

No. 881,322.

PATENTED MAR. 10, 1908.

T. KRAEMER.
TALKING MACHINE.
- APPLICATION FILED DEC. 14, 1907.

Fig. 1.

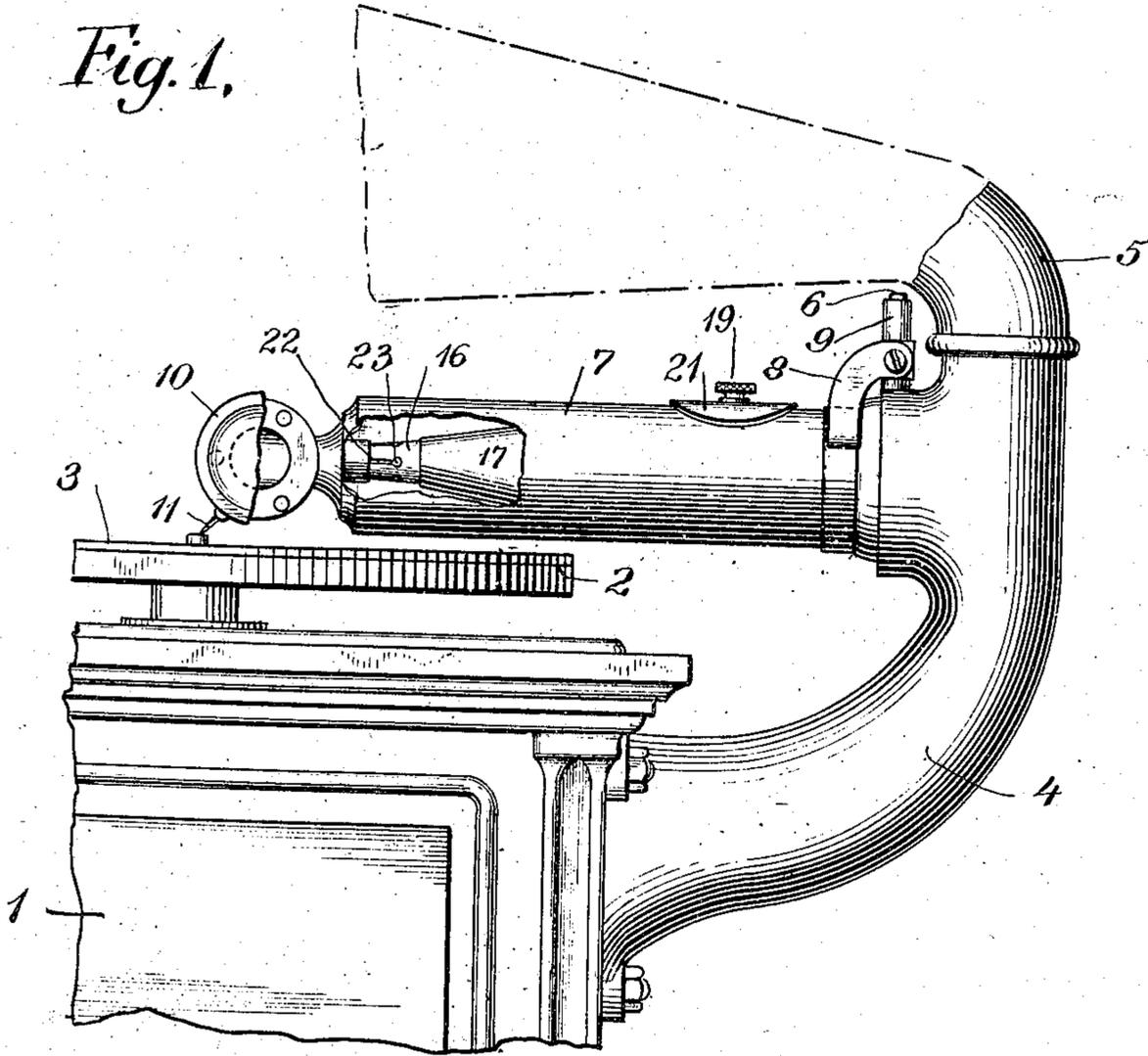


Fig. 2.

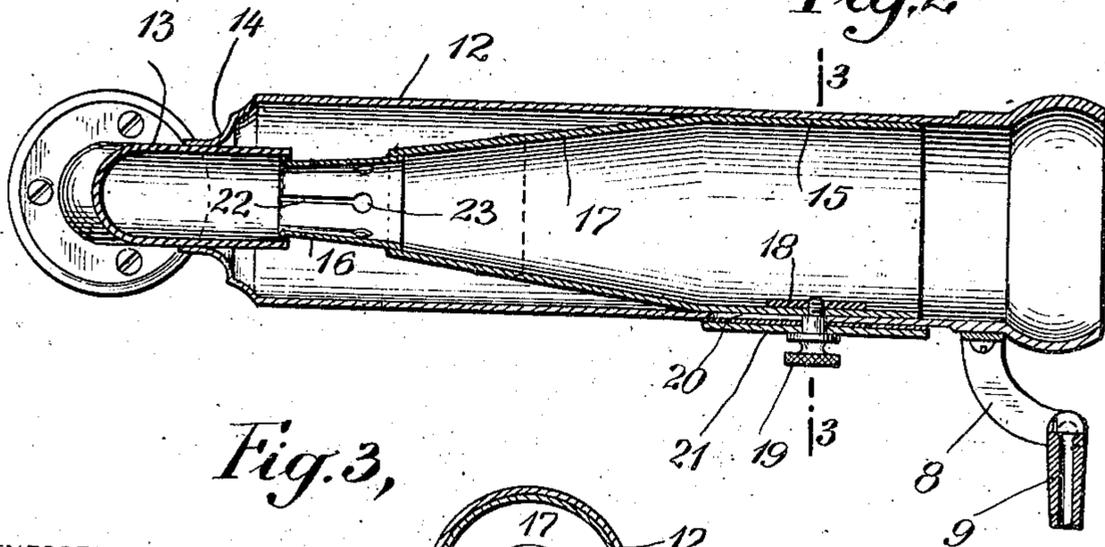
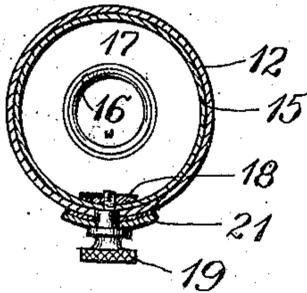


Fig. 3.



WITNESSES:

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TALKING-MACHINE.

No. 881,322.

Specification of Letters Patent.

Patented March 10, 1908.

Application filed December 14, 1907. Serial No. 406,451.

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 has reference, more particularly, to the sound-conveying devices of such machines.

The invention is directed to the provision of an improved construction of sound-conveying device for a talking machine having therein means for modifying the sound carried thereby as desired, with respect to tone, magnitude, etc.

The invention is of particular utility in a talking machine in which the re-producing mechanism is secured upon the end of a tubular tone-arm which is pivoted upon a support fixed in the motor box of the machine and which connects with an amplifying horn, the sound modifying devices being located within this tubular tone-arm and adjustable from outside the same for the purpose of effecting the desired modification in sound.

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

Figure 1 is an elevation of a portion of a talking machine, Fig. 2 is a longitudinal section of the tone-arm thereof and Fig. 3 is a transverse section of the tone-arm on line 3—3 of Fig. 2.

Referring to these drawings, 1 indicates the motor box of the talking machine having a motor therein driving a vertical shaft which carries the turn-table 2 on which the disk sound-record 3 rests. Secured to the side of the motor box is a coupling member 4 having an opening through the upper portion thereof. A tapering, amplifying horn 5 is adapted to be mounted on the upper end of the member 4, its opening communicating with the opening in the coupling member. Secured on the coupling near the other end of the opening therethrough is a pin 6 on which is supported the tone-arm 7. For this purpose the tone-arm has a yoke 8 secured thereto, on the arms of which is horizontally pivoted a cross-head carrying a sleeve 9 adapted to fit over the pin 6. The end of the tone-arm is arranged to telescope slightly with the coup-

ling member 4, as shown in Fig. 1. To the other end of the tone-arm is secured the sound-box 10 having a stylus 11 which tracks in the groove in the record disk 3.

The construction of the tone-arm is best shown in Figs. 2 and 3; it is of tubular form and consists of two cylindrical sections 12 and 13, the former of which is of considerably greater cross-sectional area than the latter. The free end of section 12 is contracted, as shown at 14, and the smaller section 13 is secured within this contracted portion. The section 13 is curved on an arc of 90 degrees, so that the action of the sound-box secured to the end of this section is at a right angle to the axis of the tone-arm.

The sound modifying device is located within the section 12 of the tone-arm and is adapted to be moved from outside the tone-arm to carry one end thereof within the end of the smaller section 13. This device consists of a portion 15 which fits snugly within the section 12, a portion 16 which is of such size that it may be moved within the end of the section 13, and a portion 17 connecting these two portions 15 and 16 which form the end portions of the sound modifying device and which are of different sizes.

In the drawings, I have shown the portion 17 as being of conical shape and this is the shape I prefer to employ. In the portion 15 and a reinforcing strip 18 secured thereto is a threaded opening adapted to receive the threaded end of a set-screw 19 which extends through an elongated slot 20 in the wall of the section 12 of the tone-arm. Between this screw and the tone-arm is a shield 21 curved so as to lie close upon the surface of the tone-arm; this shield moves back and forth with the screw 19 and the sound modifying device and is of such size that in all positions of those parts it closes the slot 20 in the tone-arm.

The end portion 16 of the sound modifying device is preferably of such size that it will fit tightly within the end of the smaller section 13 of the tone-arm. In order to secure such a tight fit, and insure the easy movement of the parts, the section 16 may be made slightly larger than the interior diameter of the section 13 and may be provided with a plurality of slits 22 extending from its end in the direction of its length. Small openings 23 may be provided at the

ends of the slits 22. As thus constructed the machine is operated in the usual manner and the sound waves emanating from the diaphragm of the sound-box 10 pass through the small section 13 of the tone-arm, the sound modifying device and the larger section 12 of the tone-arm to the amplifying horn 5. By means of the screw 19, which is provided with a knurled head, the sound modifying device may be moved in the direction of the axis of the tone-arm from the position in which it is shown in Fig. 2 to a position in which its smaller end extends within the end of the section 13 of the tone-arm. By moving the sound modifying device back and forth within the tone-arm in this way, the sounds reproduced by the machine may be modified as desired as to their tone, pitch and resonance, by reason of the coaction of the walls of the sound modifier with the sound waves passing through the sound conveying tube. It will be seen that the construction here disclosed is quite simple and that such a tone-arm may be manufactured at low cost.

In practice I have found that with the device here disclosed, a considerable degree of modification of the sounds reproduced may be effected, the different positions of the modifier resulting in making the sound loud or soft and hollow or sharp, so that the character of reproduced sound desired may be readily obtained.

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

1. In a talking machine, a sound-conveying tube comprising two sections secured together one of which is of greater internal cross-sectional area than the other, a sound modifier lying within said larger section and having one end movable within said smaller section, and means connected to said modifier and extending through the wall of the tube for moving the modifier axially of the tube from outside the same, substantially as described.

2. In a talking machine, a sound-conveying tube comprising two sections secured together one of which is of greater internal cross-sectional area than the other, a sound modifier lying within said larger section and having an elastic end portion which is movable within said smaller section, and means

for moving said modifier axially of the tube from outside the same, substantially as described.

3. In a talking machine, a sound-conveying tube comprising two sections secured together one of which is of greater internal cross-sectional area than the other, a tubular, sheet-metal sound-modifier lying within said larger section and having one end entering said smaller section and provided with a plurality of lengthwise cuts to make it elastic, and means for moving said modifier axially of the tube from outside the same, substantially as described.

4. In a talking machine, a sound-conveying tube comprising two sections secured together one of which is of greater internal cross-sectional area than the other, a tubular modifier within said tube having a portion fitting within said larger section, a portion adapted to move within the end of said smaller section and a portion of conical shape connecting said portions, and means for moving said modifier axially of the tube from outside the same, substantially as described.

5. In a talking machine, a sound-conveying tube comprising two sections secured together one of which is of greater internal cross-sectional area than the other, a tubular modifier within said tube having a portion fitting within said larger section, an elastic portion adapted to move and to fit tightly within the end of said smaller section and a portion of conical shape connecting said portions, and means for moving said modifier axially of the tube, substantially as described.

6. In a talking machine, a tone-arm formed of two cylindrical sections secured together one of which is of greater diameter than the other, a tubular sound-modifier within said tube having a portion fitting within said larger section, a portion adapted to move within said smaller section and provided with a plurality of lengthwise cuts to make it elastic and a portion of conical shape connecting said portions, and means for moving said modifier axially of the tube from outside the same, substantially as described.

This specification signed and witnessed this 9th day of December, 1907.

THOMAS KRAEMER.

Witnesses:

H. MEIER,
R. GROSS.