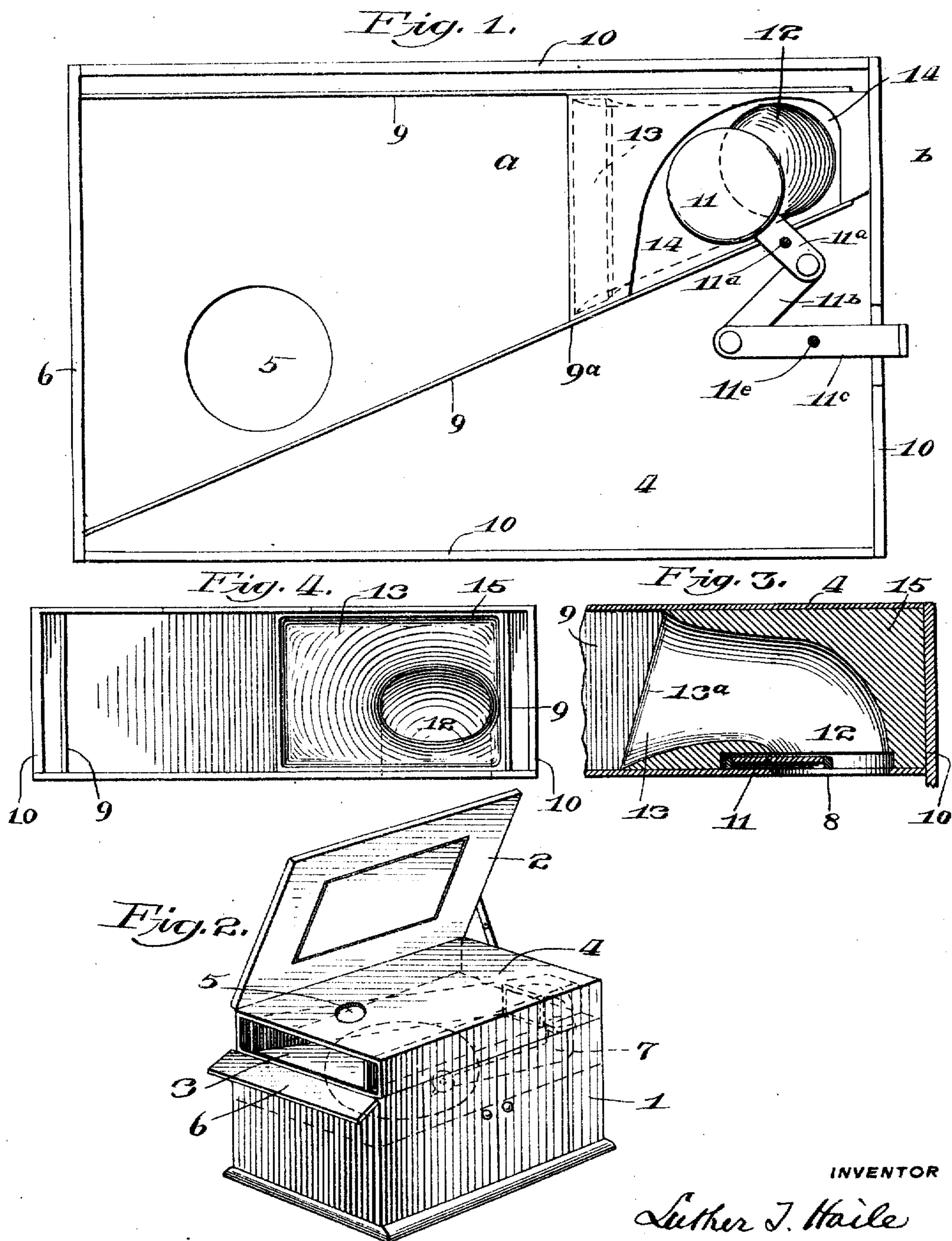


L. T. HAILE.
SOUND REPRODUCING MACHINE.
APPLICATION FILED JAN. 29, 1909.

924,456.

Patented June 8, 1909.



WITNESSES
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LUTHER T. HAILE, OF PHILADELPHIA, PENNSYLVANIA.

SOUND-REPRODUCING MACHINE.

No. 924,456.

Specification of Letters Patent.

Patented June 8, 1909.

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To all whom it may concern:

Be it known that I, LUTHER T. HAILE, a citizen of the United States, and resident of Philadelphia, State of Pennsylvania, have
5 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 a part of
10 this specification.

My invention has for its object the provision of means, applicable to sound-reproducing machines, for governing and directing the course of sound-waves from the tone-arm to the sound-discharge chamber, as well
15 as to provide a covered seat for a tone-modifying valve between said elements, and I will explain its construction and mode of operation as applied specifically to the sound-reproducing machine described in and
20 patented to me by U. S. Letters Patent No. 873,937 dated December 17, 1907, in combination with the resonance-chamber of which, it has its greatest utility. In said machine
25 the sound waves produced by the vibrating diaphragm of the sound-box carried by the movable tone-arm are delivered into a resonance-chamber having a sounding-board wall or walls which are thereby sympathetically
30 vibrated. Diverging partition walls are mounted in such resonance-chamber, leading from the sound-inlet aperture therein and toward the sound-discharge openings, and such inlet aperture is governed by a
35 movable valve. To prevent an abrupt amplification of such sound-waves as they pass the valve into the large resonance-chamber, to direct their course, to cause them to impinge against the vibratable partition walls
40 of such chamber and against the sounding-board wall thereof, I have found from practical tests that my present invention effects the result stated and enlarges the vibratory effect, besides enabling the valve to operate
45 more perfectly as a tone-modifying agent.

To these ends my present invention hereinafter described and claimed consists of the novel member, which I shall call a valve-block and sound-wave conductor, interposed
50 between the tone-arm and the sound-discharge element of a talking machine, and having interior ports and passage adapted to provide a covered or inclosed seat for the upper face of a tone-modifying valve, and
55 to receive in its interior passageway above

the valve-seat the sound-waves delivered to it past such valve and properly direct their course as aforesaid.

In the accompanying drawings illustrating my invention, Figure 1 is a bottom view
60 of the new element, shown in place on the resonance-chamber of my former machine, the base wall thereof being removed; the dotted line indicating the shape of the interior passageway above the valve-seat. Fig.
65 2 is a perspective, in dotted lines, of the same elements in top view, and indicating their relation to the tone-arm and connected parts. Fig. 3 is a section on the line *a-b* of Fig. 1, and Fig. 4 is an end view of the
70 resonance-chamber, its partition walls, and the valve block, shown in reversed position in Fig. 1.

Referring now to said drawings, 1 indicates a containing cabinet, with hinged lid 2.
75 the cabinet containing at top, below the lid, a resonance-chamber 3, of which the top wall 4 is a sounding board, having the usual sound-aperture 5 therein, and preferably supplied with a hinged closure piece 6. In
80 the body of the cabinet 1 is contained talking machine apparatus, of any usual kind, the drawing indicating, in dotted lines, a disk form of such machine, having a tone-arm 7, the discharge end of which is operatively
85 connected by a suitable swivel bearing, with the inlet aperture 8 in the bottom or base-wall of the resonance-chamber 3. Vertically-disposed partition walls 9, which diverge outwardly, are mounted within the
90 resonance-chamber, proceeding from the region of and surrounding the inlet aperture therein and extending in the opposite direction. All these parts are shown and described in my former patent and need not be
95 further described herein.

The new element added thereto, as shown in end view in Fig. 4 and in vertical section, taken longitudinally, in Fig. 3, both views
100 showing it in place on the resonance-chamber of the machine, is a member 15, shown as a block of wood, that material being preferred because it is more suitably vibratable; and this member is recessed at 14 (as seen in
105 Fig. 1) to form an inclosed chamber for the movable valve 11 which is freely movable therein, and preferably without contact with the walls of said recess. Proceeding thence from the top of this recess 14, the block 15
110 is hollowed out to form a curved passageway

12, 13, for sound waves, said passageway beginning at the top wall of said recess 14, in circular form as at 12 (Figs. 3 and 4) thence curving and at same time gradually enlarging in cross-sectional area, passing from circular to rectangular in cross section (see 13 Fig. 4) at its outlet, and terminating thereat in a peripheral edge which is preferably inclined from the vertical, as indicated at 13^a in Fig. 3. In assembling the elements, said new member 15 is placed, relatively to the basal wall 11 of the resonance-chamber 3, to bring the recessed valve-inclosing chamber 14 over the aperture 8 in said basal wall, and also to bring the inlet end 12 of the passageway on the member 15 in vertical alinement with said aperture 8 in the basal wall of the resonance-chamber. The valve 11 is interposed between the two by being placed in said recess 14 and mounted to be actuated therein by means of a jointed handle 11^a 11^b and 11^c pivoted at 11^a and 11^c to the base wall 11, the part 11^b extending outside the vertical wall 10 of the resonance-chamber, as more particularly shown and described in another U. S. patent granted to me No. 888,084 dated May 19, 1908. But this character of valve and means to actuate it may be varied in the construction and operation of the particular improvement described and claimed herein, for example as in my other U. S. Patent No. 873,937 before referred to. So mounting the new member 15 in the resonance-chamber, it is to be noted that it tapers externally in plan view, hence alining with the pair of diverging partition walls 9, 9, in the resonance-chamber, and inclosed between the rear ends of the same, as shown in Fig. 1, to which its side walls are preferably cemented, though it is not essential in such arrangement and combination with the new member 15 to extend the partition walls 9, 9, farther back than to form a junction with the valve block at about the point marked 9^a, in said Fig. 1, to form a junction between them.

In operation my improvement produces several advantageous results, in the combination described, notably, it prevents the abrupt amplification of sound-waves entering the resonance-chamber through the aperture in its basal wall, it provides an inclosed valve-seat for the valve, it causes a vibration of the valve-block itself and a transmission thereof by contact with and to the diverging partition walls which coincide with the exterior of the valve block member, and finally it gradually amplifies the sound-waves passing through its curved interior passage, discharging them against said partition walls and against the sounding-board wall of the resonance-chamber.

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

1. In a sound-producing machine comprising a resonance-chamber one wall of which is a sounding board adapted to be sympathetically vibrated and another wall of which has an inlet port, a tone arm mounted to discharge sound-waves through said port from a reproducer, and means for preliminarily modifying and amplifying said sound-waves, consisting of a member having a curved interior passageway of gradually enlarging area, mounted within the chamber and communicating at its smaller end with said port and its larger end discharging said sound-waves directly into the interior of the chamber.

2. In a sound-producing machine comprising a resonance-chamber one wall of which is a sounding-board, a sound inlet port in another wall of said chamber, a tone arm mounted to discharge sound-waves through said port from a reproducer, of means constituting a sound-amplifying and tone-modifying passage, interposed between said port and the sounding-board wall of said chamber, said means consisting of a member inclosed within said resonance-chamber and having a curved interior passageway of gradually enlarging area the inlet end of which is circular and the discharge end of which is rectangular in cross-section.

3. In a sound producing machine comprising a sound-amplifying and tone-modifying chamber, and a tone-arm carrying a reproducer, of means comprising a valve interposed between said elements for directing the course and governing the transmission of sound-waves from one to the other, said means consisting of a member having a curved interior passageway, the said member being recessed surrounding its inlet port to provide an inclosing covering for said valve governing said port and passageway.

4. In a sound reproducing machine comprising a resonance-chamber the upper wall of which is a sounding board, diverging partition walls in said chamber, a sound inlet port in the basal wall of said chamber, and means to discharge sound waves through said port from a reproducer, of a member interposed between said port and the said partition walls, said member being of vibratable material and having a curved interior passageway of gradually enlarging area, the inlet end of which is circular in outline, and the discharge end of which is rectangular in outline.

5. In a sound-reproducing machine comprising a resonance-chamber, the upper wall of which is a sounding-board, a sound inlet port in the basal wall thereof, means to discharge sound-waves through said port from a reproducer, a valve governing said port, diverging partition walls in said chamber and a valve block fixedly mounted between said partition walls and over said

valved port, said valve block being recessed on its under face to provide an inclosure for said valve, and having a curved interior sound passage through it leading from said recess to and between said partition walls in the resonance-chamber.

In testimony whereof I have hereunto

affixed my signature this seventh day of January, A. D. 1909.

LUTHER T. HAILE.

Witnesses:

A. M. BIDDLE,
R. A. DUNLAP.