

No. 891,079.

PATENTED JUNE 16 1908.

T. KRAEMER.
SOUND BOX FOR TALKING MACHINES.
APPLICATION FILED JULY 15, 1907.

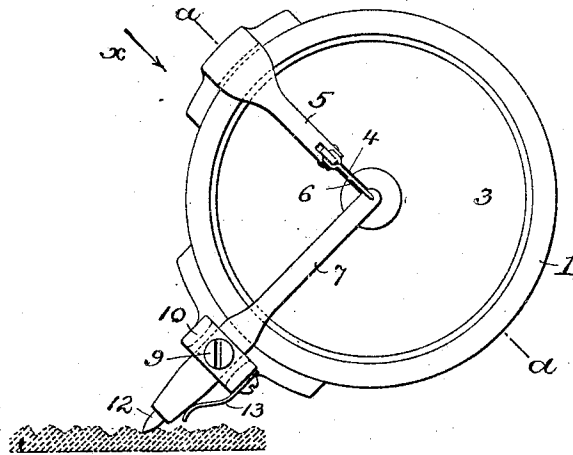


Fig. 1.

Fig. 4.

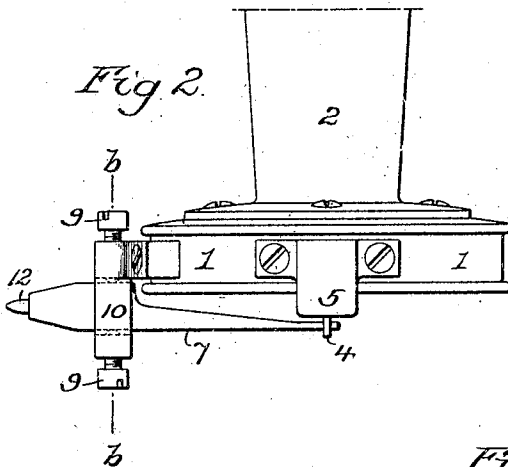
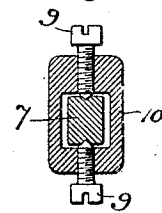


Fig. 2.

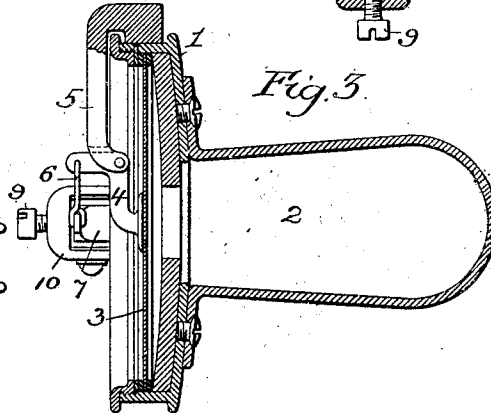
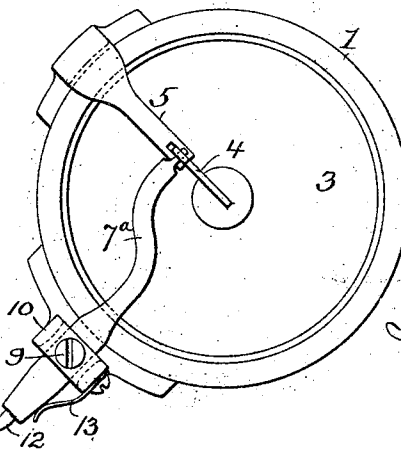


Fig. 3.

Fig. 5.



Witnesses

Harry L. Smith
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UNITED STATES PATENT OFFICE.

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

SOUND-BOX FOR TALKING-MACHINES.

No. 891,079.

Specification of Letters Patent.

Patented June 16, 1908.

Application filed July 15, 1907. Serial No. 383,721.

To all whom it may concern:

Be it known that I, THOMAS KRAEMER, a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented certain Improvements in Sound-Boxes for Talking-Machines, of which the following is a specification.

The object of my invention is to adapt for use in connection with a phonograph record of the "hill and valley" type, a sound box of the character usually employed in connection with records of the "lateral wave" type. This object I attain in the manner hereinafter set forth, reference being had to the accompanying drawing, in which

Figure 1 is a face view of a sound box constructed in accordance with my present invention; Fig. 2 is an elevation of the same looking in the direction of the arrow *x*, Fig. 1; Fig. 3 is a section on the line *a-a*, Fig. 1; Fig. 4 is a section on the line *b-b*, Fig. 1, and Fig. 5 is a view similar to Fig. 1, but illustrating a slight modification of the invention.

The cylindrical casing 1 of the sound box is mounted upon the hollow arm 2 as usual, and has supported within it, in the ordinary way, the diaphragm 3, the central portion of this diaphragm being secured to one arm of a bell crank lever 4 which is pivoted to an overhanging bracket 5, secured to the casing 1, the other arm of said lever 4 being connected, by a link 6, to one arm of the stylus lever 7, the latter being pivotally mounted upon the pointed ends of screws 9 which are carried by opposite members of a yoke 10 secured to the casing 1, of the sound box. (See Figs. 2 and 4). The other arm of said stylus lever carries the stylus 12 which engages the groove of the record as shown in Fig. 1, so that, as the record travels beneath said stylus, the stylus lever is caused to vibrate by reason of the "hill and valley" conformation of the base of the groove, these vibrations being in the same plane as that of the diaphragm 3, but being transformed by the bell crank lever 4 into vibrations at a right angle to the plane of the diaphragm, thereby causing vibrations of the latter corresponding to the vibrations of the stylus lever. A spring 13 secured to the yoke 10 and bearing upon the stylus lever serves to maintain constant contact of the lever connections and of the bell crank lever and diaphragm.

Instead of using a link connection between the two levers as shown in Fig. 3, I may, in some cases, cause the stylus lever to engage directly with the bell crank lever 4, as shown, for instance, in Fig. 5, the stylus lever 7^a being suitably bent or deflected for this purpose.

By reason of my invention, a sound box of the type usually employed in connection with records having "lateral wave" grooves is readily adapted for use in connection with records having grooves of the "hill and valley" type.

I claim:—

1. The combination of a sound box, a vertically disposed diaphragm therein, a bearing fixed to said sound box, a bell crank lever attached to said diaphragm and pivotally mounted in said bearing to vibrate at a right angle to the plane of the diaphragm, another bearing fixed to said sound box and carrying pivots extending parallel with the axis of the sound box and diaphragm, and a stylus lever carried by said pivots and connected to said bell crank lever to vibrate in a plane at a right angle to the axis of the sound box and diaphragm.

2. The combination of a sound box, a vertically disposed diaphragm therein, a bearing fixed to said sound box and projecting over the diaphragm, a bell crank lever attached to said diaphragm and pivotally mounted in said projecting bearing to vibrate at a right angle to the plane of the diaphragm, another bearing fixed to said sound box and carrying pivots extending parallel with the axis of the sound box and diaphragm, and a stylus lever carried by said pivots and connected to said bell crank lever to vibrate vertically in a plane at a right angle to the axis of the sound box and diaphragm.

3. The combination of a sound box, a vertically disposed diaphragm therein, a bearing fixed to said sound box, a bell crank lever attached to said diaphragm and pivotally mounted in said bearing to vibrate at a right angle to the plane of the diaphragm, another bearing fixed to said sound box and carrying pivots extending parallel with the axis of the sound box and diaphragm, a stylus lever carried by said pivots and connected to said bell crank lever to vibrate vertically in a plane at a right angle to the axis of the sound box and diaphragm, and a spring carried by

the bearing to which the stylus lever is pivoted, said spring acting upon the stylus lever to lift the same from the groove of the record.

4. The combination of a sound box, a vertically disposed diaphragm therein, a bearing fixed to said sound box, a bell crank lever attached to said diaphragm and pivotally mounted in said bearing to vibrate at a right angle to the plane of the diaphragm, another bearing fixed to said sound box and provided with adjustable screw pivots extending parallel with the axis of the sound box and diaphragm, and a stylus lever mounted upon said pivots and connected to said bell crank lever to vibrate vertically in a plane at a right angle to the axis of the sound box and diaphragm.

5. The combination of a sound box, a vertically disposed diaphragm therein, a bearing fixed to said sound box and projecting over

said diaphragm, a bell crank lever attached to said diaphragm and pivotally mounted in said projecting bearing to vibrate at a right angle to the plane of the diaphragm, another bearing fixed to the sound box and provided with adjustable screw pivots extending parallel with the axis of the sound box and diaphragm, and a stylus lever mounted upon said pivots and connected to said bell crank lever to vibrate vertically in a plane at a right angle to the axis of the sound box and diaphragm.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses.

THOMAS KRAEMER.

Witnesses:

HAMILTON D. TURNER,
KATE A. BEADLE.