A. A. HUSEBY.

TALKING MACHINE.

APPLICATION FILED DEC. 17, 1915.

1,198,636.

Patented Sept. 19, 1916.

3 SHEETS—SHEET 1.

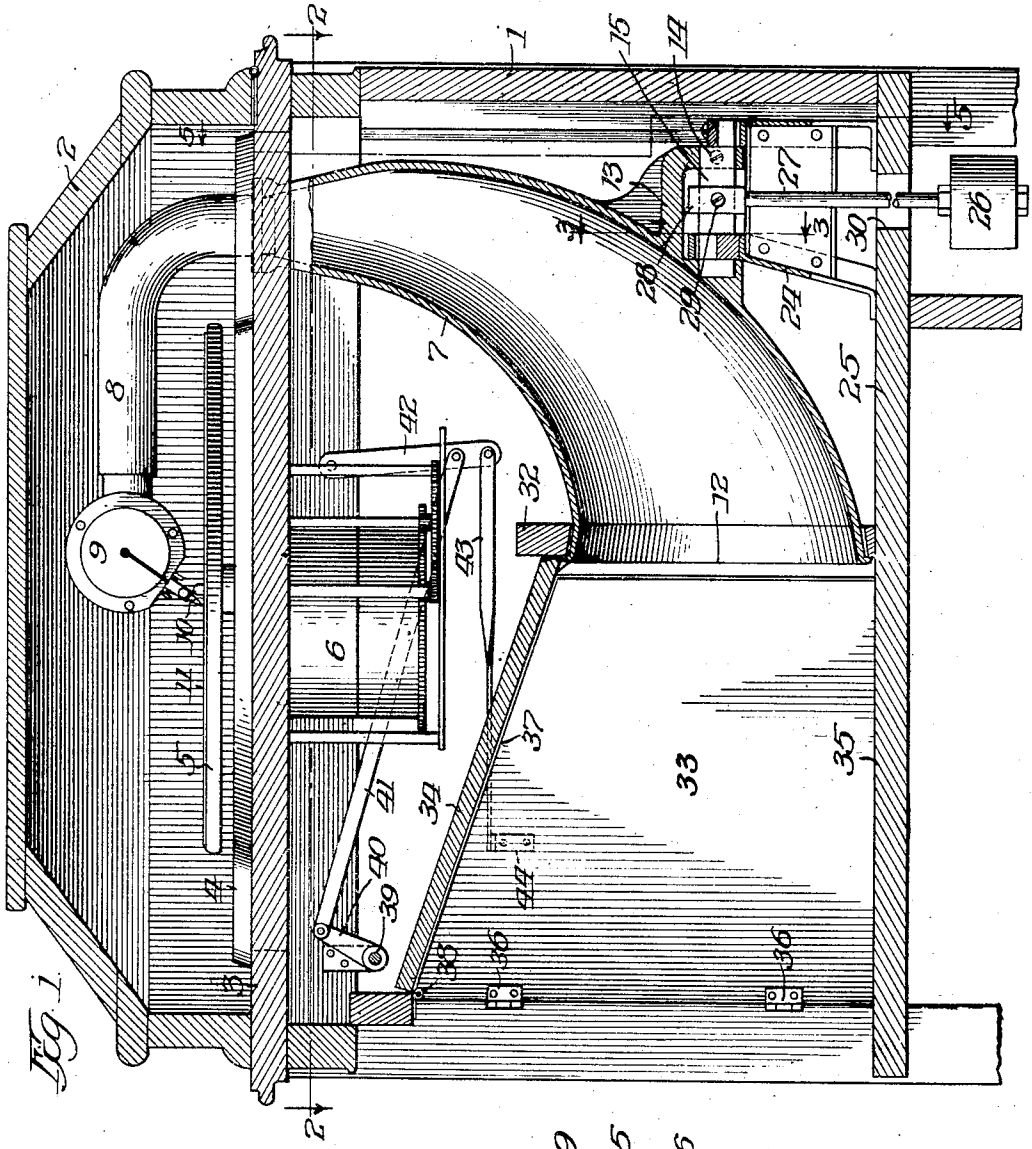


Fig. 1.

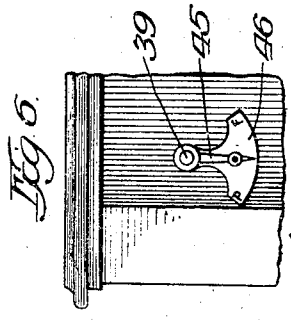


Fig. 6.

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3 SHEETS—SHEET 2.

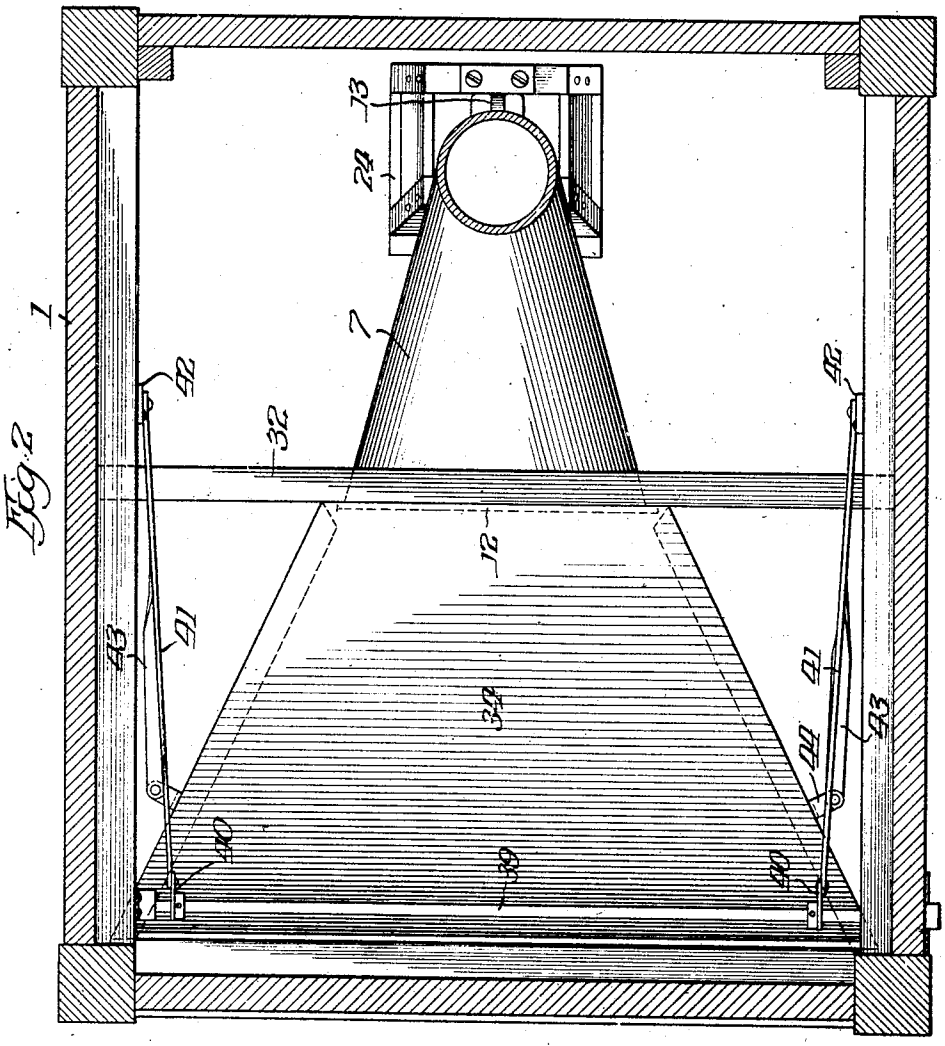


Fig. 2

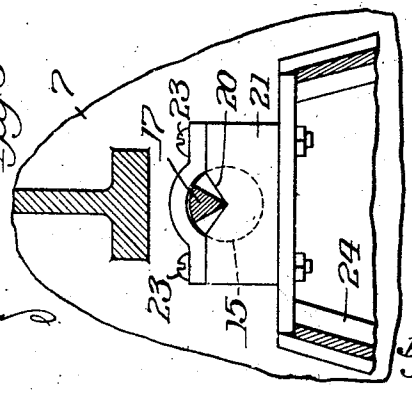


Fig. 3

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3 SHEETS—SHEET 3.

Fig. 5.

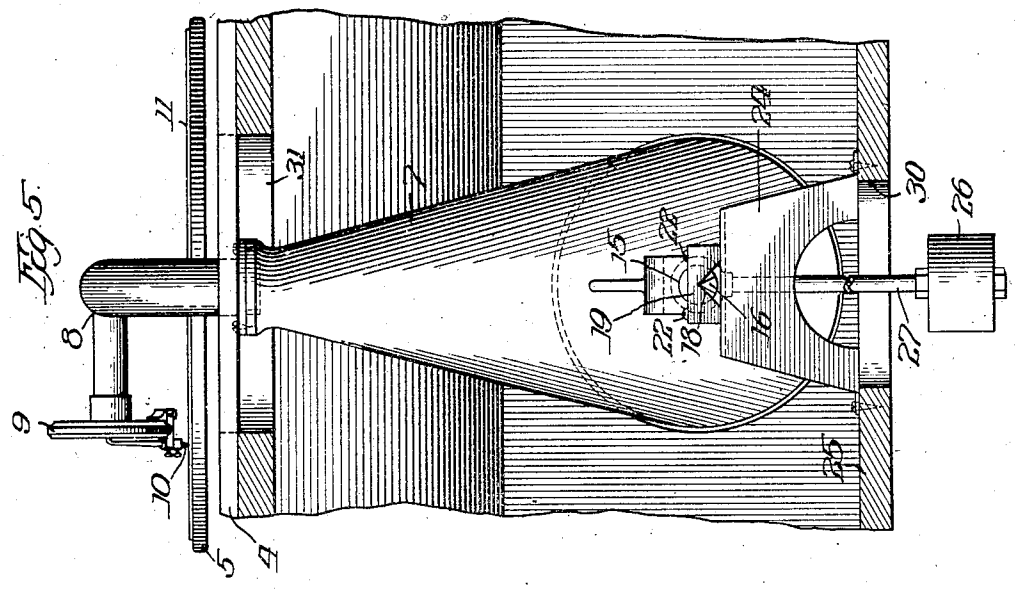
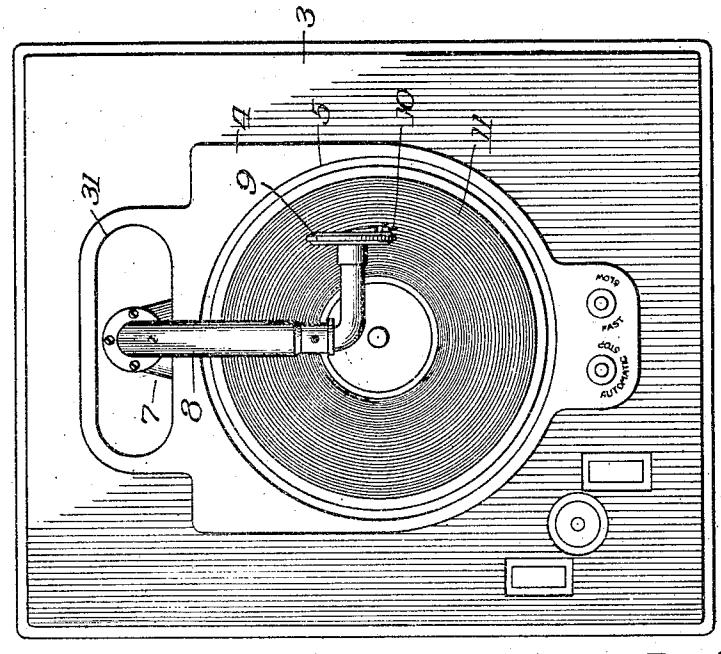


Fig. 4.



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UNITED STATES PATENT OFFICE.

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TALKING-MACHINE.

1,198,636. Specification of Letters Patent. Patented Sept. 19, 1916.

Application filed December 17, 1915. Serial No. 67,336.

To all whom it may concern:

Be it known that I, ALBERT A. HUSEBY, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Talking-Machines, of which the following is a specification.

This invention relates to the art of phonographs or talking machines, and has reference more particularly to improvements in the sound conveyers or conduits of such machines.

More specifically, the invention relates to that general type of sound conveyers or conduits that is characterized by a sound tube (consisting of a substantially horizontal laterally swinging tone-arm portion overhanging the turntable and a downwardly and forwardly extending substantially upright portion), and an amplifier that registers and communicates with the delivery end of the sound tube and, as its name implies, serves to amplify and magnify the volume of sound emitted by the sound conveyer.

The principal object of the invention is to simplify the construction and improve the tone-conveying and delivering qualities of sound conveyers of this general type; a more specific object being to provide an improved and simplified construction of and mounting for the sound tube.

Still other objects and advantages of the invention will be apparent to those skilled in the art from a perusal of the following detailed description in connection with the accompanying drawings, wherein—

Figure 1 is a vertical section through the upper portion of the cabinet, the amplifier and the upright section of the sound tube and its bearings, with the turn-table, sound-box and tone-arm section of the sound tube appearing in elevation. Fig. 2 is a horizontal section on the line 2—2 of Fig. 1, omitting the motor. Fig. 3 is a fragmentary section, enlarged, on the line 3—3 of Fig. 1. Fig. 4 is a top plan view with the lid of the cabinet removed. Fig. 5 is a vertical section on the line 5—5 of Fig. 1. Fig. 6 is a detail fragmentary side elevation of the cabinet, showing the amplifier adjusting arm or lever.

In the drawings 1 designates as an entirety the upper portion of the box or cabinet in which the principal parts of the mechanism are housed, and 2 designates the hinged lid or cover. Mounted on the top wall 3 of the case is a metal plate 4 in which is rotatably mounted the usual turntable 5 driven by a spring motor conventionally illustrated at 6, these parts being of ordinary or usual construction.

7 designates the generally upright portion of the sound tube, to the upper end of which is rigidly connected the horizontally extending portion of the sound tube 8 commonly known as a tone-arm, this latter having flexibly mounted on its free end a sound-box 9 carrying a stylus 10 that engages the spiral groove of the record disk 11. The shank of the sound box to which the sound box proper is rigidly attached has its inner end bent rearwardly and loosely fitted within the forward reduced end of the arm 8 so that the sound box may be swung upwardly about the arm 8 as a center away from the record, thus affording a flexible connection between the sound box and the tone arm. The section 7 of the sound tube, as clearly shown in Fig. 1, is downwardly and forwardly curved from its juncture with the tone-arm and is gradually tapered or flared toward its delivery mouth 12, which latter is in a vertical plane. The sound tube is mounted on a single pivotal support that is located wholly in rear of the sound tube section 7, and the axis of which is parallel with the tone-arm 8. This pivotal mounting of the sound tube as herein shown comprises the following parts: 13 designates a bracket on the rear of the sound tube section 7 in which is removably mounted by means of a set screw 14 a pivot shaft 15. This pivot shaft is formed with a pair of oppositely facing knife-edge trunnions 16 (Fig. 5) and 17 (Fig. 3). The trunnion 16 engages a V-shaped notch 18 in a bearing block 19, and the trunnion 17 engages a V-shaped notch 20 formed in a bearing block 21. The bearing blocks 19 and 21 are secured by bolts 22 and 23, respectively, to a suitable supporting structure 24 that, in turn, rests upon a transverse wall or floor 25 of the cabinet. The sound tube is counterbalanced so as to be practically neutral in all the positions which it assumes under the influence of the record disk by counterbalancing means connected to the pivot shaft 15, said counterbalancing means as herein shown consisting of a pendulum weight 26 mounted on a rod 27 that is keyed at its upper end by a collar 28 and set screw 29 to the shaft 15 and extends through a slot 30 in the floor 25. To accommodate

the lateral swing of that portion of the sound tube which passes through the top wall 3 and plate 4, the registering portions of the latter parts are formed with a slot 31, clearly shown in Fig. 4. By thus mounting the sound tube on a single pivot of the scale bearing type, and accurately counterbalancing same, I produce a construction wherein the side drag of the stylus on the groove of the record is reduced to a minimum, and the freedom of the stylus to respond to the vibratory influence of the lateral undulations of the record groove is enhanced. In the preferred construction the pivotal support of the sound tube is so located relatively to its delivery mouth that the extended axis of said pivotal support passes through the center of the delivery mouth, as a result of which the oscillations of the sound tube produce only a slight oscillating movement of the delivery mouth about its center. 32 designates a transverse partition that lies just behind the vertical plane of the delivery mouth of the sound tube and is apertured to permit the passage of the latter therethrough.

Referring now to that element of the sound conveyer or conduit which performs the principal function of an amplifier, this element is made up of a pair of side walls 33, a top wall 34, and a bottom wall 35 which may consist of a portion of the floor member 25. The side walls 33 are hinged at their outer vertical edges to frame members of the cabinet as indicated at 36, and they are formed with downwardly and inwardly inclined upper edges 37 on which rests the top wall 34, this latter being hinged along its outer horizontal edge to a frame member of the cabinet as shown at 38. The side walls 33 are of such length that when swung to a position wherein their free vertical edges are arrested by the transverse partition wall 32, they form substantial continuations of the outwardly flaring side walls of the section 7 of the sound tube, in which position the receiving mouth of the amplifier registers in full with the delivery mouth of the sound tube and receives and transmits all the sound waves emitted by the latter through the open front wall of the cabinet. When, however, the side walls 33 of the amplifier are swung inwardly toward each other, it is obvious that the receiving mouth of the amplifier will be more or less contracted both horizontally and vertically, so that the sound waves from the sound tube will pass only partially therethrough, being partially diverted through the interior of the cabinet, so that the volume of sound emitted will be reduced and the tone effect softened. By swinging the side walls of the amplifier inwardly until their free ends practically meet, substantially the entire volume of sound is diverted into and through the interior of the cabinet, producing a very soft and muffled tone effect.

Any suitable or convenient mechanism for thus adjusting the movable sides of the amplifier may be employed, the mechanism herein shown for this purpose comprising the following parts: 39 designates a horizontal rock shaft journaled in the upper portion of the cabinet and having keyed thereto a pair of crank-arms 40. These arms are connected by links 41 to depending lever arms 42 that are pivotally suspended from opposite sides of the cabinet, and at their lower ends are connected by links 43 to lugs 44 on the outer sides of the hinged side walls 33 of the amplifier. One end of the rock shaft 39 overhangs one side wall of the cabinet and has secured thereto a manually operable arm or lever 45, preferably overhanging and coöperating with a scale palte 46 carrying piano and forte designations, as indicated in Fig. 6.

From the foregoing description of an instrument embodying the improved features which comprise the present invention, it is believed that the manner in which the several stated objects of the invention are accomplished will be easily comprehended by those familiar with this art. The structural details illustrated and described may, of course, be modified as circumstances may require or the judgment of the builder dictate, without involving any substantial changes or sacrificing any of the benefits and advantages secured. Hence, I reserve any and all such detail changes and modifications as may fully fall within the spirit and purview of the invention as defined in the appended claims.

I claim—

1. In a talking machine, a sound conveyer having an upright portion supported entirely outside the sound passage thereof on a horizontal pivot, a horizontally extending arm portion rigid with said upright portion and extending parallel with the axis of said pivot into operative position over the record disk, a sound box connected to the forward end of said arm portion, and a stationary amplifier communicating with the lower end of said upright portion.

2. In a talking machine, the combination of a stationary amplifier, a sound conveyer having an upright portion terminating at its lower end in a horizontal portion communicating with said amplifier and supported on a horizontal pivot concentric with the joint between said conveyer and said amplifier but disposed entirely outside the sound passage, a horizontally extending arm portion rigid with said upright portion and adapted to oscillate laterally over a record disk, and a sound box flexibly connected to the forward end of said arm portion.

3. In a talking machine, a sound tube

having a horizontally extending arm portion and a downwardly and forwardly curved portion rigid with said arm portion, and a pivotal support for said downwardly and forwardly curved portion located wholly in rear of the latter.

4. In a talking machine, a sound tube having a horizontally extending arm portion and a downwardly and forwardly curved portion rigid with said arm portion, and a pivotal support for said downwardly and forwardly curved portion located wholly in rear of the latter and having its axis parallel with said arm portion.

5. In a talking machine, a sound tube having a horizontally extending arm portion and a downwardly and forwardly curved portion rigid with said arm portion and of gradually increasing diameter from its upper to its lower end, and a pivotal support for said downwardly and forwardly curved portion located wholly in rear of the latter and having its axis parallel with said arm portion.

6. In a talking machine, a sound tube having a horizontally extending arm portion and a downwardly and forwardly curved flaring portion rigid with said arm portion and terminating in a vertical delivery mouth, and a pivotal support for said flaring portion located wholly in rear of the latter, the extended axis of said pivotal support passing through the center of said delivery mouth.

7. In a talking machine, a sound tube having a generally upright portion, and a horizontal support therefor including a pair of oppositely facing knife-edge trunnions and a pair of V-shaped bearings therefor.

8. In a talking machine, a sound tube having a generally upright portion, and a horizontal support therefor comprising a bracket on the rear of said upright portion, a pivot shaft secured in said bracket and formed with a pair of oppositely facing knife-edge trunnions, and a pair of V-shaped bearings for the latter.

9. In a talking machine, a sound tube having a generally upright portion, a horizontal support therefor comprising a bracket on the rear of said upright portion, a pivot shaft secured in said bracket and formed with a pair of oppositely facing knife-edge trunnions, and a pair of V-shaped bearings for the latter, and a depending counterweight secured to said shaft.

10. In a talking machine, the combination of a sound tube comprising a vertical portion terminating at its lower end in a horizontal portion and its upper end in a horizontal tone-arm, a horizontal pivot disposed concentric with said lower horizontal portion and rearwardly of said vertical portion upon which said tube is supported, and means disposed beneath said pivot for yieldingly maintaining said upright portion in substantially vertical position.

11. In a talking machine, the combination of a sound tube comprising an upright portion provided at each end with rigid horizontally extending portions, means outside the sound passage for pivotally supporting said tube near the lower end thereof, and a counterweight rigidly connected with said tube below said pivot whereby said tube is noramlly maintained in substantially upright position.

ALBERT A. HUSEBY.