

E. DE LA RUE.
SOUND BOX FOR TALKING MACHINES AND OTHER ACOUSTICAL INSTRUMENTS.
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1,040,648.

Patented Oct. 8, 1912.

Fig. 2.

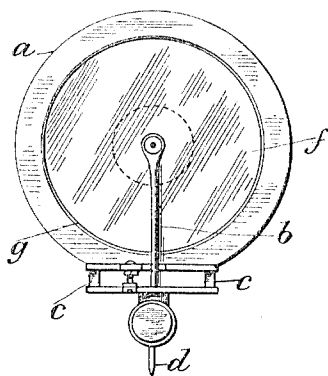


Fig. 1.

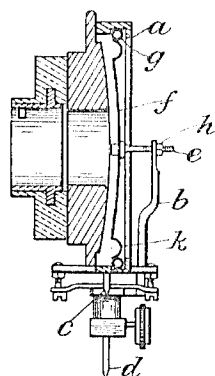


Fig. 3.

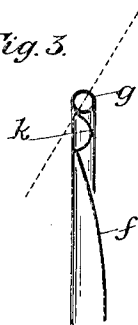
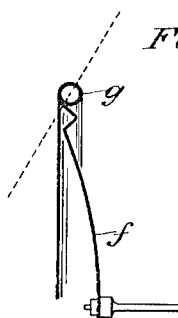


Fig. 4.



Witnesses:-
Henry B. Thorne.
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UNITED STATES PATENT OFFICE.

ERNEST DE LA RUE, OF LONDON, ENGLAND.

SOUND-BOX FOR TALKING-MACHINES AND OTHER ACOUSTICAL INSTRUMENTS.

1,040,648.

Specification of Letters Patent.

Patented Oct. 8, 1912.

Application filed April 21, 1911. Serial No. 322,531.

To all whom it may concern:

Be it known that I, ERNEST DE LA RUE, a subject of the King of Great Britain, and resident of London, England, have invented a new and useful Improvement in Sound-Boxes for Talking-Machines and other Acoustical Instruments, of which the following is a specification.

The present invention relates to improvements in sound boxes for talking machines and other acoustical instruments.

According to the present invention, I mount a diaphragm within a casing so that it is capable of reciprocating, and to this end my invention consists in mounting the diaphragm in such a manner that it is held resting upon a single resilient support at the periphery, and my invention further consists in so arranging the resilient support and so constructing the periphery of the diaphragm that the support does not exercise a thrust upon the diaphragm in a direction at right angles to the plane of the diaphragm but makes contact with the periphery of the diaphragm so as to exercise a thrust thereon in an oblique direction whereby the resiliency of the support is increased and the reciprocating action of the diaphragm is facilitated.

In the accompanying drawings, a talking machine sound box is illustrated in which my invention is embodied.

Figure 1 shows a sectional elevation of a sound box with my improvements applied thereto. Fig. 2 a front elevation thereof. Fig. 3 shows an exaggerated detail of a portion of a diaphragm and gasket. Fig. 4 a similar view to Fig. 3, but showing a variation of the corrugation of the periphery of the diaphragm.

Upon the casing *a* is mounted in any usual or convenient manner the stylus bar *b* capable of oscillating about bearings *c* and carrying at its lower end the reproducing needle *d*. Through the upper end of the stylus bar *b* passes the rod *e* which is connected at its inner end to the diaphragm *f*. The diaphragm rests against a single resilient gasket *g* and the diaphragm *f* can be drawn up against the gasket *g* with any desired tension and held in any desired position by means of the nut *h* (or equivalent means) which is adjustable upon the threaded end of the rod *e*. After proper adjustment, the nut will be fixed by waxing, soldering or the like. The bearings *c* of the

stylus bar will then exercise any desired tension upon the diaphragm *f*.

My invention differs from known forms of sound box in which the diaphragm is held in tension within its mounting by means of an adjustable connection between the diaphragm and the stylus bar in that in the sound boxes hitherto known the diaphragm has been mounted between two gaskets but not resting merely upon a single gasket or other resilient support as is the case in the present invention. I have found that if the periphery of the diaphragm is constrained at one side only, an improved reproduction is obtained.

I provide the diaphragm *f* at its periphery with a rib or corrugation *k* (shown more particularly in the exaggerated view Fig. 3) and the size of the diaphragm is so selected with regard to the gasket *g* that the corrugation *k* does not rest with its bottom upon the gasket *g* but makes contact with the gasket with its outer side. Owing to this disposition the resilient support does not exercise a thrust upon the diaphragm *f* in a direction at right angles to the plane of the diaphragm but exercises an oblique thrust thereon so that when the diaphragm is vibrated by the stylus, the gasket does not offer so much resistance to its movements and a slight rolling motion may take place between the resilient support and the corrugated periphery of the diaphragm. One angle of the line of thrust is indicated in Fig. 3 and Fig. 4 by means of dotted lines. Instead of making the corrugation *k* U-shaped as shown in Fig. 3 I make it substantially V-shaped as shown in Fig. 4.

The diaphragm is preferably constructed with a dished or coned central portion as shown, for instance, in Figs. 3 and 4 respectively, in order to increase in the manner already well understood the rigidity of the central or operative portion. The U or V-shaped corrugation running around the periphery of the substantially rigid central portion *f* adds to the resiliency of the mounting of the diaphragm, quite apart from the resiliency obtained from the position of the gasket *g*.

Claims:

1. In a sound box for acoustical instruments, a diaphragm having a substantially rigid central portion and supported at its periphery upon a single resilient support of circular section at one side of the diaphragm

and exercising upon said support an oblique thrust relatively to the direction of reciprocation of the diaphragm, a stylus bar and an adjustable tie between the diaphragm 5 and stylus bar adapted to draw the diaphragm against the resilient support.

2. In a sound box for acoustical instruments, a diaphragm having a dished central portion, and supported at its periphery upon 10 a single resilient support of circular section at one side of the diaphragm and exercising upon said support an oblique thrust relatively to the direction of reciprocation of the diaphragm, a stylus bar and an adjustable tie between the diaphragm and stylus 15 bar adapted to draw the diaphragm against the resilient support.

3. In a sound box for acoustical instruments, a diaphragm having a substantially 20 rigid central portion, and a peripheral corrugation supported at one side by a resilient support of circular section and exercising upon said support an oblique thrust relatively to the direction of reciprocation of the diaphragm, a stylus bar and an adjustable tie between the diaphragm and stylus 25 bar adapted to draw the diaphragm against the resilient support.

4. In a sound box for acoustical instru-

ments, a diaphragm having a peripheral 30 corrugation with which it rests upon a resilient support of circular section at one side of the diaphragm and exercising upon said support an oblique thrust relatively to the direction of reciprocation of the diaphragm, 35 a stylus bar and an adjustable tie between the diaphragm and stylus bar adapted to draw the diaphragm against the resilient support.

5. In a sound box for acoustical instru- 40 ments, a diaphragm having a peripheral corrugation of substantially U section with which it rests upon a resilient support of circular section at one side of the diaphragm and exercising upon said support an oblique 45 thrust relatively to the direction of reciprocation of the diaphragm, a stylus bar and an adjustable tie between the diaphragm and stylus bar adapted to draw the diaphragm against the resilient support. 50

In testimony, that I claim the foregoing as my invention, I have signed my name in presence of two witnesses, this first day of April 1911.

ERNEST DE LA RUE.

Witnesses:

M. BURHRIDGE,
W. Y. WEED.