collar 18. This screw-threaded portion is adapted to cooperate with a half-nut 20, carried by the hinged bar 21. This bar 21 is hinged at one end to the support 22, which is fixed to the bed-plate 1 of the machine and which is provided with the plate-spring 23, which bears against the end of the bar 21 for the purpose of keeping it in its raised and lowered positions. The opposite end of the bar 21 is removably retained in position within a recess at the top of the support 24, also fixed to the bed-plate 1 of the machine. By this construction it will be seen that when the half-nut 20 is in contact with the shaft 11 and said shaft is revolved by the pulley 17 the frame 4, with its gears and other attached parts, will be caused to move longitudinally within the way or guide 2. When the shaft 11 has been advanced to a position such that the half-nut 20 is adjacent the end of its travel on the screw-thread, the lever 21 may be raised, thereby disengaging the half-nut 20 from the shaft and allowing the frame or carriage 4 to be returned quickly to the other end of its travel and the turn-table to be removed.

Attached to the bed-plate 1, at each side thereof are the vertical posts 25 and 26, which are adapted to support at their upper ends the sound-box or cutter-bar 27. This bar 27 is pivoted at one end to the post 26 by means of the bolt 28, having at one end thereof the thumb-nut 29. The opposite end of said bar 27 is adapted to slide in a slot 30 in the upper end of the post 25. For the purpose of accurate adjustment of this bar the micrometer-screw 31 passes vertically through the free end thereof and rests upon the lower end of the slot 30, its upper end being provided with the usual micrometer-index 32 and thumb-nut 33. A suitable pointer 34 is also attached to the end of the post 25.

The sound-box 35, or in a turning-machine its corresponding cutting-tool, is suitably attached to the bar 27, so that as the wax disk is moved beneath said bar the stylus or cutting-tool will always travel across the disk substantially on a radius thereof. In the recording-machine the usual amplifying and receiving horn 36 is attached to the sound-box tube. When it is desired to remove the turn-table and record-disk, the bar 27 may be

raised, thus leaving the space above the table unobstructed.

The turn-table proper consists of the rotatable disk or base 37, from the lower side of which projects the shaft or stud 38, which carries at its lower end a rectangular key or projection 8. An accurately-turned bearing 39 surrounds said shaft 38 and is held thereon by means of a collar 40. This bearing carries near its upper end a plate or bar 41, which is adapted to rest upon the tops of the supports 42, which form parts of the frame 4, and is held in position thereon by means of the pivoted thumb-nuts 43, which engage notches 44 in said plate. The wax recording-disk may be retained in position by the boss 45 and the spurs 46 or any other suitable means.

It will be seen that the turn-table 37, the bearing 39, and the supporting-plate 41, form a single united structure which is capable of being attached to any machine whether recording or turning and will always insure the turn-table revolving upon exactly the same axis and without any liability of the wax disk being displaced, bent, or otherwise damaged during the transfer from one machine to another.

It is my purpose in the manufacture of sound-records first to place the disk in position upon a turn-table, then place said turn-table upon the carriage of a machine which is provided with a cutting-tool, then accurately to turn the surface of the disk, so as to make the same perfectly smooth and flat, then to transfer said turn-table, with its attached bearing, to a second machine provided with the usual recording sound-box. A groove is then made in the usual way, and record thereby obtained is ready for the process of making the matrix. I am thus enabled to transfer the record from the planing-machine in which the record is turned smooth to the recording-machine without removing the soft wax from the rigid turn-table, obviating with certainty any damage thereto and insuring with certainty exactly the same relation with the working face of the record-tablet. By these means it is possible to use a much softer and more impressionable wax than has hitherto been employed, the record thereby being made much more accurately and with a retention of many of the overtones, which otherwise would be lost owing to the resistance of a harder wax.

I do not wish to be limited to the details of construction herein described, for changes may be made by one skilled in the art which may make the device more nearly perfect mechanically, but which do not depart from the spirit of my invention.

Having thus described my invention, what I desire to claim, and protect by Letters Patent of the United States, is—

1. The combination in a sound-recording machine, of a removable member, and a turn-

table carried thereby, removable therewith, and rotatable relative thereto.

2. The combination in a sound-recording machine, of a removable member, and a turn-
5 table carried thereby, removable therewith, and rotatable relative thereto, said member having bearing or contact surfaces, which are always in a fixed relation to the working surface of said turn-table, whereby said turn-
10 table may be transferred from one machine to another without altering its axis of rotation and without damaging the recording-disk carried thereby.

3. In a sound-recording machine, a turn-
15 table comprising a rotatable disk, said disk having accurately-turned bearing-surfaces, which are always in a fixed relation to the surface of said disk, and a member removable from said machine having bearing-surfaces correspond-
20 ing to and fitting the bearing-surfaces of the disk, upon which bearing-surfaces said disk is rotatable relative to said member.

4. The combination in a sound-recording machine, of a removable member having pro-
25 jecting parts adapted to be secured to said machine, and a turn-table carried by said member and removable therewith, and rotatable relative thereto.

5. The combination in a sound-recording
30 machine of a removable member having a cylindrical bearing, a turn-table having a shaft rotatable in said bearing, and a separable coupling between said shaft and operative parts of said machine.

35 6. A turn-table for sound-recording ma-

chines, comprising a rotatable disk adapted to have the recording-disk attached thereto, an accurately-turned cylindrical bearing attached thereto, an accurately-turned bearing-sleeve carried by said cylindrical bearing, a support-
40 ing bar or plate attached to said sleeve and means to allow said plate to be secured to the recording-machine, substantially as described.

7. A turn-table for sound-recording machines comprising a rotatable disk adapted to
45 have the recording-disk attached thereto, a bearing projecting therefrom, an angular stud projecting from the lower end of said bearing, a bearing-sleeve rotatively carried by said bearing, a collar fixed to said bearing to re-
50 tain said sleeve in position thereon, a supporting bar or plate attached to said sleeve and means to allow said plate to be removably secured to the recording-machine, substantially as described.
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8. In a sound-recording machine, uprising supports situated below the recording mechanism, a removable member having lateral projections adapted to rest upon said supports, means for securing said projections
60 upon said supports, and a turn-table carried by said member, removable therewith, and rotative relative thereto.

In witness whereof I have hereunto set my hand this 30th day of October, A. D. 1902.
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ELDRIDGE R. JOHNSON.

Witnesses:

HORACE PETTIT,
JOHN F. GRADY.