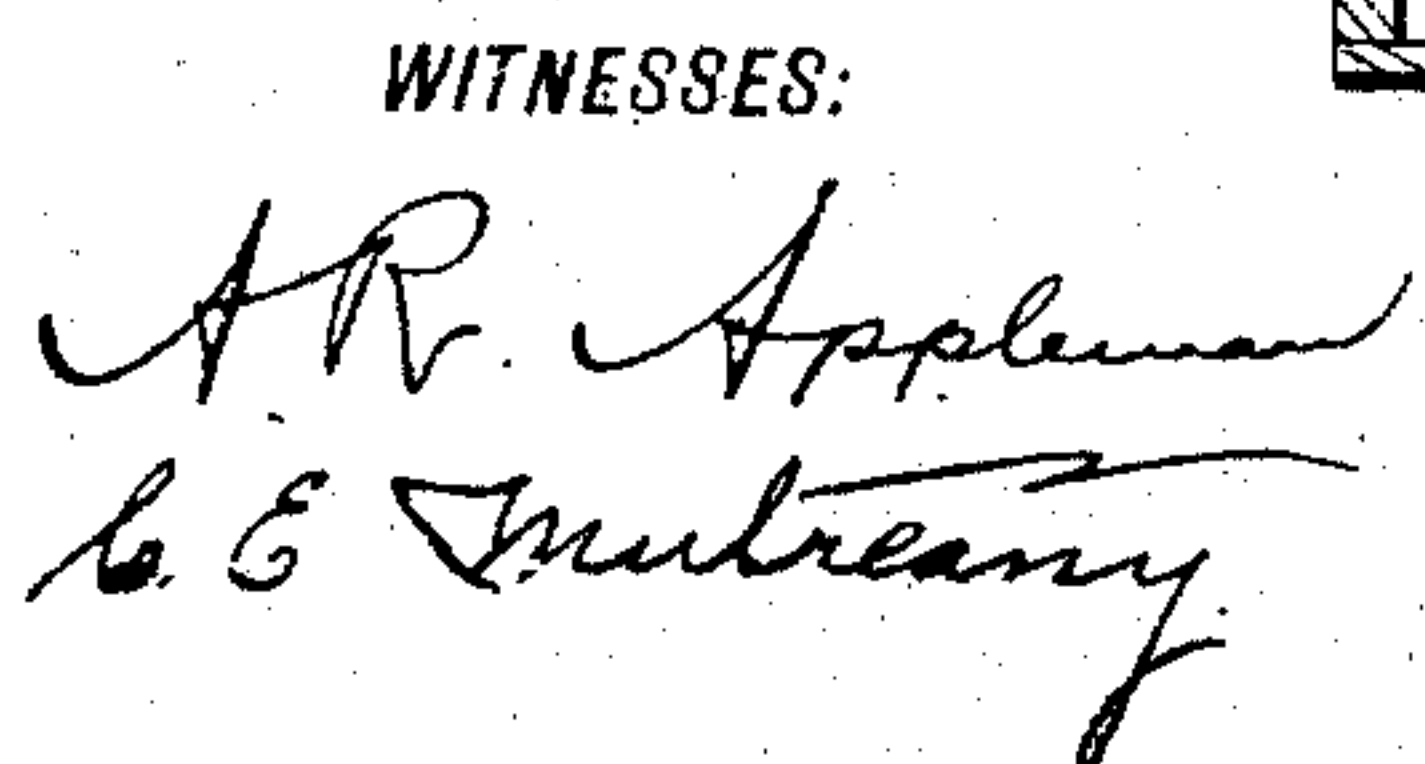


969,917.

Patented Sept. 13, 1910.



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# UNITED STATES PATENT OFFICE.

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PHONOGRAPH, GRAPHOPHONE, AND LIKE INSTRUMENT.

969,917.

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*To all whom it may concern:*

Be it known that I, EMIL G. H. STEIN, a citizen of the United States, and residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Phonographs, Graphophones, and Like Instruments, of which the following is a specification, such as will enable those skilled in the art to which it appertains to make and use the same.

This invention relates to graphophones, phonographs and other talking or musical instruments of this class, and the object thereof is to do away with the harsh and metallic sounds usually produced by instruments of this class, and this object I accomplish by means of an improved resonance box attachment which is substituted for the usual delivery horn, and may be attached to or used in connection with machines of the class specified without in any way changing or interfering with the construction of the machine or the box thereof.

The invention is fully disclosed in the following specification, of which the accompanying drawing forms a part, in which the separate parts of my improvement are designated by suitable reference characters in each of the views, and in which;—

Figure 1 is a side view of an ordinary graphophone and showing my improved resonance box applied thereto, said box and its attachments or connections being shown in section; Fig. 2 a plan view of the device as shown in Fig. 1; Fig. 3 a front view of the device looking in the direction of the arrow  $x$  in Fig. 1; Fig. 4 a partial section on the line 4—4 of Fig. 3, and;—Fig. 5 a partial section on the line 5—5 of Fig. 3.

In the drawing forming part of this specification I have shown at  $a$  an ordinary graphophone box provided with the usual rotary record tablet  $b$ , and in the practice of my invention I connect with one side of the body of the graphophone, the front side thereof as shown in the drawing, my improved resonance box  $c$ .

The resonance box  $c$  is rectangular in form, and in the form of construction shown the vertical depth thereof is slightly greater than that of the body of the graphophone box, and the transverse dimensions are slightly less than those of the body of the graphophone box, while the depth, forward and back, is about one-quarter of the ver-

tical height; but these dimensions may be varied within considerable limits without departing from the spirit of my invention or sacrificing its advantages.

The box  $c$  is preferably made of wood and the front  $c^2$  thereof is made thin and forms a sounding board, and said front is also provided centrally thereof with a large central sound aperture or opening  $c^3$  above and below which are placed horizontal reinforcing and stiffening strips or cleats  $c^4$  and  $c^5$  which are shown in cross section in Fig. 1, in plan in Figs. 4 and 5, and indicated in dotted lines in Fig. 3. The ends of the reinforcing and stiffening strips or cleats  $c^4$  above the aperture or opening  $c^3$  are beveled as shown at  $c^6$  so as to form an acute angle to the sounding board  $c^2$  in the form of construction shown, while the ends of the reinforcing strip or cleat  $c^5$  are beveled to form an obtuse angle to said sounding board, as shown at  $c^7$ , but this exact formation of the ends of said reinforcing and stiffening strips or cleats is not absolutely essential. The resonance box  $c$  is also provided in the top portion thereof with a horizontal partition  $c^8$ , in the opposite end portions of which, or on the opposite sides of the center of which are formed openings  $c^9$ .

Passing horizontally through the body of the phonograph is a valve rod  $d$ , the rear end of which is provided with a head or handle  $d^2$ , and the front end of which enters the sound box  $c$  and is provided with a valve  $d^3$  which is of greater dimensions than the aperture or opening  $c^3$  in the sound board  $c^2$  of the box  $c$ , and the said valve is preferably faced with felt or similar material as shown at  $d^4$ .

The top of the box  $c$  is provided with a circular aperture or opening  $e^{10}$ , and secured to the top of said sound box over said aperture or opening is a plate  $e$  having a semi-spherical cap  $e^2$ , in the top of which is a circular opening  $e^3$  and in practice I provide a tube  $f$  with one end of which is connected the ordinary sound reproducer  $f^2$  provided with the usual tracing needle  $f^3$ , and the other end of which is provided with a semi-spherical cap  $f^4$  which fits on the cap  $e^2$  and is adapted to rotate thereon, and in the top of which is a circular opening  $f^5$  which corresponds with but is of slightly less dimensions than the opening  $e^3$  in the cap  $e^2$ .

The tube  $f$  is provided with a head  $f^6$  of



which the semi-spherical cap  $f^4$  forms a part, and secured to the top of the box  $c$  is a bracket arm  $g$  having a horizontal head member  $g^2$ , through which is passed a screw  $g^3$  in vertical line with the head  $f^6$  of the tube  $f$ , and between which and said head is placed a spiral spring  $h$ . The head  $f^6$  of the tube  $f$  is provided with a recess  $f^7$  in which the lower end of the spring  $h$  fits and in the upper end of said spring is placed a plug  $h^2$  provided with a recess, in which the lower end of the screw  $g^3$  fits and by turning the said screw, the tension of the spring  $h$  may be regulated as will be readily understood.

The parts  $e^2$  and  $f^4$  form a ball and socket connection between the tube  $f$  and the top of the box  $c$  and the tube  $f$  which forms an arm that carries the sound reproducer  $f^2$  is free to rotate in the horizontal plane as the machine is operated or the record tablet  $b$  rotated, this rotation of the arm or tube  $f$  being accomplished by the needle  $f^3$  as it moves through the grooves of the record tablet in the usual manner.

The operation will be readily understood from the foregoing description when taken in connection with the accompanying drawing and the following statement thereof.

As the machine is operated in the usual manner, the sound or vibrations produced pass through the tube or arm  $f$  into the box  $c$  or that part thereof above the partition  $e^8$ , and thence through the opening  $e^9$  in said partition into the main part of said box and out through the aperture or opening  $e^3$ , and the valve rod  $d$  being movable longitudinally, the passage of the said sounds or vibrations through the said opening or aperture may be regulated by means of the valve  $d^3$  which forms a damper for this purpose; and the partition  $e^8$  prevents the said sounds or vibrations from passing directly from the tube or arm  $f$  into the box  $c$  and out through the opening or aperture  $e^3$  and the movement of said sounds or vibrations is regulated and controlled by said partition.

The box  $c$  is connected with the body of the instrument by side plates  $i$  as clearly shown, and in practice the said box is supported independent of the body of the instrument except for the connecting side plates  $i$ , and also independent of the support on which the instrument is placed, the only connections or supports for the said box being the side plates  $i$  or any other suitable devices or attachments that may be employed for this purpose, and by means of this construction the vibrations from the main box of the instrument are not transmitted to the sound box and harsh or metallic sounds usually produced by instruments of this class are almost entirely obviated or done away with.

Although I have shown the rod  $d$  as passing through the box of the machine it will be apparent that my invention is not limited to this particular means for operating the valve or damper  $d^3$  and any other suitable means or devices may be provided for this purpose; and other changes in and modifications of the construction of my improved resonance box attachment for instruments of the class specified may be made, within the scope of the appended claims, without departing from the spirit of my invention or sacrificing its advantages.

With my improvement the usual delivery horn is done away with or detached from the machine and the tube  $f$  takes its place, and in the application of my improvement to the machines of the class described, all that is necessary is to detach the ordinary delivery horn and this can be done without in any way interfering with or modifying the construction of the instrument or the box thereof, and if desired my improved attachment may be removed at any time and the ordinary delivery horn employed.

I am aware that efforts have been made to provide instruments of the class specified with resonance box attachments but in all such cases said attachments involve either a change in the form of the machine or the box thereof, or employ the ordinary delivery horn, and in some cases an additional resonance box, employing a delivery horn of the usual form, is provided, but all these efforts differ from mine in the features hereinbefore set out, or in the fact that my attachment, or the use thereof necessitates no change whatever in the form or construction of the machine or the box thereof and may be supported adjacent to or in connection with the machine in any desired manner.

By means of my improvement I do away almost entirely with the harsh and metallic sounds usually produced by phonographs, graphophones and other instruments of this class, and the result is the production of full, round tones or notes, the volume of which may be regulated as desired by means of the damper or valve  $d^3$ .

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

1. A resonance box for use in connection with talking machines and adapted to be supported adjacent thereto, one side of said box forming a sounding board and being provided with an aperture or opening, and a tubular arm rotatably connected with the top of said box and in communication therewith, said arm being provided with the usual sound reproducer and tracing needle, and said aperture or opening being provided with a damper and means for regulating the same, and said box being also



provided in the top portion thereof with a horizontal partition, the opposite end portions of which are provided with openings.

2. A resonance box for use in connection with talking machines and adapted to be supported adjacent thereto, one side of said box forming a sounding board and being provided with an aperture or opening, and a tubular arm rotatably connected with the top of said box and in communication therewith, said arm being provided with the usual sound reproducer and tracing needle, and said aperture or opening being provided with a damper and means for regulating the same, and said box being also provided in the top portion thereof with a horizontal partition, the opposite end portions of which are provided with openings, and the said sounding board being provided above and below the aperture or opening therein with horizontally arranged cleats.

3. The combination with a talking machine of a resonance box, formed independently thereof and supported in front thereof, the front of said resonance box forming a sound board and being provided with an aperture or opening, a damper for controlling said aperture or opening, a tubular arm rotatably connected with the top of said resonance box and provided with the usual sound reproducer and tracing needle, said resonance box being also provided in the top portion thereof with a horizontal partition having apertures or openings.

4. A resonance box for use in connection with a talking machine, means for support-

ing said box in front of said machine, the front of said box forming a sounding board and being provided with an aperture or opening, a damper for said opening (out of contact with said sounding board) and means for regulating same, and a tubular arm rotatably connected with the top of said box and in communication therewith and provided with a sound reproducer and tracing needle.

5. A resonance box for use in connection with talking machines, means for supporting said box in front of said machine, the front of said box forming a sounding board and being provided with an aperture or opening, a damper for said opening and a tubular arm rotatably connected with the top of said box and in communication therewith, the connection of said arm with the top of said box being formed by means of a ball and socket joint, part of which is connected with the top of said box and part with said arm, and a spring tension device supported above said ball and socket joint and adapted to bear on that part thereof that is connected with said arm, said arm being also provided with the usual sound reproducer and tracing needle.

In testimony that I claim the foregoing as my invention I have signed my name in presence of the subscribing witnesses this 4th day of January 1910.

EMIL G. H. STEIN.

Witnesses:

C. E. MULREANY,  
B. M. RYERSON.