

No. 885,490.

PATENTED APR. 21, 1908.

T. KRAEMER.
SOUND BOX FOR TALKING MACHINES.
APPLICATION FILED DEC. 21, 1907.

Fig. 1.

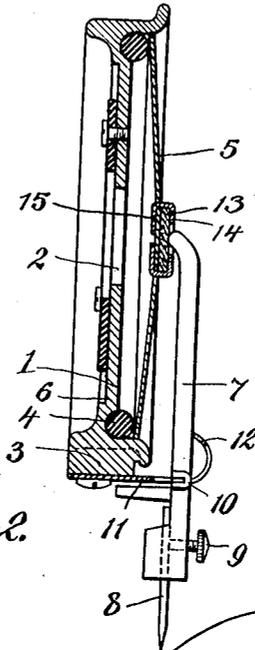


Fig. 2.

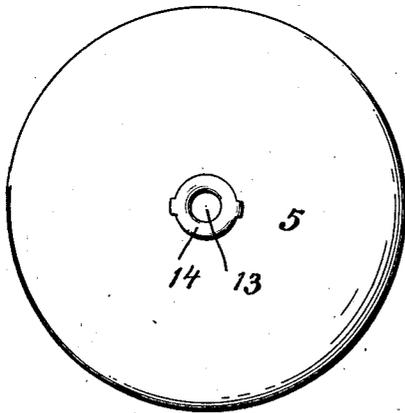


Fig. 3.

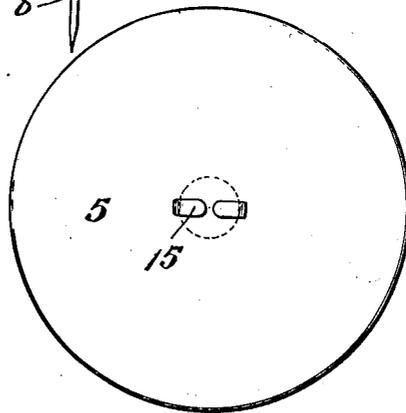
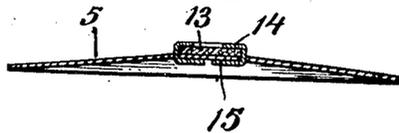


Fig. 4.



WITNESSES:

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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. 885,490.

Specification of Letters Patent.

Patented April 21, 1908.

Application filed December 21, 1907. Serial No. 407,577.

To all whom it may concern:

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

This invention relates to talking machines and has reference, more particularly, to sound-boxes for use therewith.

The invention is directed to the provision of a sound-box of an improved construction in the use of which a sound reproduction of superior tone quality is obtained and one which is, to a large extent, free from foreign sounds. This is accomplished by the employment of an improved form of diaphragm in the sound-box, this being a metallic disk having secured thereto a small body of non-metallic material which lies between the diaphragm and the lever by which the diaphragm is vibrated. The material from which this body is formed may be varied as desired and with different materials, reproductions differing in tone quality are obtained. Thus a small disk of heavy paper or of blotting paper heavily calendered may be employed, this disk being fixed to the center of the diaphragm. Preferably, the sound-box is so constructed that the diaphragm may be readily withdrawn therefrom and a number of diaphragms having non-metallic bodies of different materials fixed thereto are provided. The user of the sound-reproducing apparatus may then select and use the diaphragm which, under the particular conditions prevailing, will give the most faithful reproduction. Moreover, my improved sound-box is so constructed that it may be manufactured at low cost and the danger of breakage or displacement of the parts is reduced to a minimum.

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

Figure 1 is a sectional elevation of a sound-box, Figs. 2 and 3 are views of opposite sides of the diaphragm and Fig. 4 is a sectional view of the diaphragm, the section line being transverse to that of Fig. 1.

Referring to the drawings, the sound-box is shown as having a main wall 1, an opening therethrough with which the sound-conveying

tube is adapted to be connected, and a circular flange 3 at the outer edge of the wall 1 forming the outer wall of the box. Fitting closely within wall 3 is a rubber strip or ring 4 forming a support for the diaphragm 5, this ring being retained in position by a circular ridge 6 integral with and rising from wall 1. The stylus-lever 7 is pivotally mounted upon wall 3 and at its outer end has an opening therein to receive a stylus 8, the latter being held in position by a set-screw 9. In the present instance I have shown the stylus-lever as provided with notched lugs 10 on opposite sides thereof which receive knife-edges on a sheet-metal piece 11 secured to wall 3. The end 12 of this piece is bent over and bears on lever 7, exerting a spring tension thereon tending to turn the lever about the knife-edges as pivots in a direction to press the inner end of the lever against the diaphragm.

The diaphragm 5 is a sheet-metal disk preferably pressed so that the central portion is slightly displaced from the plane of the edge portion. At the center of the disk 5 is secured a small disk 13 of non-metallic material as paper, this being held in place by an annulus 14 of light sheet-metal at opposite edges of which are integral tangs 15 extending through openings in disk 5 and turned over against the disk as shown in Figs. 3 and 4. The inner end of the stylus-lever 7 extends through the opening in the annular casing 14 and bears on the disk 13. By this construction, the vibrations of the stylus and stylus-lever are transmitted through the disk 13 to the diaphragm 5. This disk is of non-metallic material and may be of heavy paper, blotting paper having a calendered surface, or rubber of varying degrees of hardness. I have found in practice that the provision of such a non-metallic disk greatly improves the tone quality of the sound-reproduction and reduces considerably the foreign noises usually termed "scratching" and "blasting". The diaphragms constructed as shown may be manufactured at low cost and there is little liability of displacement of the parts as it will be seen that the structure is simple and the number of parts small. The sound-box is so constructed that the diaphragm may be readily removed, this requiring merely that the stylus-lever be turned on its pivot against

the tension of spring 12. A user of a talking machine may therefore have a plurality of diaphragms 5 provided with disks 13 differing in material and may use, for each reproduction, the diaphragm which will give the best results.

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

10 1. A sound-box having a diaphragm, a thin flat piece of non-metallic material, a casing therefor securing said piece to the diaphragm, a stylus-lever pivotally mounted on a wall of the box and bearing at its inner end on said piece and a stylus secured to the
15 outer end of the lever, substantially as described.

20 2. A sound-box having a diaphragm, a thin flat piece of non-metallic material, a casing therefor securing said piece to the diaphragm, said casing having an opening therethrough, a stylus-lever pivotally mount-

ed on a wall of the box and having its inner end extending through the opening in said casing and bearing on said piece, and a stylus secured to the outer end of the lever, substantially as described.

3. A sound-box having a diaphragm, a disk of non-metallic material, an annular casing overlying the same and having tangs extending through openings in the diaphragm and holding the casing and disk thereto, a stylus-lever pivotally mounted on a wall of the box and having its inner end extending through the opening in said casing and bearing on said disk and a stylus secured to the outer end of said lever, substantially as described.

This specification signed and witnessed this 18th day of December, 1907.

THOMAS KRAEMER.

Witnesses:

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