J. C. ENGLISH.

SOUND REPRODUCING MACHINE.

APPLICATION FILED AUG. 14, 1909. RENEWED MAY 7, 1915.

1,188,374.

Patented June 20, 1916.

2 SHEETS—SHEET 1.

Fig. 1.

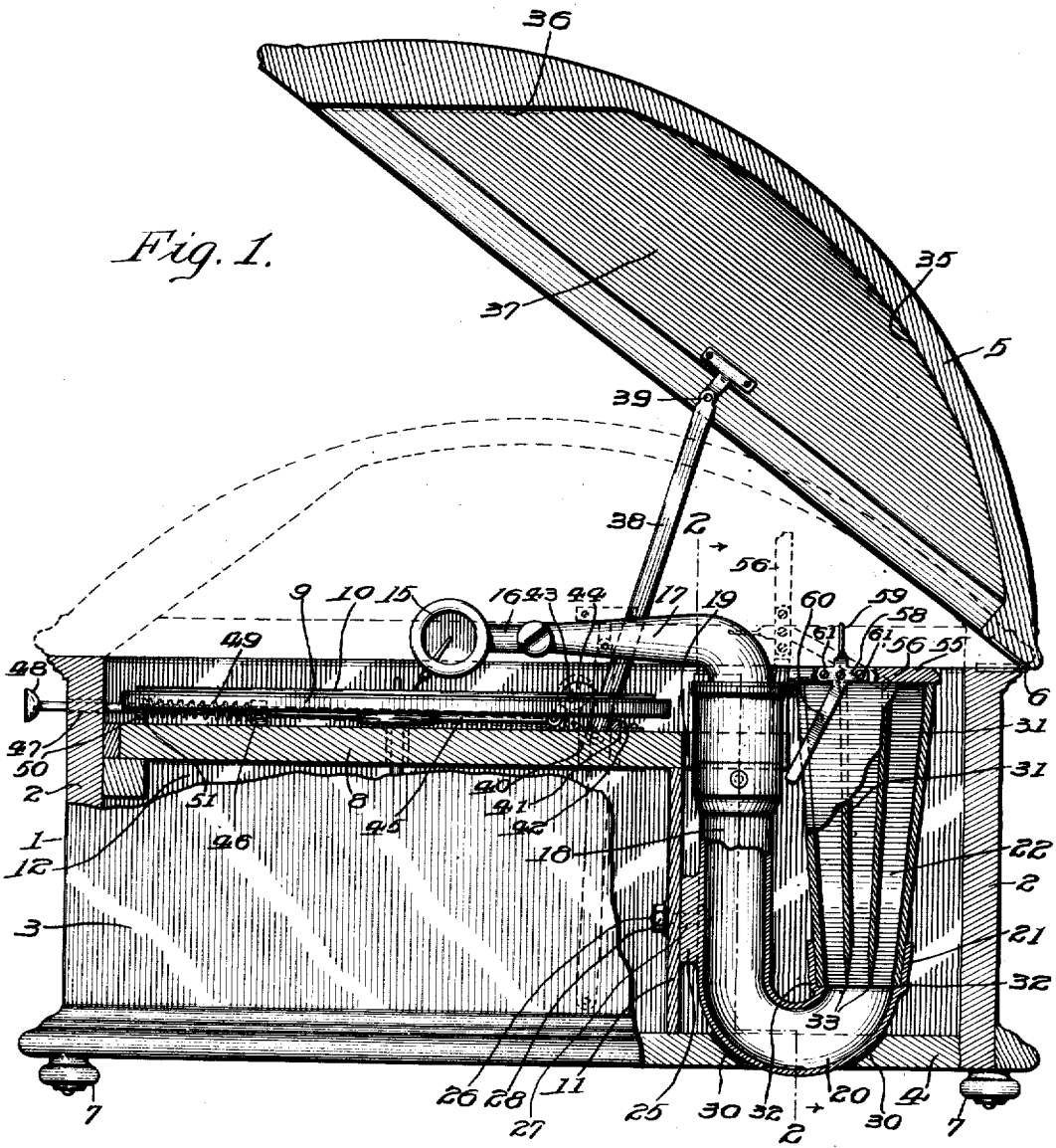

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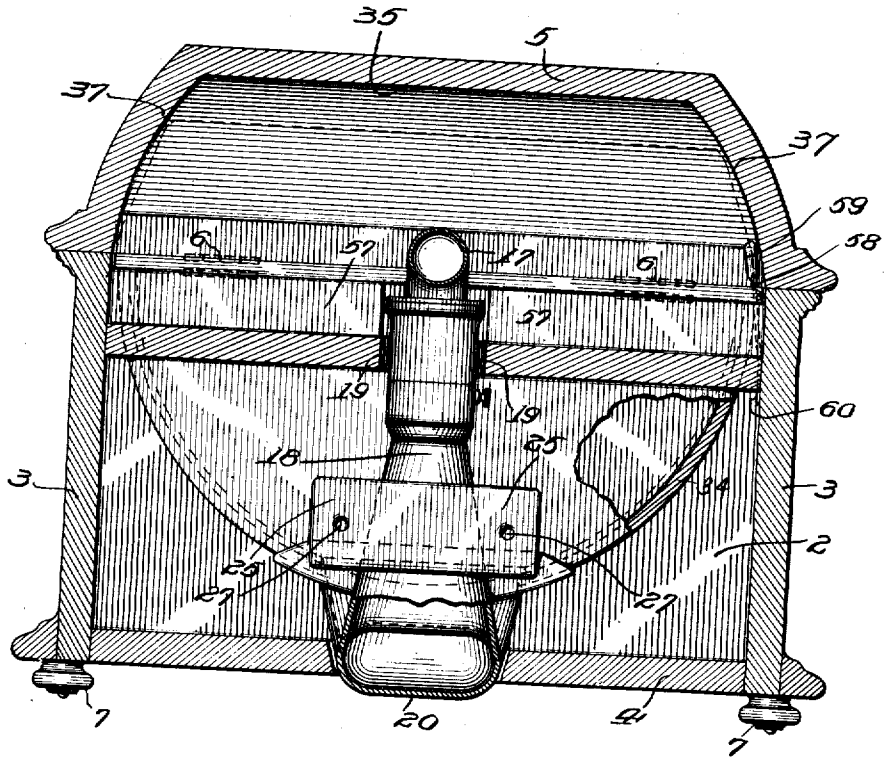
Fig. 2.



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JOHN C. ENGLISH, OF CAMDEN, NEW JERSEY, ASSIGNOR TO VICTOR TALKING MACHINE COMPANY, A CORPORATION OF NEW JERSEY.

SOUND-REPRODUCING MACHINE.

1,188,374. Specification of Letters Patent. Patented June 20, 1916.

Application filed August 14, 1909, Serial No. 512,844. Renewed May 7, 1915. Serial No 26,659.

To all whom it may concern:

Be it known that I, JOHN C. ENGLISH, a citizen of the United States, and a resident of the city of Camden, county of Camden, and State of New Jersey, have invented certain new and useful Improvements in Sound-Reproducing Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

The main objects of this invention are, to provide a compact talking machine having actuating mechanism, and sound reproducing and sound amplifying mechanism inclosed within a casing; to provide a talking machine having sound reproducing mechanism and a sound amplifier inclosed in a casing having an improved adjustable cover arranged to receive the sound waves delivered from the sound amplifier and to deflect the same in any desired direction; to provide a talking machine having an amplifier provided with an upwardly opening delivery end and inclosed in a casing having an adjustable cover arranged to deflect the sound waves delivered by the amplifier and to throw the same forwardly in any desired direction; to provide a talking machine having an amplifier with a delivery end inclosed in a casing provided with an adjustable cover arranged to deflect the sound waves delivered by the amplifier, and having an adjustable damper or closure arranged adjacent the delivery end of the amplifier to vary the quantity of sound waves directed against the deflecting surface of the cover of the casing, and thus modify the intensity of the sound waves delivered by the talking machine; to provide a talking machine inclosed in a casing having a movable cover and improved means for holding the cover in position of adjustment; to provide an improved sound amplifier; to provide sound modifying means for a sound amplifier; and to provide other improvements as will appear hereinafter.

In the drawings, Figure 1 is a fragmentary side elevation, partly in vertical section, of a talking machine constructed in accordance with this invention; and Fig. 2 is a fragmentary transverse vertical section partly in elevation on line 2—2 of Fig. 1 looking in the direction of the arrows.

Referring to the drawings, one embodiment of this invention comprises a casing or cabinet consisting of a rectangular body portion 1 having front and rear walls 2, side walls 3, and a bottom 4, and an adjustable cover 5 which is pivoted to the upper edge of the rear wall 2 of the body of the casing upon hinges 6. The casing is preferably provided upon its under side with suitable supports 7. Within the body portion 1 of the casing and near the top thereof, is an upwardly removable horizontal partition 8, above and supported by which is a turntable 9, which is adapted to carry the usual disk sound record 10. Secured to and depending from the horizontal partition 8 is the usual actuating mechanism for rotating the turntable. Although in the present instance a turntable carrying a disk record is shown it is obvious that any other form of record support carrying a suitable record might be used in applying this invention.

A transverse vertical partition 11 extends between the bottom of the casing and the horizontal partition 8, and between the side walls 3, forming within the casing two compartments or chambers one of which is a closed compartment 12 within which is inclosed the actuating mechanism for rotating the turntable, and which also might be arranged as a storage compartment for records or talking machine accessories and the other of which is a compartment open at the top of the casing adapted to contain sound conveying and amplifying means described more particularly below. This partition 11 may be in the form of a rectangular resonant sounding board as shown, supported at its edges only, for a purpose to be explained hereinafter.

A sound box 15 or sound reproducing device of any well known construction is mounted upon and communicates with a tube 16, pivoted upon a horizontal axis to and communicating with the free end of a tapering tubular sound box arm 17, which extends rearwardly in a substantially horizontal direction, and the rear end of which is turned downwardly within the casing and is mounted in any well known manner to swing upon a fixed vertical axis upon the upper or inner end of a downwardly extending rigid tubular bracket 18 with which it communicates.

The tubular bracket 18 forms an intermediate section of a tapering sound amplifier,

the inner section or inlet end of which is formed by the tapering sound box arm 17. The horizontal partition 8 of the casing extends rearwardly beyond the vertical partition 11 and its rear edge is spaced forwardly from the inner surface of the rear wall 2 of the casing, and is provided centrally with a suitable recess 19 through which the upper or inner portion of the tubular bracket 18 extends, the bracket being preferably out of contact with the partition.

The lower portion of the hollow bracket 18 is curved rearwardly and then upwardly, forming a return bend or elbow 20 and terminates within the casing in an upwardly extending flaring socket 21, adapted to receive the body portion 22 of the amplifier. The hollow bracket 18 may be substantially uniform in diameter, measured in a direction parallel to the sides of the casing, flaring slightly toward the socket 21, but measured in a direction parallel to the rear of the casing, the bracket preferably flares or increases in diameter from its inner or upper end outwardly, as shown in Fig. 2. The hollow bracket is preferably substantially cylindrical at its inner end but it changes gradually to an oblong shape in cross section as it approaches the socket 21, which is preferably rectangular and oblong in cross section, having its long diameter substantially parallel to the rear wall of the casing.

For securing the hollow bracket 18 rigidly in position, the bracket is provided upon its front side intermediate of its ends with oppositely extending flattened projections 25 forming a base plate, having a flat front side which rests against the rear side of the vertical partition 11, and is held in position by bolts 26 which pass through holes 27, provided therefor in the base and in the partition, and are secured in position by nuts 28. Any other suitable means, however, obviously may be used, instead of or in addition to the means described for rigidly securing the bracket 18 to the vertical partition 11.

To economize space, the bottom 5 of the case is provided with an aperture 30 bounded by an inwardly flaring wall, and the elbow 20 of the hollow bracket 18 projects within this aperture, but preferably is out of contact with the flaring wall bounding the aperture, although very close thereto to prevent the escape of sound waves between the elbow and the wall of the aperture.

The body 22 of the amplifier is entirely supported by the socket 21 of the lower end of the bracket 18, extending upwardly from the socket and between the rear edge of the horizontal partition 8 and the rear wall of the casing, and is out of contact with the partition or any part of the casing. The body of the amplifier comprises a series of upwardly extending flat sounding boards 31 substantially semi-circular in shape and having their curved edges inserted within the socket 21. The outer sounding boards bear against circular shoulders 32 formed between the inner surfaces of the transverse sides of the socket and the inner surfaces of the hollow bracket adjacent the socket, and the inner surfaces of the outer sounding boards are flush with the adjacent inner surface of the bracket, and the intermediate boards are sharpened at their lower edges as at 33, to avoid obstructing the passage of sound waves from the bracket into the body of the amplifier.

The curved edges of the sounding boards are connected together by means of oppositely extending curved side pieces 34, each of which extends from within one side of the socket 21 to the upper straight edges of the sounding boards and forms a deflector for the sound waves. The body of the amplifier is preferably constructed so that the sounding boards diverge slightly upwardly, although good results may be obtained when the sounding boards are substantially parallel.

The upper edges of the sounding boards and the curved side pieces are preferably arranged in a plane parallel to but slightly below the plane of the upper edges of the body of the casing. The long diameter of the upper or delivery end of the body of the amplifier is, in this construction substantially parallel with the back of the casing, and the delivery end extends substantially the full width of the interior of the casing and in proximity to the rear wall of the casing.

By this construction the hollow bracket 18 and the body 22 of the amplifier supported thereby are disposed and contained in one of the compartments in the casing formed by the partition or sounding board 11, in such a manner that the discharge end of the amplifier is disposed at or near the open side of said compartment and when the cover 5 of the casing is partly open, the sound waves issuing from the outlet of the amplifier strike against the inner surface of the cover and are deflected forwardly. The inner surface 35 of the top portion of the cover 5 is preferably concave substantially from its rear edge, a greater portion of the distance toward its front edge, the concave curved surface being formed preferably by a straight line traveling in a curved path and maintained always in a horizontal position parallel to the front wall of the casing. The remaining front portion 36 of the inner surface of the cover of the casing is flat, and is preferably arranged at an angle of about 45 degrees with the plane of the bottom edges of the cover, so that this flat surface

is substantially horizontal when the cover is open at an angle of about 45 degrees, as shown in Fig. 1. The sides 37 of the cover may be slightly concave upon their inner surfaces and may diverge slightly downwardly as shown, and serve to confine the sound waves and prevent them from passing off laterally from the casing. It is obvious that the shape of the inner surface of the cover might be modified to suit various purposes and might be formed to throw the sound waves from the machine either in parallel lines or in diverging or converging lines as preferred.

For holding the cover 5 in any desired position of adjustment, a downwardly extending link 38 is pivoted at its upper end 39 to the inner surface of one side of the cover 5, and the lower end of the link extends slidably through a slot 40 provided therefor in the horizontal partition 8 of the casing. Secured to the upper side of the horizontal partition 8, and surrounding the slot 40 is a slotted plate 41 provided with an upwardly projecting lug 42 adjacent to one side of the slot therein. Above the slot 40, and projecting inwardly from the adjacent side of the body of the casing is fixed a stud 43 upon which is pivoted a cam lever 44, to which is pivoted one end of a substantially horizontal actuating rod 45, which is slidably arranged above the horizontal partition 8 in a support 46 secured to the partition. The outer end of this rod 45 projects through an aperture 47 provided therefor in the front wall of the casing and the end of the rod is provided outside of the casing with a push button 48 whereby the rod may be operated. The rod is normally pressed outwardly by means of a spiral spring 49 surrounding the rod between the fixed support 46 and a collar 50 surrounding the rod and longitudinally adjustable thereon by means of a set screw 51. The cam lever 44 normally binds the link 38 against the lug 42, and prevents the link from moving downwardly, but does not offer any resistance to the upward movement of the link. When the actuating rod is pressed inwardly the cam lever is moved away from the link to release it. With this construction in mind, it is obvious that to open the casing it is simply necessary to raise the cover 5 and the same will be held automatically in any position to which it is moved, and that to close the casing it is simply necessary to push the button 48, whereupon the rod 45 will move the cam lever 44 out of engagement with the link 38, and the cover will then drop into a closed position. The position assumed by the cam lever 44 is shown in dotted lines, and the position of the cover 5 when closed and the link 38 is also shown in dotted lines in Fig. 1.

For the purpose of modifying the intensity of the sound waves issuing from the machine, a damper or muffler 55 is provided, comprising a flat imperforate board or plate 56 adapted to cover the delivery end of the amplifier. This plate 56 is hinged to the upper edges of two vertical plates 57, which are secured upon the upper side of the rear end of the horizontal partition 8 flush with the rear edge thereof, and upon opposite sides of the hollow bracket 18 of the amplifier. To hold the damper 56 in any desired position, a base plate 58 having a thumb piece 59 projecting upwardly therefrom, and a spring arm 60 projecting downwardly therefrom, is secured by means of screws 61 to one end of the damper. The spring arm is arranged to bear against the inner surface of the adjacent side wall of the body of the casing with sufficient force to hold the damper in any desired position, and the upwardly extending thumb piece forms a convenient means of moving the damper.

In the construction above described, the shape and arrangement of the amplifying means together with the unique construction of the casing makes it possible to provide a talking machine having an amplifier of relatively large proportions, inclosed in a relatively shallow and compact casing, and moreover the improved form of the amplifier, particularly the form of the return bend or elbow of the intermediate or fixed portion of the amplifier, imparts an improved quality to the reproduction. The amplifier being supported upon a resonant sounding board 11, forming one side of a closed compartment or air chamber 12, also adds to the effect of the reproduction.

Although in the construction illustrated a tapering swinging sound box arm is shown, it is obvious that a cylindrical sound box arm might be used instead of the tapering arm and in this case, the sound box arm might not be considered as a portion of the amplifier, and the amplifier would then consist of the tapering bracket 18 and the resonant body portion 22 carried thereby. It is also obvious that various other changes might be made in the construction illustrated, and that the improvements described herein might be used in various relations other than those shown, without departing from the spirit of this invention or the scope of the appended claims.

Having thus described this invention, what I claim and desire to protect by Letters Patent of the United States: is:—

1. In a talking machine, the combination with a casing, of an amplifier having a delivery end within said casing, a damper adjustably mounted adjacent said delivery end, and resilient means between said damper and said casing to hold said damper in different adjusted positions.

2. In a talking machine, the combination with a casing, of an amplifier having a delivery end within said casing, a sound modifier mounted to swing on said casing adjacent said delivery end, and resilient means between said modifier and said casing to hold said modifier in different adjusted positions.

3. In a talking machine, the combination with a casing, of an amplifier having a hollow non-vibratory bracket extending downwardly within said casing and then upwardly and terminating in an upwardly opening socket, and upwardly extending sounding boards secured in said socket.

4. In a talking machine, the combination with a casing, of an amplifier having a hollow non-vibratory bracket extending downwardly within said casing and then upwardly and terminating in an upwardly opening socket, and upwardly extending sounding boards secured in said socket, the upper edges of said boards extending transversely of said casing substantially the full width of the interior of said casing.

5. In a talking machine, the combination with a casing, sound reproducing mechanism, a reproducer arm, a tubular support for said arm, communicating with said arm and extending downwardly in said casing and then being provided with a return bend, and a sound amplifying member communicating therewith and extending upwardly and discharging upwardly near one side of said casing, said parts above mentioned being all carried by and mounted within said casing, of a cover, hinged to that edge of said casing adjacent the discharge end of said member, and coöperating therewith to modify and amplify the sound emitted therefrom.

6. In a talking machine, the combination with a casing having a vertical transverse partition therein, of actuating mechanism located in front of said partition, and sound amplifying means having an upwardly opening delivery end located in the rear of said partition, said sound amplifying means being entirely supported by said partition.

7. In a talking machine, the combination with a casing, sound reproducing mechanism, a reproducer arm, a non-vibratory tubular support for said arm, generally increasing in cross-sectional area, communicating with said reproducer arm and extending downwardly in said casing, and then being provided with a return bend, and a vibratory sound amplifying member communicating therewith and extending upwardly and discharging upwardly near one side of said casing, all of said parts above mentioned being carried by and mounted within said casing, of a cover, hinged to that edge of said casing adjacent the discharge end of said member, and coöperating therewith to modify the sound emitted therefrom.

8. In a talking machine, the combination with a casing, of a sounding-board secured therein, hollow sound conveying means entirely supported by said sounding-board, and sound reproducing means communicating with said sound conveying means.

9. In a talking machine, the combination with a sounding-board, of hollow sound conveying means secured thereto and entirely supported thereby, sound reproducing means communicating with said sound conveying means, and sound amplifying means entirely supported by and communicating with said sound conveying means, said sound amplifying means including a sounding-board.

10. In a talking machine, the combination with a casing, sound reproducing mechanism, a reproducer arm, a tubular support for said arm, communicating with said arm and extending downwardly in said casing and then being provided with a return bend, and a sound conveying member communicating with said support and extending upwardly and discharging upwardly near one side of said casing, all of said parts above mentioned being carried by said casing, of a hollow cover, closed at its top, sides and ends and open at the bottom thereof, hinged to that edge of said casing adjacent the discharge end of said member, for deflecting and amplifying the sound waves discharged against it from said member when said cover is lifted.

11. In a talking machine, the combination with a sounding board, of a sound amplifier rigidly secured thereto and entirely supported thereby, the major portion of said amplifier being out of contact with said sounding board.

12. In a talking machine, the combination with a casing and a record support, of a non-vibratory tubular bracket extending into said casing and being provided with a return bend, a hollow vibratory sound amplifying member carried by one end of said bracket and discharging sound upwardly, sound reproducing means carried by the other end of said bracket, said parts above mentioned being substantially all mounted within said casing, and a hinged cover secured to the top of said casing, which cover when raised at an angle to said casing serves to deflect the sound, delivered by said amplifying member, outwardly from said casing.

13. In a talking machine, the combination of a casing provided with a compartment having an outlet opening, sound reproducing means carried by the casing and outside of said compartment, a hollow cover movably connected to the casing and adapted in a closed position to inclose the reproducing

means and to close over said outlet opening and in open position to provide a continuation of sound amplifying means, and a tapering sound amplifier inclosed within said compartment and communicating with said reproducing means and discharging sound toward said cover.

14. In a talking machine, the combination of a casing, sound reproducing means mounted on the casing, a hollow cover movably connected to the casing and adapted in closed position to inclose said reproducing means and in open position to constitute a deflector for the sound, and a conduit having a return bend, said conduit communicating with said reproducing means and conveying sound to said cover.

15. In a talking machine the combination with a cabinet having a body portion and a cover, of talking machine mechanism contained within the said body portion of the cabinet and including a sound reproducing mechanism and a tapering amplifier opening upwardly within said body portion and at one side thereof, the cover being hinged to the body portion at said side thereof and adapted to inclose said reproducing mechanism and being adjustable at different angles with respect thereto to deflect the sound from the amplifier across the top of the body portion of the cabinet.

16. In a talking machine, the combination with a sounding board, of sound reproducing means, a sound conduit communicating with said reproducing means and including a tapering amplifier, said conduit providing a continuous passage from said reproducing means to the mouth of the amplifier and being secured at an intermediate point in its length to said sounding board and being wholly supported thereby.

17. In a talking machine, the combination with a cabinet having a compartment, of a continuous hollow sound conducting and amplifying member comprising a swinging arm outside of said compartment, a bracket secured to said cabinet within said compartment and upon which said arm is mounted and supported and a hollow, resonant, vibratory body supported on said bracket and extending in said compartment, said sound conducting and amplifying member being attached to said cabinet at substantially a single point only and that point being within said compartment.

18. In a talking machine, the combination with a cabinet, of a continuous hollow sound conducting and amplifying member comprising a swinging arm, a bracket within said cabinet and upon which said arm is mounted and supported and a hollow, resonant, vibratory body supported on said bracket and extending in said cabinet, said sound conducting and amplifying member being attached to said cabinet at a point within said cabinet and substantially midway between its extreme ends.

In witness whereof I have hereunto set my hand this 12th day of August A. D., 1909.

JOHN C. ENGLISH.

Witnesses:
EDWARD K. MACEWAN,
FRANK B. MIDDLETON, Jr.

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17. In a talking machine, the combination with a cabinet having a compartment, of a continuous hollow sound conducting and amplifying member comprising a swinging arm outside of said compartment, a bracket secured to said cabinet within said compartment and upon which said arm is mounted and supported and a hollow, resonant, vibratory body supported on said bracket and extending in said compartment, said sound conducting and amplifying member being attached to said cabinet at substantially a single point only and that point being within said compartment.

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Corrections in Letters Patent No. 1,188,374.

It is hereby certified that in Letters Patent No. 1,188,374, granted June 20, 1916, upon the application of John C. English, of Camden, New Jersey, for an improvement in "Sound-Reproducing Machines," errors appear requiring correction as follows: Sheet 1, in heading, name of patentee, for "J. C. Finglish" read *J. C. English;* in the printed specification, page 4, line 32, claim 5, for the word "amplifying" read *conveying;* same page and claim, line 40, strike out the words "and amplify"; same page, line 63, claim 7, for the word "cover" read *sound-deflecting member;* same page and claim, line 65, before the word "member" insert the word *amplifying;* same page, line 81, claim 9, commencing with the word "said" strike out all to the end of the claim; page 5, line 5, claim 13, strike out the word "and"; and that the said Letters Patent should be read with these corrections therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 22d day of August, A. D., 1916.

[SEAL.]

F. W. H. CLAY,
Acting Commissioner of Patents.

Cl. 274—2.

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