S. M. WIRTS.

SOUND REPRODUCING MACHINE.

APPLICATION FILED DEC. 2, 1909.

965,678.

Patented July 26, 1910.

3 SHEETS—SHEET 1.

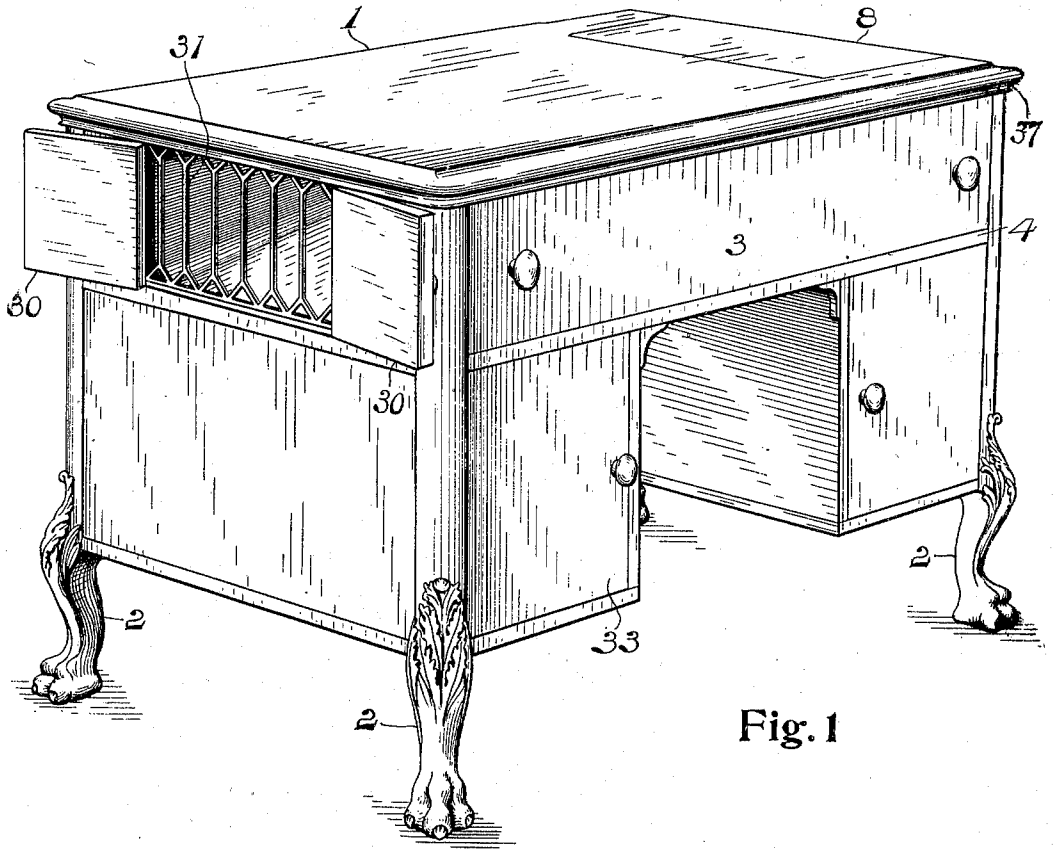

Fig. 1

Witnesses
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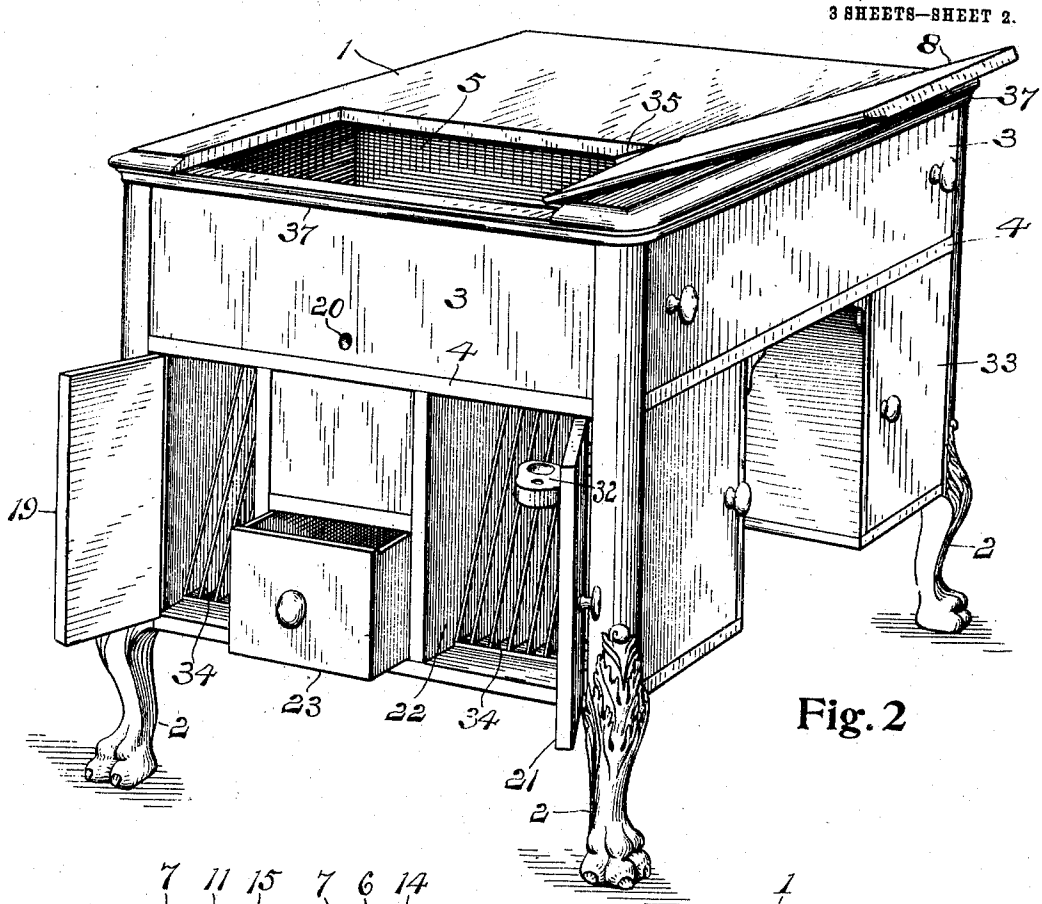

Fig. 2

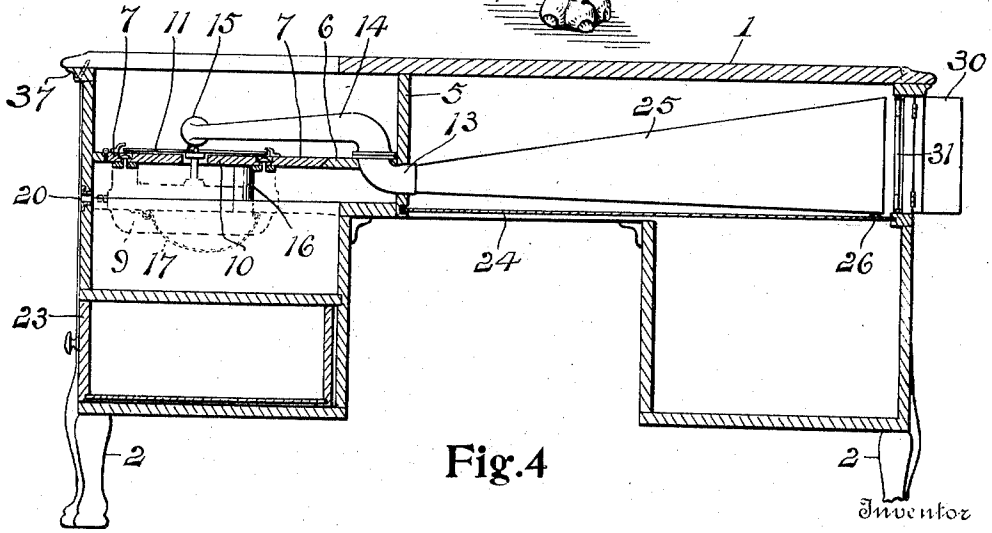

Fig. 4

Witnesses

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3 SHEETS—SHEET 3.

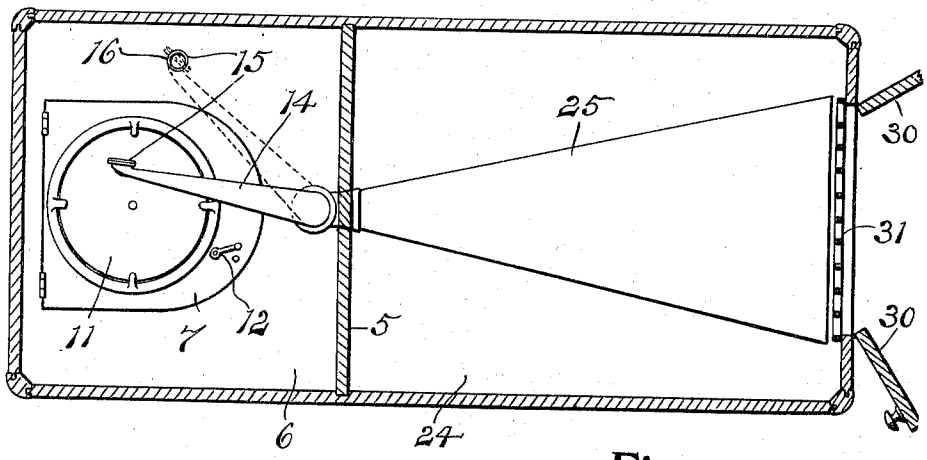

Fig. 3.

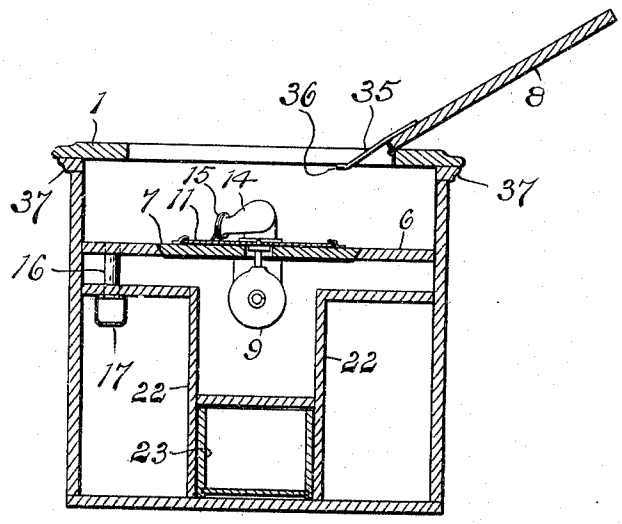

Fig. 5.

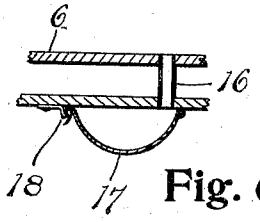

Fig. 6.

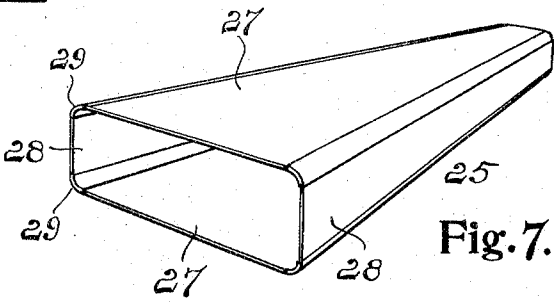

Fig. 7.

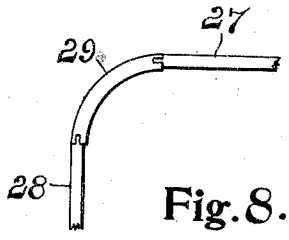

Fig. 8.

Witnesses

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UNITED STATES PATENT OFFICE.

STEPHEN M. WIRTS, OF DETROIT, MICHIGAN.

SOUND-REPRODUCING MACHINE.

965,678. Specification of Letters Patent. Patented July 26, 1910.

Application filed December 2, 1909. Serial No. 530,899.

To all whom it may concern:

Be it known that I, STEPHEN M. WIRTS, a citizen of the United States of America, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Sound-Reproducing Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

In the construction of phonographs and like sound reproducing machines, it is desirable to eliminate as far as possible all noises arising from the movements of the motor and to amplify sound waves from the diaphragm without destroying their quality.

This invention relates to a sound reproducing machine of the phonograph type in which provision is made for eliminating as far as possible, all sound except those produced by the diaphragm vibrations.

A further object of the invention is to provide an attractive exterior for the machine which makes it available as an ordinary article of furniture as well as a storage place for records and for the implements necessary in manipulating the phonograph proper.

The invention consists in the matters hereinafter set forth, and more particularly pointed out in the appended claims.

In the drawings, Figure 1 is a view in perspective of a machine embodying features of the invention showing open doors at the mouth of the horn; Fig. 2 is a similar view taken from the opposite end with doors open; Fig. 3 is a plan view of the machine with the top entirely removed; Fig. 4 is a view in central, longitudinal section showing the arrangement of a phonograph horn and sound board; Fig. 5 is a view in cross section through the table; Fig. 6 is a view in detail of a needle tray; Fig. 7 is a view in detail of a horn; and Fig. 8 is an enlarged sectional detail of a horn.

As shown in preferred form, an exterior casing is provided that has the general design and appearance of a library table with a removable top 1, corner legs 2 and depending sides or aprons 3 paneled to represent drawer and cabinet spaces. Horizontal rails 4 below and parallel to the top, connect the corner posts or legs and are reinforced by a cross partition 5 that transversely divides the space below the top into unequal compartments. A horizontal platform 6 forms the bottom of the smaller of these compartments. It is rigidly secured to the cross wall and side frame, and together with the cross wall and adjacent sides, is constructed of wood that is not resonant and that is arranged to deaden any vibrations imparted to it.

A central portion 7 of the platform 6 is hinged along its outer edge so that it can be tilted up, a cover 8 in the table top being arranged to fold back on invisible hinges to permit this. The movable portion 7 forms a phonograph shelf or base. A motor 9 of any preferred type suitable for the purpose is rigidly secured in a lower compartment against the bottom of this shelf, a sound deadening sheet 10 of felt or like material being interposed between it and the motor. Preferably the base is arranged to be flush with the platform 6 when closed down and the meeting margins of the base and platform are felt-lined or otherwise provided with sound deadening means.

A main spindle of the motor extends through the shelf and a turntable 11 of standard construction is mounted thereon to rotate a short distance above and parallel to the shelf. A speed regulating lever 12 for the motor is mounted on the upper side of the shelf.

A tubular elbow or fitting 13 is secured in an aperture in the platform 6 adjacent the cross partition 5 with its mouth substantially flush with the platform. A sound tube 14 is swiveled in the mouth of this fitting to swing horizontally over the turntable in the usual way, and has at the inner end a diaphragm and needle holder 15 of conventional type. A tube or well 16 is secured in the platform 6 so that the needle holder may be swung into register with it. The well discharges into a segmental tray 17 secured closely against the under side of the platform as by a suitable hinge at one end and a snap 18 at the other. Discarded needles are dropped into this by swinging the sound tube over the well and releasing the needle. The tray 17 is accessible through a door 19 that closes a compartment directly below it, and may be emptied by releasing the snap 18 and allowing it to swing down, the needles sliding readily out of the smoothly rounded receptacle. If the motor is spring actuated a winding crank may be inserted through an aperture 20 in a panel that closes a space directly below the motor. This space is cut off from the com-

partment closed by the door 19 and a companion compartment closed by a door 21 on the opposite side, by vertical partitions indicated at 22 and a tool-drawer 23 fills the space below the motor compartment.

A sounding board 24 of resonant wood or like suitable material, forms the bottom of the larger compartment adjacent the cross wall 5, its side and outer margins being framed into the side casing and its inner margin adjacent the cross wall 5 being preferably independent thereof. A horn 25 has its small end or neck inserted into the lower end of the fitting 13 which extends through an aperture in the partition 5.

The mouth of the horn rests on suitable blocks 26 of soft rubber or like material on the sounding board adjacent the end wall of the table. Tapering top and bottom walls 27 of thin, selected, resonant woods such as are used in stringed instruments, are connected to side walls 28 of like material by round corner strips 29 of heavier wood, the edges being dove-tailed together. It is found that the best effect is produced by finishing the outer faces of the corners and sides to form a flush unbroken surface while the inner faces of the corner places are allowed to project slightly.

An opening in the end of the table that registers with the mouth of the horn is closed by doors 30 which are hinged so that they may be swung outwardly to form extensions of the side walls of the horn. A grille 31 of ornamental design is removably secured in the opening.

The door 21 carries a needle and tool box 32. Doors 33 close cabinets or compartments on the horn end of the table that correspond to the compartments at the other end and suitable ledges 34 or racks are placed in these compartments for supporting record disks. The cover 8 which closes the opening in the table top is hinged to swing laterally so that articles on the rest of the table need not be moved when it is desired to use the phonograph. To prevent marring of the top, the cover 8 has a finger 35 secured to its underside near the hinge with an inturned end 36 that underlies the top and holds the cover in elevated position so as not to rest on the table. As a further detail of construction a rectangular frame 37 on the top of the casing has concealed screws (not indicated) or like fastenings engaging the top which, when loosened, permit the bodily removal of the latter.

The operating mechanism of the phonograph is thus supported independently of the horn and of the sound tube in such manner that vibrations therefrom are absorbed and deadened. The sound tube is likewise rigidly supported by non-resonant members independently of the motor so that the vibrations of the latter which occasion the scratching noises heard when the horn is directly connected to the motor are taken up. The horn itself is constructed of resonant materials adapted to amplify the sound waves of the diaphragm without destroying or changing their quality and its effect is enhanced by the resonant compartment in which it is placed, the sounding board vibrating in unison with the horn walls and communicating these sound waves to the air in the compartment so that they materially increase the volume of sound from the opening in the wall adjacent the horn mouth. The sounding board is like-wise cut off from the vibrations of the motor by the method of supporting it in the table.

The machine when not in use is an ornamental and useful article of furniture and at the same time has a capacity for a large number of records.

Obviously, changes in details of construction may be made without departing from the spirit of the invention and I do not care to limit myself to any particular form or arrangement of parts.

What I claim as my invention is:—

1. A sound reproducing machine comprising a casing having a sound-muffling compartment and a resonant compartment separated therefrom by a sound-deadening wall and provided with a sounding board that constitutes another wall thereof, sound reproducing means in the muffling compartment, a conductor for leading sounds from the reproducer into the resonant compartment, and an amplifying horn resting on the sounding board in the resonant compartment for directing sounds from the conductor toward an opening in the outer wall of said compartment, the horn having plane vibratable walls of resonant material.

2. A sound reproducing machine comprising a casing having a sound-muffling compartment, a compartment below the sound-muffling compartment, a motor base hinged in the base of the upper compartment, a motor secured to the underside thereof, a sound-reproducing apparatus in the upper compartment operated by the motor, a resonant compartment separted from the muffling compartment by a sound-deadening wall and provided with a sounding board that constitutes another wall thereof, a conductor for leading sounds from the reproducer into the resonant compartment, and a sound amplifier supported on the sounding board for leading sounds from the conductor to an opening through the outer wall of the resonant compartment.

3. A sound reproducing machine comprising a table having a plane top and an underbody divided into a sound-muffling compartment and a resonant compartment separated therefrom by a sound-deadening wall and provided with a sounding board that

constitutes another wall thereof, sound reproducing means in the muffling compartment, a conductor for leading sounds from the reproducer into the resonant compartment, and a sound amplifier supported on the sound board for leading sounds from the conductor to an opening through the outer wall of the resonant compartment.

4. A sound reproducing machine comprising a table having a plane top, an underbody with a sound-muffling compartment and a resonant compartment separated therefrom by a sound-deadening wall, a sounding-board constituting the bottom of the resonant compartment, a base hinged in the bottom of the sound-muffling compartment to swing upwardly, a cover hinged in the table top over the sound-muffling compartment, sound reproducing apparatus on the base, a motor therefor suspended from the base, a conductor for leading sounds from the reproducer into the resonant compartment, and a sound amplifier supported on the sounding board for leading sounds from the conductor to an opening through the outer wall of the resonant compartment.

5. A sound reproducing machine comprising a table having a plane top, and an underbody with a sound muffling compartment and a resonant compartment separated therefrom by a sound-deadening wall, a non-resonant bottom wall for the muffling compartment, a sounding board for the bottom of the resonant compartment, a base hinged to close an opening in the muffling compartment bottom wall, a phonograph motor secured on the underside of the base with a turntable therefor on the upper side, a hollow fitting secured in the bottom wall extending into the resonant compartment, a sound tube swinging in the fitting over the turntable and having a sound-reproducing device on the free end, and a horn extending from the fitting toward an opening in the outer wall of the resonant compartment and resting on the sounding board.

6. A sound reproducing machine comprisa table having a plane top, and an underbody with a sound muffling compartment and a resonant compartment separated therefrom by a sound-deadening wall, a non-resonant bottom wall for the muffling compartment, a sounding board for the bottom of the resonant compartment, a base hinged to close an opening in the muffling compartment bottom wall, a phonograph motor secured on the underside of the base with a turntable therefor on the upper side, a hollow fitting secured in the bottom wall extending into the resonant compartment, a sound tube swinging in the fitting over the turntable, a diaphragm and needle holder on the free end of the tube, a well in the muffling compartment bottom wall with which the needle holder may register, a needle tray pivotally secured to the bottom wall under the well, and a horn resting on the sounding board and extending from the fitting toward an opening in the outer wall of the resonant compartment.

In testimony whereof I affix my signature in presence of two witnesses.

STEPHEN M. WIRTS.

Witnesses:
OTTO F. BARTHEL,
ANNA M. DORR.