No. 785,363. PATENTED MAR. 21, 1905.

E. R. JOHNSON.

TALKING MACHINE.

APPLICATION FILED SEPT. 18, 1902.

Fig. 1.

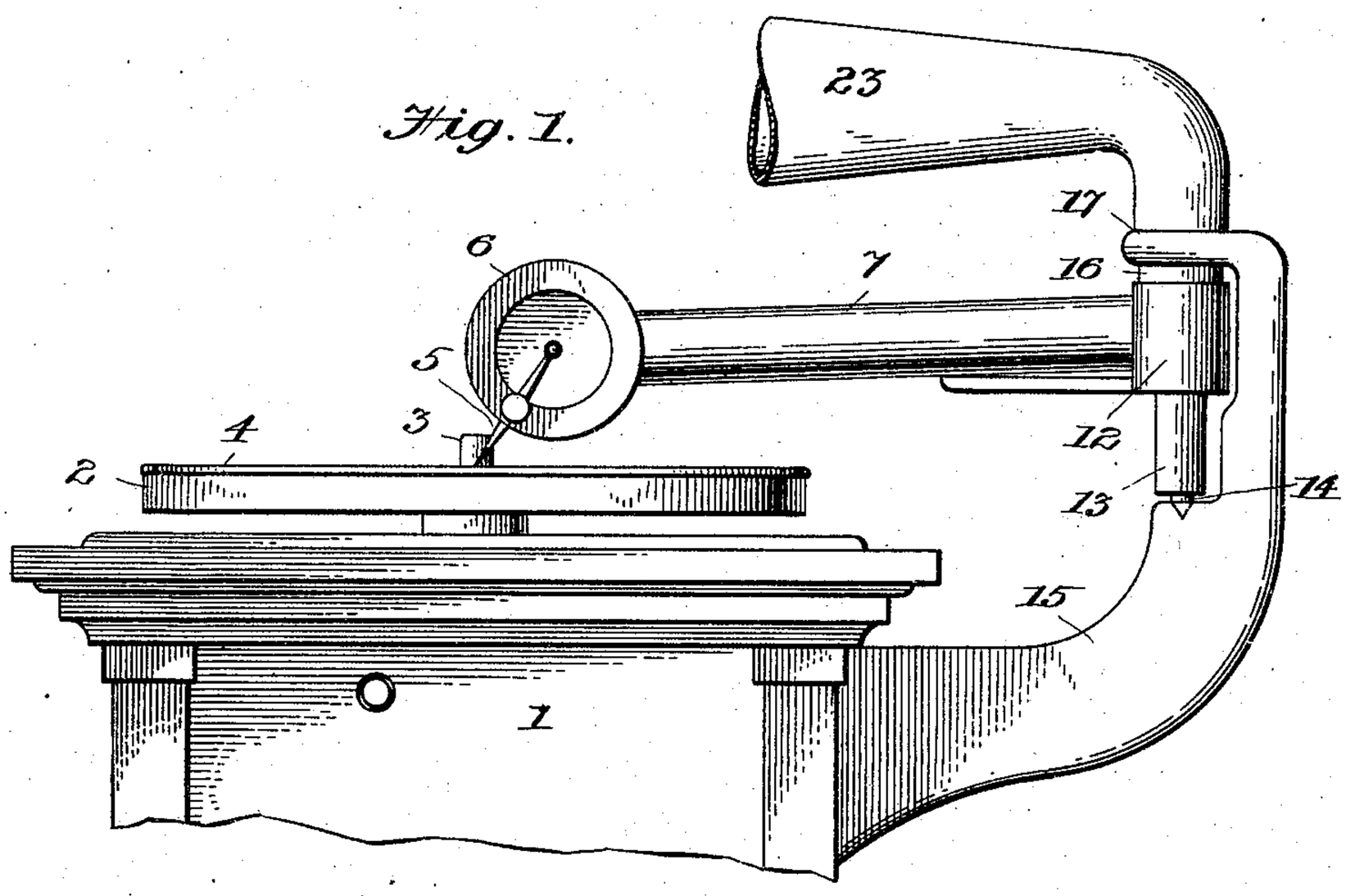


Fig. 2.

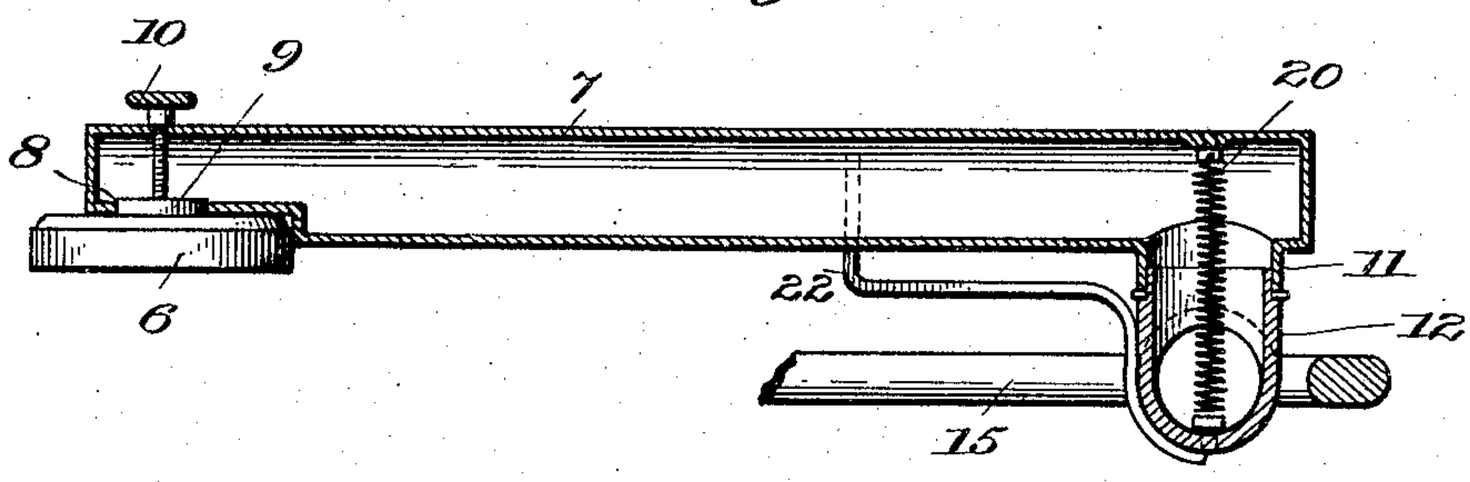


Fig. 3.

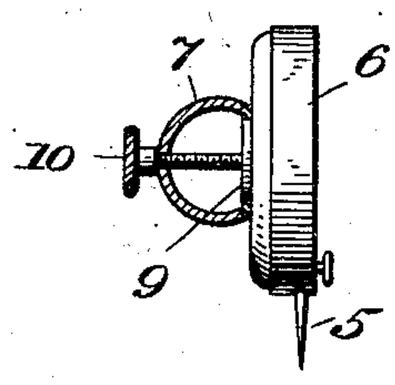
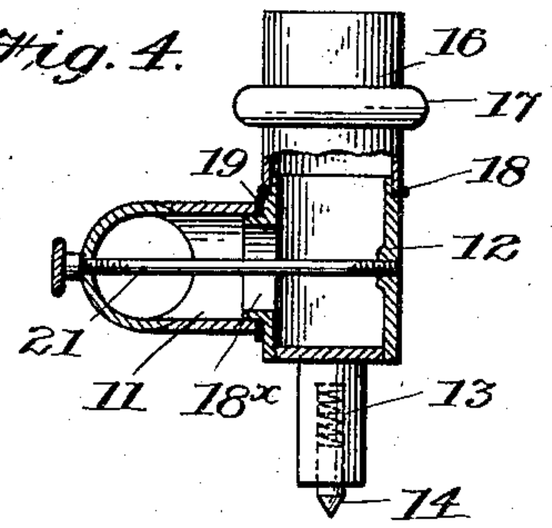


Fig. 4.



Witnesses.

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No. 785,363. Patented March 21, 1905.

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. 785,363, dated March 21, 1905.

Application filed September 18, 1902. Serial No. 123,865.

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 has reference to certain improvements in talking-machines of the flat-record type, and has for its object to generally improve and simplify the construction of devices of this character in such manner as to increase both the volume and character of the reproductions and render the tones clearer, sweeter, and more distinct.

With these ends in view my invention consists in the structure substantially as herein described and illustrated, and particularly set forth in the appended claims.

Referring to the accompanying drawings, which form a part of this specification, Figure 1 is a side elevation of a talking-machine embodying my improvements. Fig. 2 is a sectional plan taken longitudinally through the reproducer-arm. Fig. 3 is a cross-section through the forward end of the arm, showing the connection with the sound-box; and Fig. 4 is a cross-section through the swivel-joint at the other end of the arm, showing a modified form of means for holding the two sections together.

Referring particularly to the said drawings, 1 designates the motor-casing, and 2 the turn-table, which is driven by a spindle 3, connected with the motor mechanism in the usual manner. The turn-table 2 carries the usual flat disk record 4, having the spirally-arranged record-groove provided thereon, which is engaged by the stylus-point 5 of the sound-box 6.

The sound-box-supporting arm 7 comprises a tubular section closed at both ends, having an opening 8 adjacent its forward end on one side of the said tube adapted to receive the boss 9, carried by the sound-box 6. The sound-box may be secured to the arm 7 by means of a set-screw 10, which passes through the said arm and has its end threaded in an aperture provided in a bridge running across the boss 9. The rear end of the arm 7 is provided with a short tubular section 11, which opens into the side of the arm 7 at a point slightly to one side of the end of the arm. A tubular section 12, closed at its lower end and having an extension 13 provided on its under side, which carries a spring-pressed pivot 14, is pivotally mounted in the stationary bracket 15, which is carried by the sound-box casing. The section 12 is telescoped into a short section of tubing 16, which is rigidly held in an aperture formed in the arm 17 of the bracket 15. A shoulder 18 is formed on the section 12 at the point where it bears against the lower portion of the section 16, and a rubber gasket is interposed between these two sections for the purpose of rendering the same sound-proof.

Extending from the side of the section 12 is a boss $18^{\times}$, having a shoulder formed adjacent its ends, and the end of this boss fits into the end of the tubular section 11, which is connected with the arm 7. A washer 19 is interposed between these two sections for the purpose of rendering the connection sound-proof. In order to hold the section 12 and the section 11 together, I provide a small coiled spring 20, which is secured at one end to the interior of the tubular arm 7 and at its other end to the outer interior wall of the section 12. Instead of using the yielding connection 20 for holding these parts together a thin set-screw 21, such as shown in Fig. 4 of the drawings, may be used with equally good result.

Secured to the lower portion of the vertically-disposed section 12 is an arm 22, which extends under the tubular arm 7 and serves to limit the downward movement of the arm when its reproducing mechanism is removed from contact with the record. The short tubular section 16 extends a certain distance above the arm 17 of the bracket 15, and to this section is fitted the horn 23 in such a manner that the said horn may be swung around in any direction desired. It will be noted from this construction that the entire weight

of the horn is supported by the bracket-arm, so that any-size horn may be used on machines of this construction without increasing the weight of the reproducer-supporting arm.

This construction of machine is designed for use with rigidly-mounted turn-tables, and a double swivel-joint is necessary in order to permit the arm 7 to move both laterally and vertically. By my above-described construction I find that the sounds transmitted from the diaphragm to the horn are greatly amplified and that the tone and quality of the reproduction is much clearer and more distinct than in the old construction of talking-machines, wherein the horn was connected directly to the sound-box. This I attribute partly to the fact that the hollow arm 7 is rigid throughout its entire length, and consequently there is no twisting to this arm caused by the weight of the horn and no false vibrations, as in the case of the wooden arm heretofore used.

Minor details in construction may be made without departing from the spirit and scope of my invention. For instance, the manner in which the long arm 7 is swiveled to the transversely-disposed short section 12 might be altered and any other suitable swiveled connection substituted therefor, and, further, the means for holding the sound-box to the arm 7 might be changed and any other suitable means substituted therefor, and various other modifications might be made.

What I claim, and desire to secure by Letters Patent, is—

1. In a talking-machine, the combination of a continuous hollow arm, a sound-box attached to one end thereof, a transverse hub connected at one side of the other end of said arm, there being a swivel-joint between said hub and arm.

2. In a talking-machine, the combination in reproducing mechanism of a continuous hollow arm provided at one end with a sound-box, and at its other end with a short transverse tube having a swivel-joint therein, said tube being pivoted on a transverse axis and adapted to communicate with sound-conducting means.

3. In a talking-machine, the combination in reproducing mechanism of a continuous hollow arm provided at one end with a sound-box, a hollow hub or member adapted to turn about an axis at right angles to the hollow arm and means connecting the end of said hollow arm opposite to the sound-box with said hollow member and including a swivel-joint to permit a movement of the sound-box about an axis transverse to that of the hollow hub or member.

4. In a talking-machine, the combination in reproducing mechanism of a continuous hollow arm provided at one end with the sound-box and at its other end a pivoted transverse hub there being a swivel connection between said hub and arm and affording a continuous closed sound-conducting passage between said sound-box and hub.

5. In a talking-machine, the combination with the record, of a reproducing mechanism comprising a hollow tubular arm rigid throughout its length and closed at both ends, an opening in the side of said arm adjacent its rear end, a swivel connection between said opening and the pivoted tubular section, a support for said pivoted tubular section, and a sound-box connected with the interior of the tubular arm adjacent its forward end, substantially as described.

6. The combination in a talking-machine, of a rigid tubular arm closed at both ends having an opening in the side thereof adjacent its rear end, a transversely-disposed short tubular section pivoted in a support so as to move on a vertical axis, a tubular connection between the tubular arm and the short section, a swivel-joint provided in said tubular connection, and a sound-box connected with an opening in the side of the tubular arm adjacent its front end, substantially as described.

7. The combination in a talking-machine, of a rigid tubular arm closed at both ends having an opening in its side adjacent its rear end, a transversely-disposed short tubular section pivoted in a support so as to move on a vertical axis, a tubular connection between the tubular arm and the short section, a swivel-joint provided in said tubular connection so as to permit of a substantially vertical movement to the tubular arm, means for holding the two sections together, and a sound-box connected to an opening formed in the side of the tubular arm adjacent its front end, substantially as described.

8. The combination with a talking-machine of a continuous tubular arm closed at both ends and having an opening in its side adjacent its rear end, a short tube or flange surrounding said opening, a transversely-disposed hollow hub pivoted in a support to move on an axis transverse to said arm and having an opening in the side thereof, said opening being surrounded by a short tube or flange which is adapted to telescope with the flange on said arm so as to permit of a movement of said arm on an axis at right angles to the axis of said hub, a spring for holding the two short tubes or flanges in telescoped relation and a sound-box connected with the outer end of said hollow arm.

In witness whereof I have hereunto set my hand this 17th day of September, A. D. 1902.

ELDRIDGE R. JOHNSON.

Witnesses:

HORACE PETTIT,

JNO. T. CROSS.