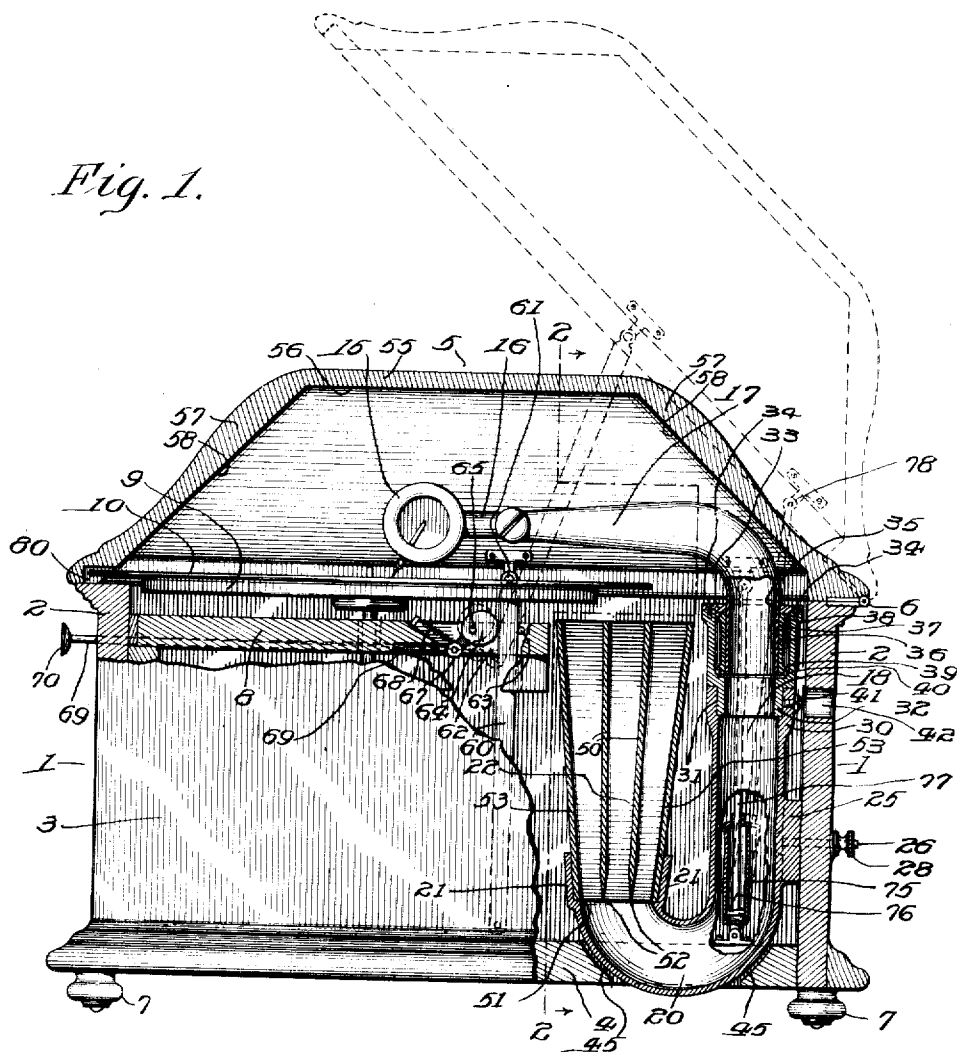


J. C. ENGLISH.
SOUND REPRODUCING MACHINE.
APPLICATION FILED AUG. 14, 1909. RENEWED NOV. 7, 1914.

1,187,892.

Patented June 20, 1916.
2 SHEETS—SHEET 1.

Fig. 1.



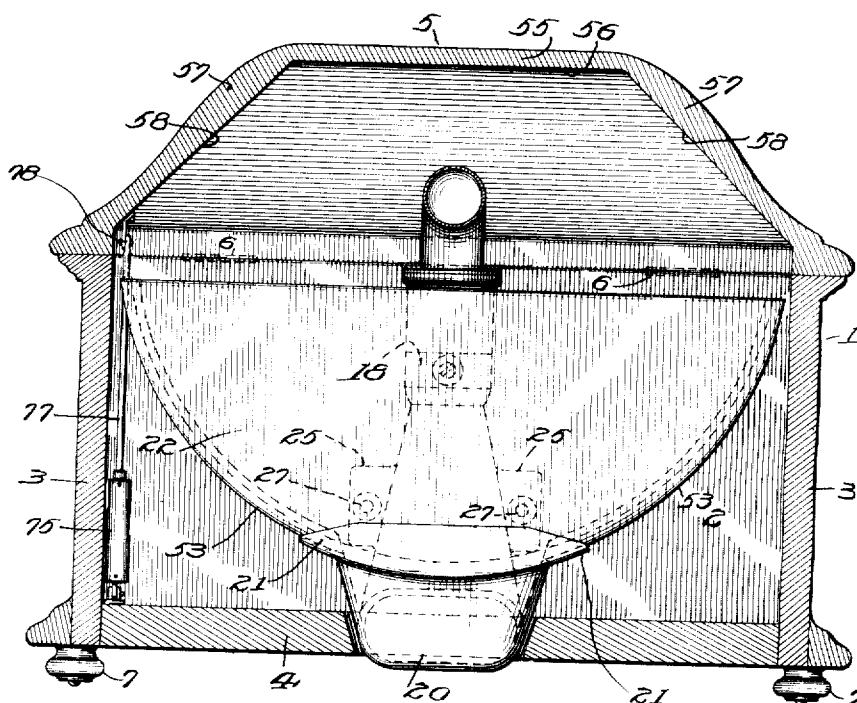
WITNESSES
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Fig. 2.



WITNESSES
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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.

1,187,892.

Specification of Letters Patent.

Patented June 20, 1916.

Application filed August 14, 1908, Serial No. 512,845. Renewed November 7, 1914. Serial No. 870,939.

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 a record support mounted within a casing, sound reproducing means and sound amplifying means arranged to cooperate with the record support, and supported within the casing from the rear wall thereof, the sound amplifying means having a delivery end opening upwardly beneath the plane of the record support; to provide a talking machine having a casing provided with an adjustable cover and improved means for holding the cover in adjusted position; to provide a talking machine having a casing provided with a movable cover, and improved means for preventing the sudden closing of the cover; to provide a talking machine having a casing recessed internally to permit of the use of a relatively large record; 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 a transverse vertical section 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 bottom wall 4, and an adjustable cover 5, which is pivoted at its

rear edge to the upper rear edge of the rear end wall 2 of the body of the casing upon hinges 6. The body of the casing is preferably provided on its under side with suitable supports 7.

Within the body portion of the casing and near the top thereof is a horizontal removable partition 8, which forms a support for a turntable 9, which is adapted to carry the usual sound record 10. Beneath the horizontal partition 8 and carried thereby within the casing, is arranged suitable actuating mechanism for rotating the turntable. Although in the present instance, a turntable carrying a disk record is shown within the casing, it is obvious that any other form of record support carrying a suitable record might be used in applying this invention.

A sound box 15 or sound reproducing device of any well known construction, is mounted upon and communicates with a U-shaped tube 16, which is pivoted upon a horizontal axis 16, and communicates 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 and is mounted in any suitable manner to swing upon a fixed vertical axis upon the upper 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 lower portion of the hollow bracket 18 is curved forwardly and then upwardly forming a return bend or elbow and terminates 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 rear side, intermediate of its ends, with oppositely extending flattened projections 25, forming a base plate having a flat rear side which rests against the inner surface of the rear wall 2 of the casing, and is held in position by bolts 26 which pass through suitable apertures 27 provided therefor in the opposite sides of the base and in the rear wall of the casing, the bolts having heads integral therewith upon their inner ends, and nuts 28, threaded upon their outer ends outside of and in the rear of the casing. The nuts 28 are preferably provided with knurled heads for convenience of manipulation. 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 rear wall 2 of the casing. In the construction shown the base plate formed by the projections 25 forms the sole support for the hollow bracket 18, which in turn forms the sole support for the swinging sound box arm at one end of the bracket, and the body portion 22 of the amplifier at the other end of the bracket in the socket 21, these parts being preferably out of contact with any part of the casing except through the base plate.

For rotatably connecting the downwardly extending end of the tubular sound box arm 17 to the upper end of the bracket 18, the upper end of the bracket is enlarged as at 30, and is provided with an internal cylindrical recess 31 opening upwardly. Within the cylindrical recess 31 fits the reduced lower end of a cylindrical head 32, to the upper end of which is secured a flat circular cover 33 by means of screws 34. The cover 33 is provided with a central circular aperture 35 within which rotatably fits the lower end of the sound box arm, the end of the sound box arm projecting downwardly within the head and into proximity to the lower reduced end thereof. The portion of the sound box arm within the head is surrounded by a sleeve 36, fixed thereon and provided adjacent each end thereof with an outwardly projecting annular flange 37, the upper flange forming with the internal surfaces of the cover and side wall of the head a race way for antifriction balls 38, and the lower flange forming with an internal annular shoulder 39 provided within the head, a race way for antifriction balls 40, whereby the sound box arm is rotatably supported. For holding the head 32 in position in the upper end of the bracket 18, a set screw 41 is threaded into the rear side of the upper enlarged end of the bracket and engages against the reduced portion of the head

within the bracket, the outer end of the screw being preferably provided with a slotted head adapted to be engaged by a screw-driver, and the rear wall of the casing being provided with an aperture 42 for the convenient insertion of the screw-driver for the adjustment of the screw from the outside of the casing.

To economize space, the bottom 4 of the casing is provided with an aperture 45 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 thereof, 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 extends upwardly from the socket 21 at the lower end of the hollow bracket 18, and is entirely supported thereby, and comprises a series of upwardly extending flat sounding boards 50, substantially semi-circular in shape and having their curved edges inserted within the socket 21, and their straight edges arranged in a substantially horizontal plane, spaced slightly below the plane of the turntable and substantially in the plane of the upper surface of the horizontal partition 8. The rear edge of the horizontal partition 8 is spaced slightly in front of the upper end of the body of the amplifier to permit of the free vibration thereof.

The lower edges of the outer sounding boards of the body of the amplifier bear against circular internal shoulders 51 formed against the inner surfaces of the transverse sides of the socket. 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 surfaces of the bracket, and the intermediate sounding boards are sharpened at their lower edges as at 52, to avoid obstructing the passage of sound waves through the amplifier. The curved edges of the sounding boards are connected together by means of oppositely extending curved side pieces 53, 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 passing through the amplifier. The body of the amplifier is preferably constructed so that the sounding boards diverge upwardly, although good results may be obtained when the sounding boards are substantially parallel.

The upper or delivery end of the body 22 of the amplifier is, in the construction shown, oblong and substantially rectangular in shape and has its long diameter substantially parallel with the back of the casing and extends substantially the full width of the interior of the casing, the body of the amplifier, however, being preferably out of

contact with any part of the casing, and unrestrained except at its lower end, where it engages in the socket.

The cover 5 of the casing comprises a top wall 55, having a flat inner surface 56, which is substantially horizontal when the cover is closed, and four downwardly flaring side walls 57 having flat inner surfaces 58, which are each arranged preferably at an angle of substantially 45 degrees with the inner surface of the top of the cover so that when the cover is opened to an angle of about 45 degrees with the top plane of the body of the casing, the inner surface of the front side 15 of the cover will be substantially horizontal and the inner surface of the rear wall of the cover will be substantially vertical. The cover is thus constructed so that its inner surface may act effectively as a reflector to deflect forwardly the sound waves issuing 20 upwardly from the delivery end of the amplifier and the particular shape shown for the inner surface of the cover is obviously only one of several shapes which are desirable for this purpose.

For holding the cover 5 in any desired position of angularity with respect to the body of the casing, a downwardly extending link 60 is pivoted at its upper end to the inner surface of one side of the cover as at 61, and the lower end of the link extends slidably through a suitable slot 62 provided therefor in one side of the horizontal partition 8 and bears slidably against the pin or lug 63, 30 which projects from the horizontal partition and across the rear of the slot. A cam lever 44 is pivoted as at 65 intermediate its ends in a slot provided therefor in the horizontal partition 8 and in front of the link 60. The rear end of the lever normally engages slidably against the forward edge of the link and prevents the link from moving downwardly but does not offer any resistance to the upward movement of the link, and the 45 other end 67 of the lever normally projects downwardly and forwardly in the slot, the lever being normally held in engagement with the link by means of a spiral spring 68 or other suitable yielding connection between the lower end 67 of the lever and one side of the casing or other fixed support. For moving the lower end of the cam lever inwardly to bring the other end of the cam lever out of engagement with the link 60, a 55 push rod 69 is pivoted at one end to the lower end of the lever and extends forwardly therefrom in a substantially horizontal direction in a recess provided therefor upon the under side of the partition 8, and through the front wall of the casing, the 60 outer end of the push rod projecting forwardly from the front side of the casing and being provided with a push button 70 for the convenient operation of the rod.

With this construction in mind, it is ob-

vious 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 70, whereupon the rod 69 will move the cam lever 64 out of engagement with the link 60, and the lever will then be free to fall into a closed position. The position of the cover 5 when open and the corresponding position 75 of the cam lever 64 are shown in dotted lines in Fig. 1.

For preventing the cover from closing suddenly upon the body of the casing when released by the movement of the push button 70, a vertically arranged dash pot 75 of any suitable construction is located within the rear portion of the casing adjacent the bottom thereof, and is pivoted at its lower end to the upper surface of the bottom of the casing or other fixed support. This dash 85 pot 75 carries the usual piston 76 mounted upon the end of a piston rod 77, and the upper end of the rod is pivotally connected through a bracket 78 to the rear portion of the inner surface of one side of the cover of the casing. When the cover is released from the elevated position the dash pot acts in a well known manner to permit the cover to fall gently into a closed position upon the 95 body of the casing.

To adapt the machine to use a relatively large record, the turntable 9 may be arranged so that its upper surface is slightly above the upper surface of the body of the casing, and the turntable may be of such a diameter and so placed that the front portion of its peripheral edge is in close proximity to the inner surface of the front side of the casing, and so that the rear portion of its peripheral edge overhangs the front portion of the delivery end of the amplifier. To permit of the use of a record larger in diameter than the turntable, the lower edge of the front side of the cover is provided with 110 an internal recess 80, adapted to receive the projecting edge of a record support when placed upon the turntable, the walls of the recess being out of contact with the record to permit of the free rotation of the record. 115

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. 125

Although in the construction illustrated a tapering swinging sound box arm is shown, it is obvious that a cylindrical 130

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 tubular 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.

15 Having thus described my 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 a record support in said casing, sound reproducing means mounted to cooperate with said record support and sound amplifying means communicating with said sound reproducing means and having a delivery end opening upwardly below said record support.

2. In a talking machine, the combination with a casing, sound reproducing means therein, a tubular sound conveyer communicating with said reproducing means and having a portion extending downwardly within said casing, the lower end of said sound conveyer being curved inwardly and then upwardly to form a return bend, and sound amplifying means communicating with said tubular conveyer and extending upwardly from the inner end of said return bend and discharging sound emitted therefrom upwardly and between said downwardly extending portion and said reproducing means, of a cover hinged to that side of said casing adjacent the discharge end of said amplifier to modify the sound waves discharged against it by said amplifier and direct said sound waves out of said machine.

3. In a talking machine, the combination with a casing, of a substantially horizontal disk record support mounted therein in the front portion thereof, sound reproducing means arranged above said support, and sound amplifying means within said casing and communicating with said sound reproducing means and secured to the rear wall of said casing, said sound amplifying means having a return bend or elbow having a portion extending downwardly from said reproducing means and then forwardly and terminating in an upwardly opening body arranged between said downwardly extending portion and said support.

4. In a talking machine, the combination with a casing, of a substantially horizontal disk record support arranged to rotate on a substantially vertical axis in the front portion of said casing, a tubular bracket

extending downwardly within the rear portion of said casing and fixed to the rear wall thereof, a sound box arm mounted to swing in a substantially horizontal plane upon the upper end of said bracket, a sound box carried by said sound box arm over said record support, and sound amplifying means communicating with said bracket and having an upwardly opening delivery end located in front of said bracket and between said bracket and the axis of rotation of said record support.

5. In a talking machine, the combination with sound reproducing means, a casing, and a rotary record support therein, of a non-vibratory tubular bracket communicating with said sound reproducing means and having a portion extending downwardly within said casing, the lower end of said bracket extending toward the axis of rotation of said record support and then upwardly forming a return bend and terminating in an upwardly opening socket, and vibratory sound amplifying means secured in said socket and extending upwardly therefrom.

6. In a talking machine, the combination with a casing, of a movable tone arm, of sound reproducing means carried by said tone arm, sound amplifying means within said casing and communicating with said tone arm and having a hollow delivery end opening toward said tone arm but spaced therefrom, and a rotary disk record support extending into the space between said delivery end and said tone arm.

7. In a talking machine, the combination of a casing, a rotary record support, sound reproducing means arranged to cooperate with said record support, and hollow sound amplifying means communicating with said reproducing means, a portion of said sound amplifying means being arranged to conduct sound downwardly from said sound reproducing means and a portion of said sound amplifying means being arranged to conduct and discharge sound upwardly from said first mentioned portion between said first mentioned portion and the axis of rotation of said record support, of a cover hinged to that edge of said casing adjacent the said downwardly extending portion of said sound amplifying means and cooperating with the discharge end of said upwardly extending portion to modify the sound emitted therefrom.

8. In a talking machine, the combination of a substantially horizontal disk record support, of sound reproducing means arranged above said support, and sound amplifying means communicating with said sound reproducing means, said sound amplifying means comprising a hollow non-vibratory member having a return bend or elbow having a portion extending down-

wardly from said reproducing means and then forwardly and a vibratory amplifying body terminating in an upwardly opening end and arranged between said downwardly
5 extending portion and said support.

9. In a talking machine, the combination with a substantially horizontal disk record support arranged to rotate upon a substantially vertical axis, of a tubular bracket
10 with a portion extending downwardly, and sound amplifying means having an upwardly opening delivery and communicating with the lower end of said downwardly extending portion and located between
15 said bracket and the axis of rotation of said record support.

10. In a talking machine, the combination with a casing, of a movable tone arm

inclosed thereby, sound reproducing means carried by said tone arm, hollow sound conveying means, sound amplifying means
20 communicating with said tone arm through said sound conveying means and having a hollow fixed delivery end inclosed by said casing and opening toward said tone
25 arm, but spaced therefrom, and a rotary disk record support extending into the space between said delivery end and said tone arm.

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

JOHN C. ENGLISH.

Witnesses:

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

wardly from said reproducing means and then forwardly and a vibratory amplifying body terminating in an upwardly opening end and arranged between said downwardly
5 extending portion and said support.

9. In a talking machine, the combination with a substantially horizontal disk record support arranged to rotate upon a substantially vertical axis, of a tubular bracket
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15 said bracket and the axis of rotation of said record support.

10. In a talking machine, the combination with a casing, of a movable tone arm

inclosed thereby, sound reproducing means carried by said tone arm, hollow sound conveying means, sound amplifying means communicating with said tone arm through said sound conveying means and having a hollow fixed delivery end inclosed by said casing and opening toward said tone
20 arm, but spaced therefrom, and a rotary disk record support extending into the space between said delivery end and said tone arm.

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

JOHN C. ENGLISH.

Witnesses:

EDWARD K. MAC EWAN,
FRANK B. MIDDLETON, JR.

Correction in Letter Patent No. 1,187,892.

It is hereby certified that in Letters Patent No. 1,187,892, granted June 20, 1916, upon the application of John C. English, of Camden, New Jersey, for an improvement in "Sound-Reproducing Machines," an error appears in the printed specification requiring correction as follows: Page 5, line 12, claim 9, for the word "and" read *end*; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 1st day of August, A. D., 1916.

[SEAL.]

F. W. H. CLAY,

Acting Commissioner of Patents.

Cl. 274-2.

It is hereby certified that in Letters Patent No. 1,187,892, granted June 20, 1916, upon the application of John C. English, of Camden, New Jersey, for an improvement in "Sound-Reproducing Machines," an error appears in the printed specification requiring correction as follows: Page 5, line 12, claim 9, for the word "and" read *end*; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

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