T. KRAEMER.

TALKING MACHINE.

APPLICATION FILED MAR. 10, 1909.

960,560.

Patented June 7, 1910.

Fig. 1,

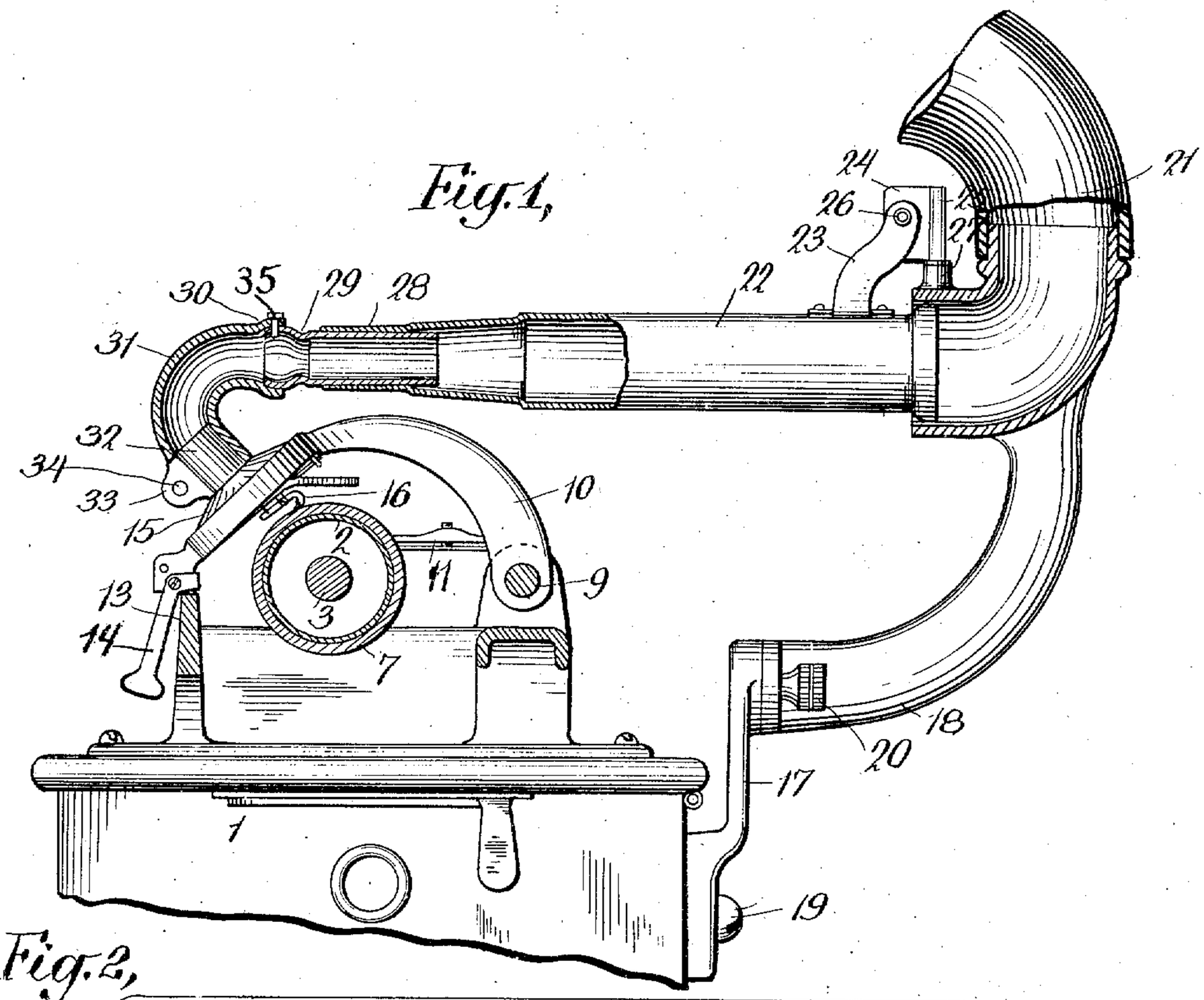
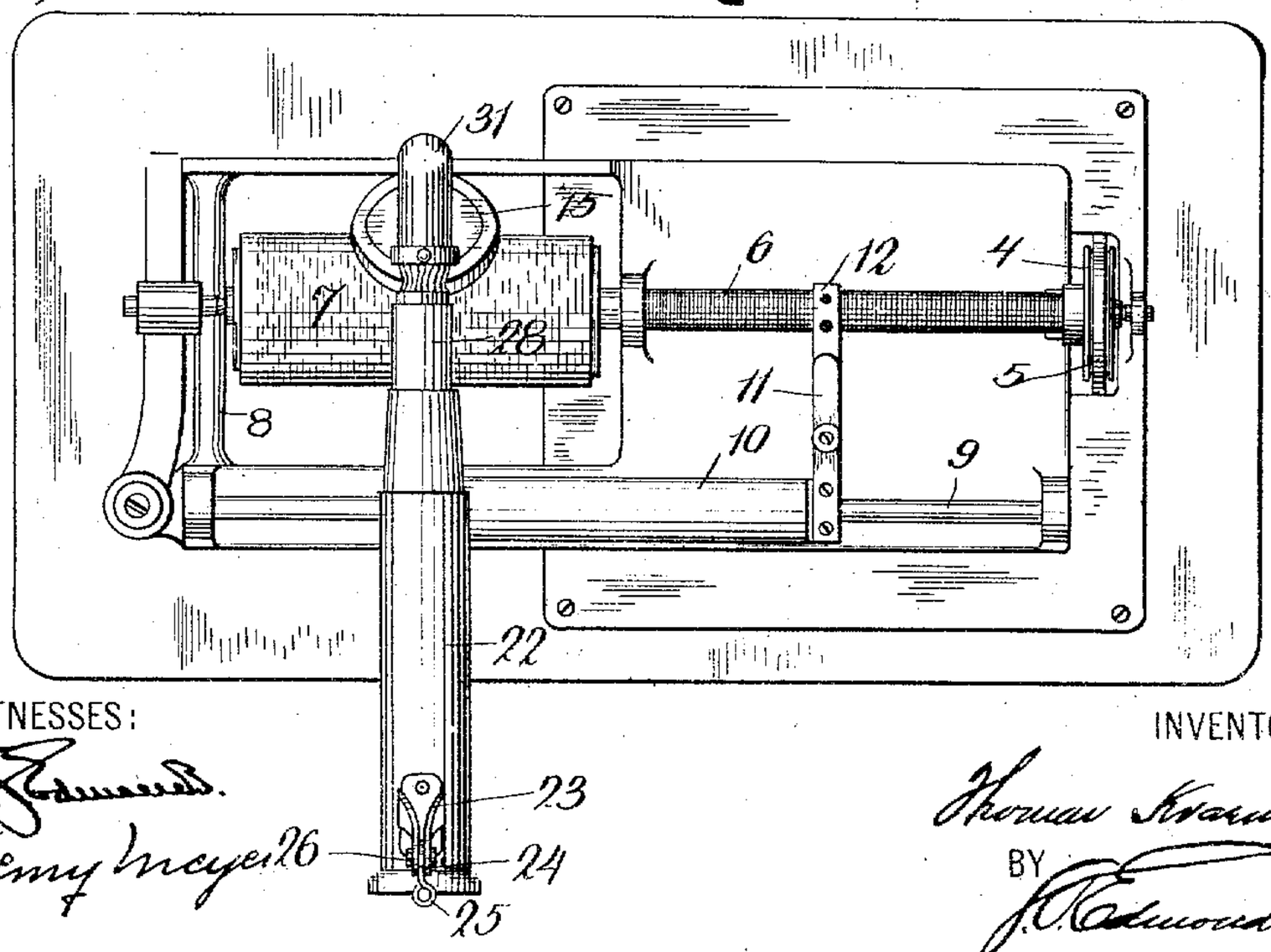


Fig. 2,



WITNESSES:

Henry Mayer.

INVENTOR

Thomas Kraemer

BY

J. C. Edmonds

ATTORNEY

UNITED STATES PATENT OFFICE.

THOMAS KRAEMER, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO HAWTHORNE & SHEBLE MANUFACTURING COMPANY, OF PHILADELPHIA, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

TALKING-MACHINI

960,560. Specification of Letters Patent. **Patented June 7, 1910.**

Application filed March 10, 1909. Serial No. 482,521.

To all whom it may concern:

Be it known that I, THOMAS KRAEMER, a citizen ,of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Talking-Machines, of which the following is a specification.

This invention relates to talking machines and particularly to machines of the type having a reproducer which is movable in a straight line over the sound-record and a sound-conveying member pivotally mounted at one end and connected to the reproducer at the other end thereof.

The object of the invention is to effect certain improvements in the construction of machines of this type, the improvements being directed particularly to simplifying the construction, to the provision of a passage for the sound-waves which is comparatively free from bends and to reducing the cost of manufacture without making any sacrifice in the strength of the parts of the machine or in the freedom of operation thereof.

The invention is of particular utility in a machine employing a sound-record of cylindrical form and a reproducer movable in a straight line parallel to the axis of this cylindrical record during the reproduction of the sound-record, as in phonographs of the type now commonly used. With such a movable reproducer is employed a tone-arm pivotally mounted at one end upon a supporting-arm projecting upwardly from the motor-box of the machine, this tone arm communicating with an amplifying horn also mounted on this supporting-arm. At its free end this tone-arm is connected to the reproducer and this connection is effected in such a manner as to maintain the connection between the end of the tone-arm and the reproducer while the former is turning about a pivot and the latter moving in a straight line. For this purpose the end of the tone-arm is pivotally connected to a tubular extension on the reproducer and the tone-arm is made up of two or more sections which may move relatively so as to telescope more or less during the operation of reproducing a record and thus have its length increased or diminished as may be necessary, in order to maintain the desired connection by allowing for the differences in the movements.

The preferred embodiment of my invention is illustrated in the accompanying drawings in which—

Figure 1 is a sectional elevation of a talking machine constructed in accordance with my invention and Fig. 2 is a plan view of a portion of the machine.

Referring to these drawings, the machine comprises a motor-box 1, having therein a motor for driving the support for the sound-record. The support is here shown as a mandrel 2, mounted upon a shaft 3, the end of which carries a pulley 4 on which a belt 5 runs to transmit rotary motion from the motor within the box to the shaft 3. The shaft 3 beyond the mandrel 2 is provided with a thread 6 corresponding in pitch to the thread of the record-groove upon the cylindrical sound-record 7, which is mounted upon the mandrel 2. The frame 8 of the machine supports a shaft 9 upon which is mounted the reproducer-carriage 10 and an arm 11 extending forwardly from this carriage has a half-nut 12 secured to its free end and coacting with the feed-screw 6 so that as shaft 3 is rotated the carriage 10 is caused to travel in the direction of the length of rod 9. The rod 9 forms a pivotal support for the carriage 10 and the forward end of the latter bears upon a horizontal surface on the upper edge of a wall 13 forming part of the frame 8. A lever 14 is pivotally mounted upon the forward end of the carriage 10 so that the forward end of the carriage may be raised a distance sufficient to carry the reproducer out of coaction with the sound-record. The reproducer 15 is mounted upon the carriage 10 and is provided with a pivotally mounted stylus 16 adapted to track in the record-groove formed in the sound-record 7 and to actuate the diaphragm of the sound-box 15.

Secured to the motor-box and extending upwardly therefrom is a supporting-arm for the amplifying horn and tone-arm of the machine. This arm may be constructed in any suitable manner, but the construction which I prefer to employ is that illustrated in Fig. 1 wherein the arm is shown as consisting of two parts 17 and 18, the former of which is secured to the motor-box 1 by

screws 19. The part 18 is provided with laterally extending ears at its lower end and screws 20 extend through openings in these ears and enter threaded openings in the upper end of the part 17. These parts may be readily detached for convenience in shipping and in making repairs. At its upper end the supporting-arm has an opening formed therein and a horn 21 is supported upon the upper end of the arm with the opening therethrough communicating with the opening formed in the arm.

The tone-arm 22 is pivotally mounted upon the supporting-arm with its end telescoping somewhat with the opening formed in the supporting-arm as shown in Fig. 1. Secured to the tone-arm is a yoke 23 having two upwardly extending arms which lie one on either side of a flange 24 extending outwardly from a sleeve 25 and a rivet 26 passing through these parts forms a pivotal connection between the flange 24 and arms 23. The sleeve 25 is adapted to receive a pin 27 extending upwardly from the supporting-arm so as to permit the tone-arm 22 to turn freely about a vertical axis. The tone-arm 22 may be of any suitable shape but at some point in its length it is provided with telescoping parts so as to permit an extension or contraction of the length of the tone-arm. Thus, I have shown the tone-arm provided with a section 28 at its free end, which is of smaller cross-section than the remainder of the tone-arm and within this is a sleeve 29 which is freely movable within the section 28 in the direction of the axis of these parts. The end of the section 29 projects beyond the end of the section 28 and this projecting end is provided with a spherical surface. This spherically-formed end of the section 29 is adapted to be received within an enlarged end 30 of a curved tubular member 31, the opposite end of which is adapted to receive a tubular extension 32 on the reproducer 15. This end of the tubular member 31 is split and provided with ears 33 which may be drawn together by a screw 34 in order to cause the member 31 to grip the extension 32. The parts 30 and 29 are held together by a pin 35 projecting through an opening in the enlarged end 30 and into an opening in the spherically-formed end of the section 29. With the parts thus constructed it will be seen that the reproducer 15 and the tubular member 31 move in a straight line parallel to the axis of the sound-record during the sound-reproduction and that at the same time the tone-arm 22 and the section 29 move about a vertical axis, that is the axis of the pin 27. During these movements the spherically-formed end of the section 29 turns freely within the enlarged end 30 about the axis of the pin 35, and the section 29 moves axially within the section 28 and in accordance with the changes in the distance between the pins 35 and 27. The pin 35 fits within the openings in the parts connected thereby loosely enough to permit of the slight vertical movement of the reproducer effected by the lever 14 in moving the reproducer between operative and inoperative positions. The passageway for the sound-waves from the reproducer to the amplifying horn formed by the parts as above described, is comparatively free from bends so that a good reproduction and one which is free from foreign sounds may be obtained. Furthermore, this tone-arm construction consists of a small number of parts which may be manufactured and assembled at very low cost.

Having described my invention what I claim as new therein and desire to secure by Letters Patent of the United States, is as follows:

In a talking-machine, the combination of a motor-box, a support for a cylindrical sound-record thereon, means for rotating said support, a reproducer movable in a straight line over the sound-record on said support, a supporting arm extending upwardly from the motor-box, a tone-arm pivotally mounted upon said supporting-arm, a tubular section movable axially in the free end of said tone-arm and adapted to telescope more or less therewith, a tubular member having one end secured to the reproducer and curved intermediate its ends so that its opposite end is directed toward said supporting arm, and a pivotal connection between the last-named end of said tubular member and one end of said tubular section, substantially as set forth.

This specification signed and witnessed this 26th day of February, 1909.

THOMAS KRAEMER.

Witnesses:
EMIL SCHUCH,
H. MÜHLSCHLEGEL.