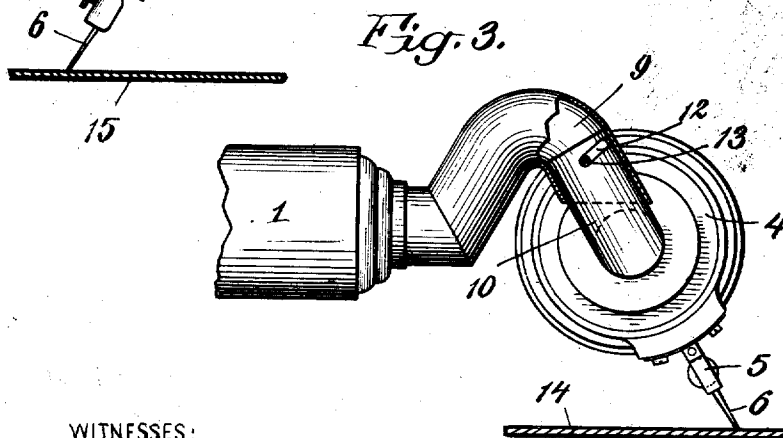
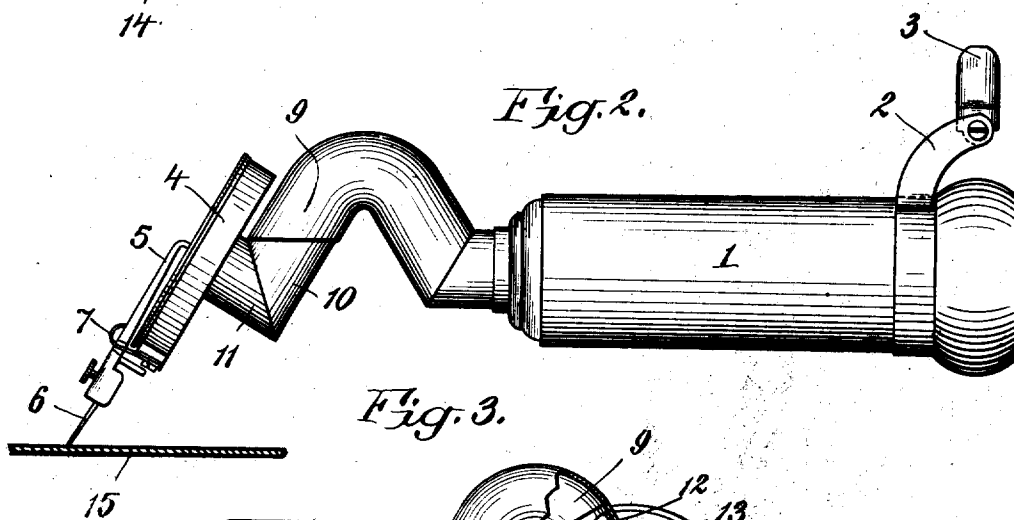
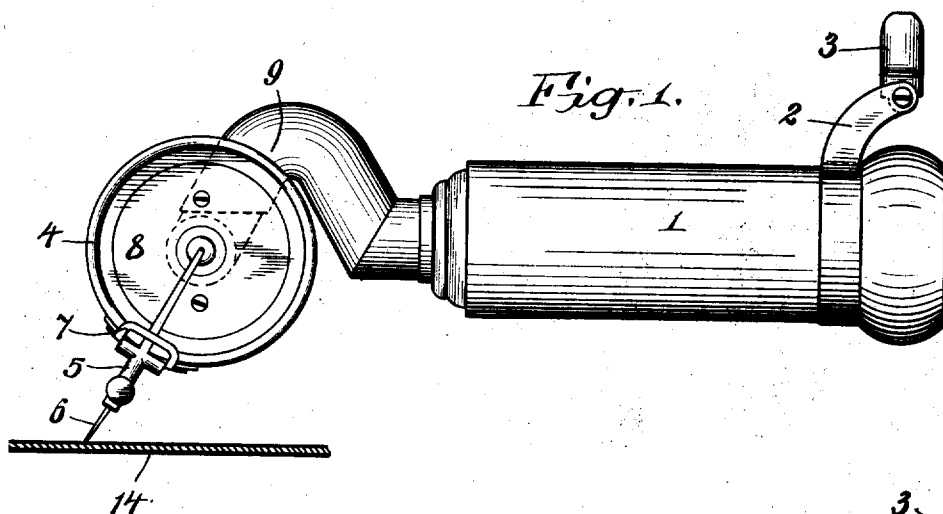


T. KRAEMER.
TALKING MACHINE.
APPLICATION FILED MAR. 7, 1908.

899,874.

Patented Sept. 29, 1908.



WITNESSES:
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TALKING-MACHINE.

No. 899,874

Specification of Letters Patent. Patented Sept. 29, 1908.

Application filed March 7, 1908. Serial No. 419,658.

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 a certain new and useful Improvement in Talking-Machines, of which the following is a specification.

This invention relates to talking-machines and has reference particularly to the manner in which the sound-boxes of such machines are connected to the sound-conveying and-amplifying devices thereof.

As is well known, record-tablets for the mechanical reproduction of recorded sounds, whether of cylinder, disk or other form, are of two types depending on the character of the undulations of the record-groove, these being termed the vertically undulating and the laterally undulating types. For reproducing sounds from these two types of record-tablets, machines differing in construction have heretofore been required, so that a person having but one machine could use only records of one of these two types.

The object of my invention is to provide a talking-machine so constructed that it may be used to reproduce sounds from either of these two types of records differing in the character of the sound-undulations of the record-groove. This is accomplished by providing a sound-box which is arranged to assume either of two operative positions, in one of which the stylus of the sound-box will cooperate with a record of the vertically undulating type to reproduce the recorded sounds and in the other of which it will cooperate with a record of the laterally undulating type. Thus, the sound-conveying device of the talking-machine, consisting of either an-amplifying horn alone or a combined horn and tone-arm may have a joint therein permitting movement of the sound-box to either of its two positions.

In the preferred embodiment of the invention, a tone-arm is employed and a joint is provided near the free end thereof such that the sound-box may be moved from one operative position to a second operative position in which its diaphragm is disposed at a right angle to the plane of the diaphragm when the box is in the first position.

One embodiment of the invention is illustrated in the accompanying drawings, in which

Figures 1 and 2 are views in elevation of the tone-arm and sound-box showing the two positions of the latter, and Fig. 3 is a sectional elevation of the sound-box and a portion of the tone-arm.

Referring to these drawings, 1 indicates a tubular tone-arm of any suitable construction, this being adapted to be pivotally mounted at one end on a coupling-member extending outwardly from the motor-box of a talking-machine. For the purpose of such pivotal mounting, the tone-arm is here shown as having a yoke 2 secured thereto in which is pivoted a cross-head carrying a sleeve 3 adapted to receive a vertically-disposed pin on the coupling-member above mentioned. The other end of the tone-arm carries the sound-box 4 having a stylus-lever 5 in which is secured a stylus 6. The lever 5 is pivotally mounted on the wall of the box by having notched lugs thereon in which are received knife-edges on a sheet-metal member 7 secured to the box. Member 7 is bent over at its end and bears on lever 5 to hold the inner end of the lever yieldingly against the diaphragm 8 of the box.

At its outer end, the tone-arm 1 is bent, preferably in the manner shown, to form a portion 9 therein the axis of which is inclined to the axis of the main portion of the tone-arm. The portion 9 is adapted to receive a tubular extension 10 on the sound-box 4, this extension being connected to the sound-box by a short tubular piece 11 and having its axis substantially parallel to the diaphragm 8. In the extension 10 is a slot 12 into which enters the end of a pin 13 extending inwardly from the portion 9, slot 12 being of such size as to permit extension 10 to turn in tube 9 through ninety degrees. The tubular extension 10 fits snugly within the tubular portion 9 and excessive relative movement of the parts in the direction of their axis is precluded by the pin 13. Preferably the parts are so formed that in one or both of the positions of the sound-box, the end of portion 9 bears upon the piece 11 at the junction of the latter with the extension 10 to assist in holding the sound-box

and the parts connected thereto steadily in position. If desired, the slot 12 may be so formed that it extends in the direction of the length of tube 10 as well as around the same so that the turning movement of the sound-box will cause tube 10 to move into and out of tube 9; such relative movement of tubes 9 and 10 may be desirable to compensate for the use of styluses of different lengths in the two positions of the sound-box and the slight change which would otherwise be made in the distance of the end of the stylus-lever from the axis of the tone-arm when the sound-box is moved from one position to the other due to the fact that in its movement the sound-box turns about an axis inclined to that of the tone-arm.

Figs. 1 and 2 illustrate the two operative positions of the sound-box relatively to the tone-arm and in these figures 14 indicates a disk sound-record having a record-groove of the laterally undulating type, while 15 indicates a similar record having a groove of the vertically undulating type. In Fig. 1, it will be seen that the diaphragm of the sound-box lies in a plane substantially parallel to the axis of the tone-arm in a position to be vibrated by the coaction of the stylus with lateral undulations in the record-tablet 14; in Fig. 2, however, the diaphragm extends across the axis of the tone-arm and is somewhat inclined so that it will be vibrated by the coaction of its stylus with vertical undulations.

The movement of the sound-box about the pivotal connection thereof to the tone-arm carries the box to either of two operative positions, and in both of these positions the single stylus of the sound-box projects from the box in the same direction, that is, downwardly in the structure shown in the drawings; therefore, a talking-machine equipped with such a tone-arm and sound-box may be used with sound-records of the same form, as disk records, but differing as to the character of the sound undulations, as vertical or lateral, these disks being mounted upon the same support as the turn-table of the machine.

Having now described my invention, what I claim as new therein and desire to secure by Letters Patent is as follows:—

1. In a talking machine, a sound-box having a diaphragm and a tubular connection thereto for carrying sound, said connection having a joint therein permitting movement of the sound-box to either of two operative positions, a single stylus being adapted to vibrate the diaphragm in either of said positions and said stylus projecting in substantially the same direction from the sound-box

in both of said positions, substantially as set forth.

2. In a talking-machine, a sound-conveying tube, and a sound-box pivotally mounted thereon and provided with a single stylus, said box being movable about the pivotal axis through ninety degrees to carry it to either of two operative positions in both of which said stylus projects in substantially the same direction from the sound-box, substantially as set forth.

3. In a talking-machine, a sound-conveying tube and a sound-box having a diaphragm mounted on said tube and movable from a position in which the diaphragm is parallel to the axis of the tube to a position in which the diaphragm extends across said axis, substantially as set forth.

4. In a talking-machine, a sound-conveying tube, a sound-box having a single stylus, and two telescoping tubular pieces, one on said tube and the other on said box, permitting movement of the sound-box relatively to the tube to either of two operative positions in both of which said stylus projects in substantially the same direction from the sound-box, substantially as set forth.

5. In a talking-machine, a sound-conveying tube, a sound-box having a single stylus, two telescoping tubular pieces, one on said tube and the other on said box, permitting movement of the sound-box relatively to the tube to either of two operative positions in both of which said stylus projects in substantially the same direction from the sound-box, and a pin on one of said pieces entering a slot in the other, substantially as set forth.

6. In a talking-machine, a sound-conveying tube having a tubular portion at its end turned at an acute angle to the axis of the tube, and a sound-box having a stylus pivotally mounted on said portion and adapted to be turned about the same to either of two operative positions, substantially as set forth.

7. In a talking-machine, a sound-conveying tube having a tubular portion at its end turned at an angle to the axis of the tube, and a sound-box having a stylus and a tubular piece fixed to the box and telescoping with said portion to permit turning the sound-box relatively to said tube to either of two operative positions, in both of which the stylus of the sound-box projects in substantially the same direction from the sound-box, substantially as set forth.

This specification signed and witnessed this 26th day of February, 1908.

THOMAS KRAEMER.

Witnesses:

AMIE SCHNELL,
H. MÜHLSCHLEGEL.