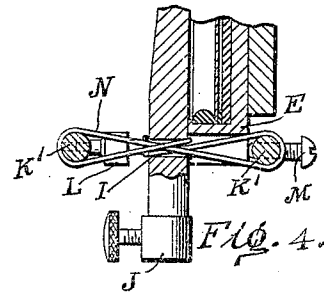
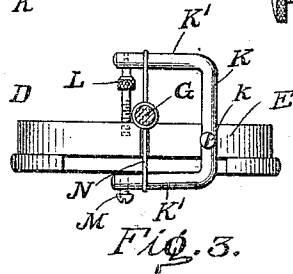
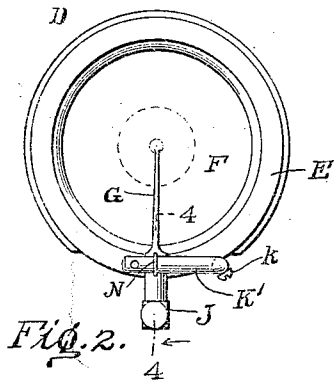
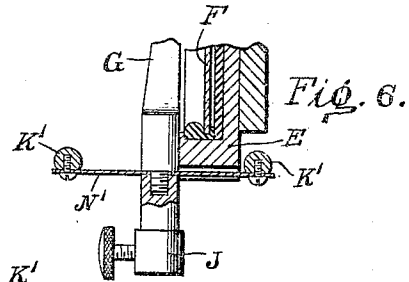
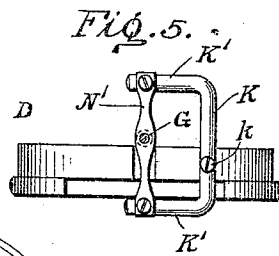
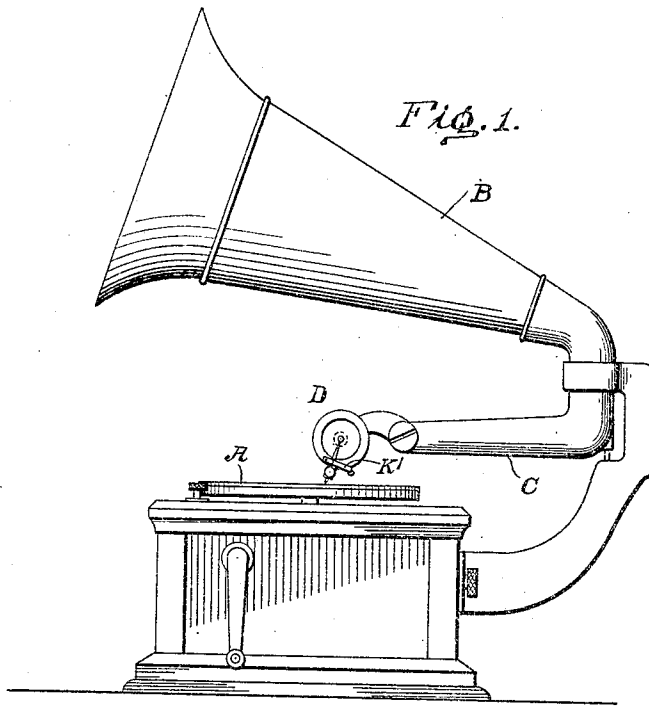


954,953.

Patented Apr. 12, 1910.



WITNESSES:

D. Webster, Jr.
P. M. Kelly.

INVENTOR

Robert L. Gibson

BY

[Signature]
Attorney

UNITED STATES PATENT OFFICE.

ROBERT L. GIBSON, OF PHILADELPHIA, PENNSYLVANIA.

SOUND-BOX FOR TALKING-MACHINES.

954,953.

Specification of Letters Patent. Patented Apr. 12, 1910.

Application filed October 27, 1905. Serial No. 284,646.

To all whom it may concern:

Be it known that I, ROBERT L. GIBSON, of the city and county of Philadelphia and State of Pennsylvania, have invented an
5 Improvement in Sound-Boxes for Talking-Machines, of which the following is a specification.

My invention has reference to sound boxes for talking machines and consists of certain
10 improvements which are fully set forth in the following specification and shown in the accompanying drawings, which form a part thereof.

The object of my invention is to provide
15 a construction of sound box for talking machines, which shall have great sensitiveness whereby the volume of sound may be increased without loss of timbre or accuracy of articulation.

My invention consists in supporting the
20 stylus bar on a pivotal connection formed by a spring whose length is in a plane at right angles to the plane of the diaphragm.

My invention further consists in providing
25 the sound box with a stylus bar secured to or in contact with the diaphragm and suspended from the frame of the sound box by a wire structure under tension.

My invention also consists in providing
30 an expansible frame to which the wire structure is secured, combined with adjusting devices for the expansible frame whereby the wire structure may have its tension adjusted.

My invention also embodies details of construction which, together with the features
35 above specified, will be better understood by reference to the drawings, in which:

Figure 1 is an elevation of a talking machine embodying my invention; Fig. 2 is a
40 front elevation of the sound box; Fig. 3 is a bottom view of the sound box; Fig. 4 is an enlarged sectional view on line 4—4 of Fig. 2 showing my improved manner of suspending
45 the stylus bar; Fig. 5 is a bottom view of a sound box showing a modification of my invention; and Fig. 6 is a sectional elevation of the same.

Referring to Fig. 1, A is the rotating
50 record carrying disk or table, B is the horn, C is the swinging sound conveying arm and D is the sound box suspended from the arm and may be connected with it in any suitable manner.

55 The sound box consists of the following construction. The box frame or head E

contains the diaphragm F which is arranged therein in any way. G is the stylus bar and is secured at one end to the center of the diaphragm F and provided at the other or
60 free end with a clamp J of any convenient construction for holding the stylus or needle point. At a short distance from the clamp J, the stylus bar is provided with a hole I through which the suspension wire N is
65 passed. This suspension wire is looped about the two arms of an expansible frame K which is preferably U-shaped and secured to the box or head E at $\frac{1}{2}$ whereby its two
70 arms K' are adapted for adjustment. The wire N is preferably of one continuous length, starting from the stylus bar and terminating thereon. The ends and central part of this wire are passed through a hole
75 I in the stylus bar G; and said ends are twisted about each other or the body of the wire and preferably soldered to the stylus bar to securely hold them. It is best that the
80 two portions of the wire extending between the arms K' K' shall cross whereby they pass through the hole in the stylus bar. The arms K' are adjusted to or from each other by the screws L and M, which are
85 screwed into the arms and rest against the body of the sound box case or head E. By means of these screws the two arms may be
90 adjusted to or from each other and relatively to the sound box head E, the latter adjustment securing the proper positioning of the stylus bar G and the former the
95 tension of the looped wire. The screw $\frac{1}{2}$ may hold the expansible frame K rigidly to the head E or permit a small oscillation as preferred, the position and adjustment of the arms K' of said frame being secured by
100 the screws L M. It is also evident that if the frame K is rigidly held by the head E, one of the screws L M might be dispensed with and hence I do not limit myself to the use of the two screws.

While I have shown the expansible frame
as formed in U-shape, I do not in any wise
105 restrict myself thereto, as this frame may be formed in any suitable manner so long as it sustains the wire loops and permits them to be held under proper tension. Furthermore, while I have shown the screws L, M for
110 adjusting the expansible frame, any other suitable means for securing the adjustment may be used in lieu thereof. Neither do I confine myself to the particular arrangement of the wire for supporting the stylus bar, as my

invention comprehends broadly the support of the stylus bar by a wire connection which holds it in proper relation to the head and diaphragm.

5 While it is not new to connect the bar to a spring supported at its ends and arranged transversely to the plane of the diaphragm, in former constructions of this kind the spring is not the sole means of supporting and sustaining the stylus bar, but is the
10 means of holding the stylus bar on a fulcrum between a portion of the stylus bar and the head upon which the bar vibrates. In my construction the spring acts not as a
15 means of holding the bar upon a stationary fulcrum but as the sole means of supporting the bar and the usual stationary fulcrum is dispensed with. The bar vibrates at the point of connection with the spring and not
20 on a stationary or fixed fulcrum.

The advantage secured by my improved method of pivoting the stylus bar is that the stylus bar is exceedingly sensitive of oscillation and practically the entire effect produced upon the stylus by the record groove is transmitted to the diaphragm, and therefore the articulation is particularly loud and clear. Furthermore, the construction is inexpensive and is easy of adjustment.

30 In the modified form of my invention shown in Figs. 5 and 6, I employ a steel plate spring N' instead of the wire. The stylus bar G extends through the spring at its middle and the ends of the spring are secured to the U-shaped frame K by rivets or
35 screws. To make the spring very sensitive, it may be reduced in width upon each side of the stylus bar. In this construction as in that first described the spring is in the
40 plane of vibration of the stylus bar, namely a plane at right angles to the plane of the diaphragm, and the length of the spring is also substantially at right angles to the diaphragm.

45 While I prefer that the frame K shall be expansible, it is not necessarily so, and especially is this true of the modification shown in Figs 5 and 6.

Therefore while I prefer the construction shown as being excellently adapted to the purpose of my invention, I do not restrict myself to the details as these may be modified in various ways without departing from the spirit of the invention.

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

1. In a sound-box for talking machines, the combination of the case and diaphragm,
60 a stretched wire for carrying the stylus bar supported at its opposite ends only by points of support which with the wire are disposed in a line transversely to the plane of the diaphragm and which wire by the oscillations
65 of the stylus bar is caused to continually

vary its tension in the direction of its length, and a stylus bar connected with the wire between the ends thereof, said wire having the function of a fulcrum and yieldingly supporting the stylus bar so that it may rock in
70 the direction of the length of the wire and vary its tension.

2. In a sound-box for talking machines, the combination of the case and diaphragm, a stretched wire for carrying the stylus bar
75 supported at its opposite ends only by points of support which with the wire are disposed in a line transversely to the plane of the diaphragm and which wire by the oscillations of the stylus bar is caused to continually
80 vary its tension in the direction of its length, a stylus bar connected with the wire between the ends thereof, said wire having the function of a fulcrum and yieldingly supporting the stylus bar so that it may rock in the direction
85 of the length of the wire and vary its tension, and means to the points of support to or from each other in a line transversely to the plane of the diaphragm to vary the normal tension of the said stretched wire. 90

3. In a sound-box for talking machines, the combination of the case and diaphragm, a stretched spring for carrying the stylus bar supported rigidly at its opposite ends only by points of support which with the
95 spring are disposed in a line transversely to the plane of the diaphragm and which spring by the oscillations of the stylus bar is caused to continually vary its tension in the direction of its length, and a stylus bar
100 connected with the spring between the ends thereof, said spring having the function of a fulcrum and yieldingly supporting the stylus bar so that it may rock in the direction of the length of the spring and vary its
105 tension.

4. In a sound box for talking machines, the combination of the head or case and diaphragm, a stylus bar acting upon the diaphragm, an expansible frame secured to
110 the head or case and a looped wire structure having its loops connected to portions of the expansible frame on each side of the stylus bar and supporting the stylus bar intermediate of said loops whereby it is
115 free to oscillate in a plane transversely to the length of the loops.

5. In a sound box for talking machines, the combination of the head or case and diaphragm, with a stylus bar acting upon
120 the diaphragm, an expansible frame secured to the head or case and a looped wire structure having its loops connected to portions of the expansible frame on each side of the stylus bar and supporting the stylus bar
125 intermediate of said loops whereby it is free to oscillate in a plane transversely to the length of the loops, and means for adjusting the expansible frame to put the wire loop portions under greater or less tension. 130

6. In a sound box for talking machines,
the combination of the head or case and
diaphragm, with a stylus bar acting upon
the diaphragm, an expansible frame secured
5 to the head or case and a looped wire struc-
ture having its loops connected to portions
of the expansible frame on each side of the
stylus bar and supporting the stylus bar
intermediate of said loops whereby it is free
10 to oscillate in a plane transversely to the
length of the loops, and means for adjusting
the expansible frame relatively to the head
or case whereby the stylus bar may be
adjusted relatively to the diaphragm and
15 head.

7. In a sound-box for talking machines,
the combination of the head or case and
diaphragm, a U-frame carried by said head,
a spring between the arms of said U-frame,
20 said supporting arms of the U-frame and
the spring being disposed transversely to the

plane of the diaphragm, and a stylus bar
connected with said spring between the ends
thereof and being wholly sustained and sup-
ported by said spring and diaphragm. 25

8. In a sound-box for talking machines,
the combination of the head or case and
diaphragm, a frame carried by said head, a
wire looped about the ends of said frame
and forming a supporting spring extending 30
transversely to the plane of the diaphragm,
and the stylus bar acting on the diaphragm
and connected with said looped wire between
the points of support thereof and being
wholly sustained and supported by said wire 35
and the diaphragm.

In testimony of which invention, I here-
unto set my hand.

ROBERT L. GIBSON.

Witnesses:

ERNEST HOWARD HUNTER,
R. M. KELLY.