

J. H. MOUNT.
TALKING MACHINE.
APPLICATION FILED MAY 9, 1908.

949,939.

Patented Feb. 22, 1910.

5 SHEETS—SHEET 1.

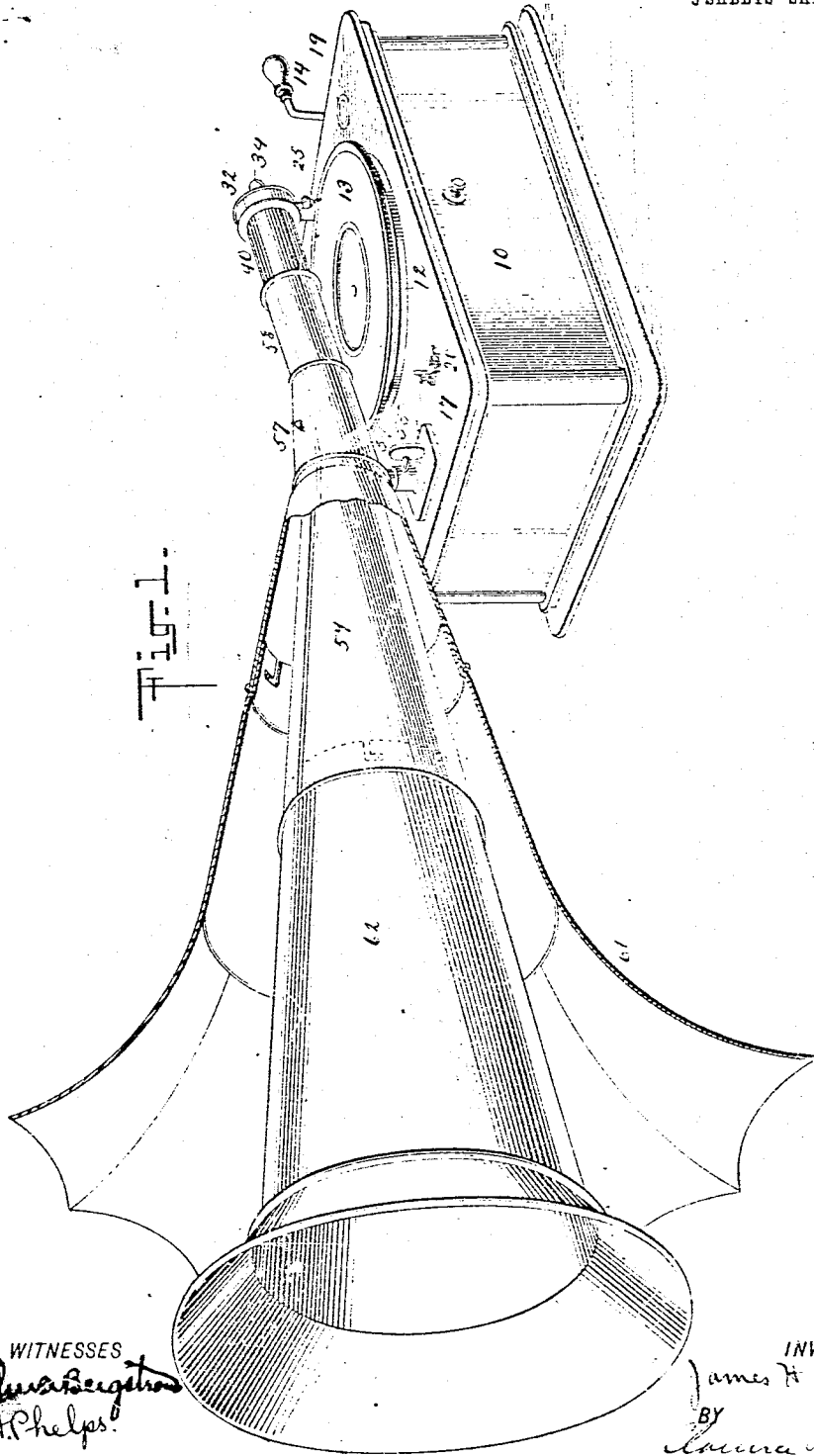


Fig. 1.

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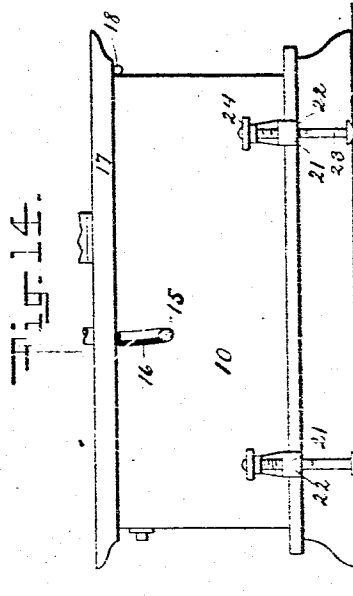
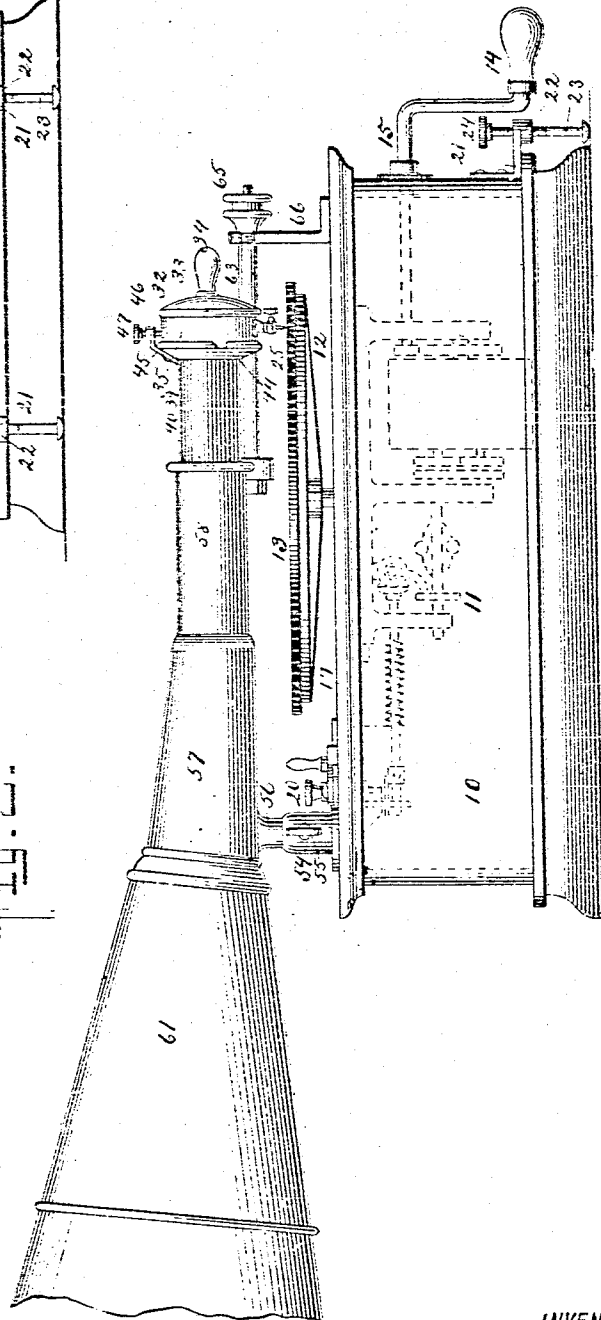


Fig. 2.



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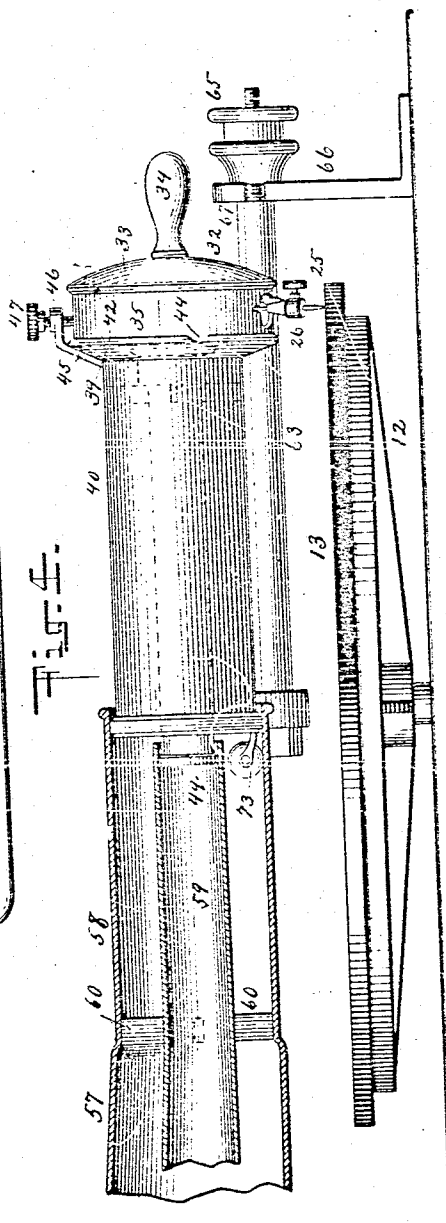
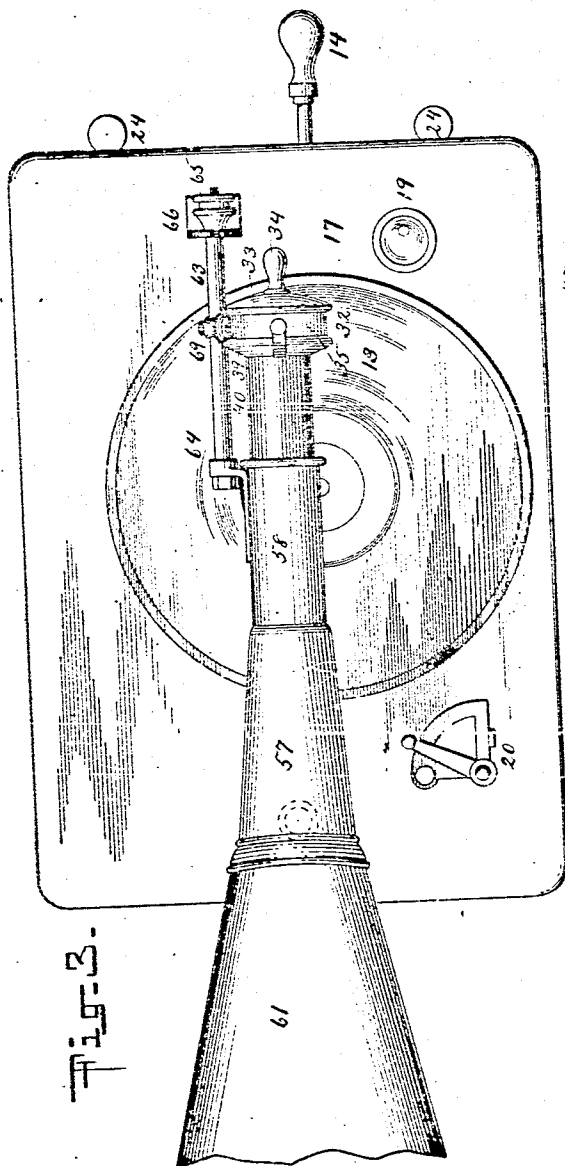
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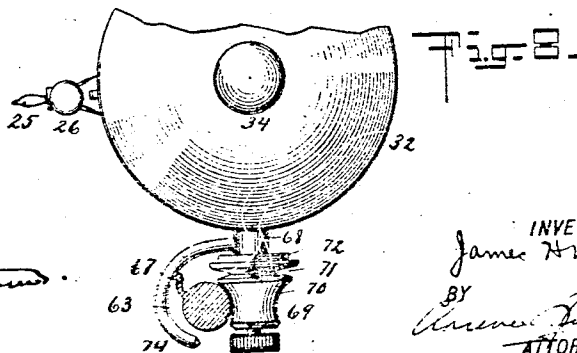
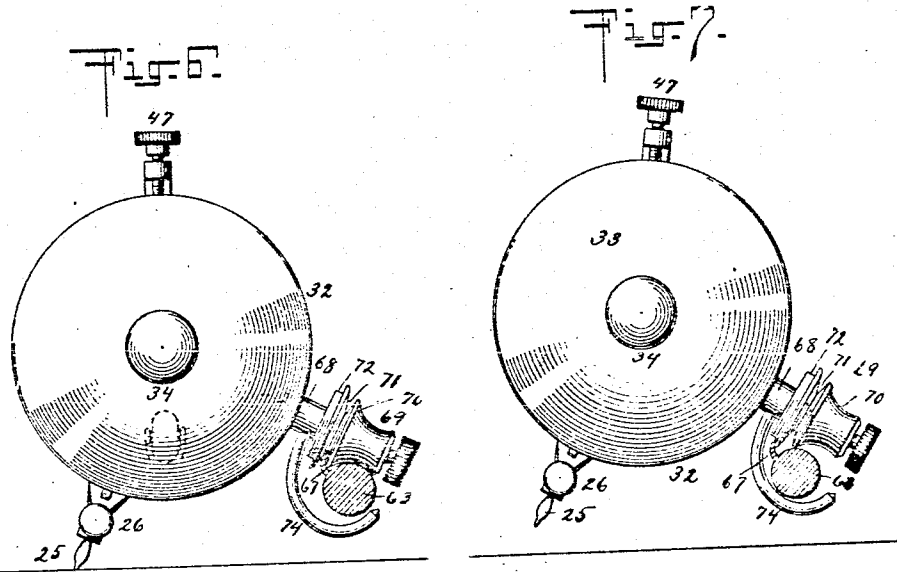
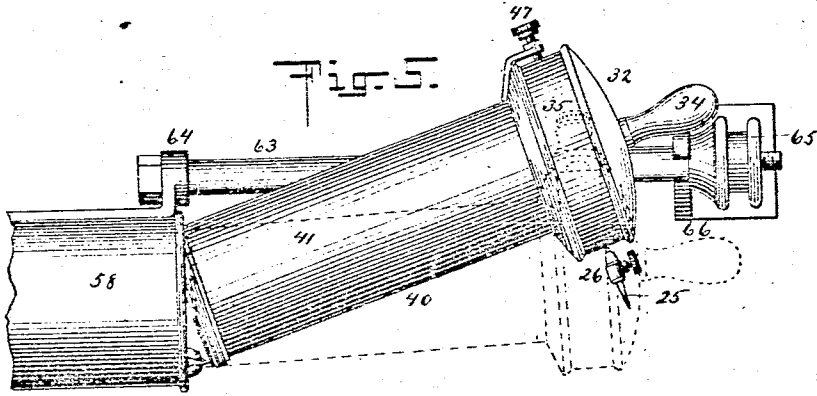
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5 SHEETS—SHEET 4.



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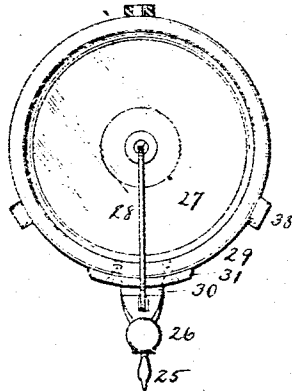


Fig 12.

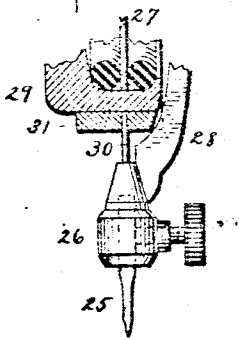
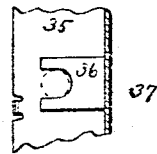


Fig-13.



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UNITED STATES PATENT OFFICE.

JAMES H. MOUNT, OF JAMESBURG, NEW JERSEY.

TALKING-MACHINE.

949,939.

Specification of Letters Patent.

Patented Feb. 22, 1910.

Application filed May 9, 1908. Serial No. 431,819.

To all whom it may concern:

Be it known that I, JAMES H. MOUNT, a citizen of the United States, residing in Jamesburg, in the State of New Jersey, have
5 invented a new and useful Improvement in Talking-Machines; and I do hereby declare that the following is a full, clear, and exact description of the same.

My invention relates to talking machines, particularly those of the disk-record type, but some of my improvements are also applicable to talking machines of the cylinder-record type.

One object of my invention is conveniently to provide for taking the machine apart and putting it together to facilitate packing and transportation.

Another object of my invention is to simplify, strengthen and improve the attachment of the stylus to the diaphragm holder.

Another object of my invention is to provide for conveying the vibrations through the sound box from both sides of the diaphragm so that the sound will be amplified and made more powerful and more distinct.

Another object of my invention is to provide for conveying the vibrations from opposite sides of the diaphragm through concentric tubes so that the vibrations from the front of the diaphragm will so merge with the vibrations from the back of the diaphragm as to produce a large volume of tone of great distinctness, power and melody.

Another object of my invention is conveniently to provide for removing the sound box from the record for replacing the needle or substituting the record.

Another object of my invention is so to counterbalance the sound box and accommodate its motion over the record that the grinding noise peculiar to most talking machines will be further obviated.

Another object of my invention is so to support the sound box on the cabinet that the whole machine can be jarred or moved without disturbing the sound or scratching the record.

Other objects of my invention will be set forth hereafter in the description.

To these various ends, my invention comprises various novel features of construction and combination of parts as are hereinafter pointed out in the claims.

In order that my invention may be fully understood, I shall, prior to claiming the same, describe in detail a talking machine

embodying the various features of my invention.

Reference is to be had to the accompanying drawings forming part of this specification in which like numbers indicate corresponding parts in all the figures.

Figure 1 is a perspective view of a talking machine of the disk-record type embodying my invention, a part being in section. Fig. 65 2 is a side elevation of the same. Fig. 3 is a plan view of the same. Fig. 4 is an enlarged side elevation of the same, parts being in section and the cabinet removed. Fig. 5 is a detail view showing the sound box and stylus in full lines swung aside for replacing the stylus and, in dotted lines, raised for introducing the record. Fig. 6 is an end view of the sound box showing the stylus resting on the record. Fig. 7 is a 75 similar view showing the stylus and sound box partly raised for introducing the record. Fig. 8 is a similar view showing the sound box and stylus fully raised for replacing the needle. Fig. 9 is an end view of the sound box and attachments with its cover removed so as to disclose its interior. Fig. 10 is a sectional view of the sound box and attachments. Fig. 11 is a detail view showing the diaphragm and attachments removed from 85 the sound box. Fig. 12 is an enlarged detail view showing the stylus clamp and its attachments to the diaphragm holder. Fig. 13 is a detail view showing the method of supporting the diaphragm holder in the sound box. Fig. 14 is an end elevation of the cabinet showing the device for adjusting the inclination of the record and the means for opening the cabinet without removing the winding handle. 95

In the drawing, 10 designates the cabinet of a talking machine which contains the mechanism, 11, indicated in dotted lines in Fig. 2 for rotating the turntable, 12, and thereby rotating the record, 13, which is here 100 represented as of the ordinary disk type.

14 designates the winding handle of the actuating mechanism, 11, which I prefer to fasten permanently to the winding shaft, 15, and arrange to drop into and be raised out of 105 a curved slot, 16, shown in Fig. 14, in the end wall of the cabinet, 10, so that the mechanism, 11, being fastened to the cover, 17, of the cabinet, 10, when said cover is raised on its hinge, 18, convenient access may be had 110 to the actuating mechanism without removing the winding handle, 14.

In order that the timing device, 19, on the top of the cabinet and the starting and stopping device, 20, also on the top of the cabinet, may be manipulated by both hands simultaneously, I arrange the timing device as shown in Fig. 1 on the right hand side of the cabinet and the stopping and starting device, 20, on the left hand side of the cabinet, connecting the stopping and starting device by suitable gearing with the actuating mechanism, 11, as indicated in Fig. 2.

The stylus and sound box in my invention is arranged as hereinafter described to travel radially from the periphery of the record, 13, to the center of the same and in order to aid said motion produced by the pressure of the side of the record groove against the stylus, I provide means for raising the outside end of the cabinet and thereby inclining the record downward in the direction of travel of the stylus so that the motion of the stylus toward the center of the record will be aided by gravity, the pressure of the side of the groove against the stylus will be minimized and the grinding noise thereby produced peculiar to most talking machines will be entirely obviated. As convenient means for thus raising the outer end of the cabinet, I have here shown brackets, 21, attached to the end of the cabinet and carrying threaded nuts, 22, through which are screwed correspondingly threaded legs or standards, 23, having heads, 24, by which they may be turned to elevate that end of the cabinet and therefore incline the record as much as may be desirable. The stylus, 25, is inserted in the clamp, 26, in the usual way and such clamp is connected to the diaphragm, 27, by a sound conveying bar, 28, of the ordinary description. I attach the stylus clamp, 26, however, to the diaphragm ring, 29, by means of a thin spring plate, 30, secured in the plane of the diaphragm to a plate, 31, rigidly attached to the ring, 29, so that the stylus and its clamp can play with the vibrations imparted to it through the bar, 28, by the diaphragm, 27, on said spring plate, 30, to and fro in the direction of the axis of the diaphragm but not transversely to said axis. By this arrangement, the vibrations of the stylus are more accurately transmitted to the diaphragm, 27, and a perfect reproduction of the original sound is made.

The sound box, 32, consists of a closed head, 33, having a handle, 34, and a cylindrical wall, 35, formed integrally with the head, 33. On the inside of the wall, 35, of the sound box are fixed blocks, 36, having axially slotted seats, 37, opening inwardly to receive cushioned studs, 38, projecting radially from the periphery of the diaphragm ring, 29, so that when the diaphragm ring is in place, the diaphragm and its ring will be separated by an air space from the head,

33, of the sound box, and also from the wall, 35, of said sound box, as best indicated in Fig. 10. The wall, 35, of the sound box is joined detachably to an annular ring, 39, secured to the outer end of a tube, 40, which is covered with cloth or other non-vibratory material, 41, as best indicated in Fig. 10.

The detachable union of the sound box to the ring, 39, preferably consists of the inner turned flange, 42, on the ring, 39, to receive the end of the wall, 35, which has lugs, 43, to pass through the slot, 44, in said flange, 42, so that the sound box can be disengaged from the ring, 39, by rotating it so as to bring one lug, 43, opposite the slot, 44, when the sound box can be easily removed. To make the attachment of the sound box to the ring, 39, and tube, 40, more secure, I fasten a bracket, 45, on the ring, 39, carrying a nut, 46, through which a set screw, 47, is arranged to screw against the wall, 35. With this arrangement, by detaching the sound box, 32, from the ring, 39, the diaphragm ring, 29, and with it the diaphragm and stylus can be removed from the open side of the sound box, the stylus and its clamp being withdrawn through a slot, 48, in the wall of the sound box. Within the tube, 40, I fasten concentrically so as to leave an air space between them, an inner tube, 49, by radial spacing pieces, 50, so that the axis of the tube, 49, will be directly in line with the diaphragm, 27. Around the inner end of the tube, 49, I preferably place a non-vibratory bushing, 51, against the end of which is arranged to abut the collar, 52, formed around an annular flange, 53, projecting inwardly from the diaphragm ring, 29. By this construction, as will be best seen in Fig. 10, the vibrations from the front of the diaphragm, 27, will be transmitted directly through the collar, 52, and the inner tube, 49, while the vibrations from the rear of the diaphragm, 27, will be transmitted through the space between said diaphragm and head of the sound box, through the annular space between the ring, 29, and the wall, 35, of said sound box, through the space between the flange, 53, and the annular ring, 39, and thereby through the annular space between the tube, 40, and the concentric inner tube, 49, fixed therein.

On the top of the cabinet, 10, I fix a vertical socket, 54, provided with a set screw, 55, in which is clamped detachably a standard, 56, fixed on an outer sound tube, 57. The sound tube, 57, is provided with a cylindrical extension, 58, axially in line with the diaphragm, 27, and sound tubes, 40 and 49, and in this extension, 58, of the sound tube, 57, the tube, 40, is arranged to travel axially, carrying with it the sound box and stylus, by means of a roller, 53, fastened to the end of the tube, 40, and running on the interior of the sound tube, 58. Within the sound

tube, 57 and 58, is also fixed concentrically an inner sound tube, 59, by radial spacing pieces, 60, and in said inner tube, 59, the inner tube, 49, is likewise adapted to travel axially and freely, supported by the same roller, 73. The direct and reflected vibrations from the diaphragm, 27, will therefore be conveyed through the sound tubes, 59 and 58 respectively in all positions of the sound box as the same travels over the record, 13.

On the outer end of the outer sound tube, 57, is fastened by means of an ordinary bayonet lock an amplifying horn, 61, and on the outer end of the inner sound tube, 59, is fastened by means of an ordinary bayonet lock, concentrically within the outer horn, 61, but projecting beyond the same, an inner amplifying horn, 62. The direct vibrations from the diaphragm, 27, will therefore emerge from the inner horn, 62, and the reflected vibrations from the diaphragm, 27, will emerge from the outer horn, 61. The adjustment and arrangement of the two horns is such that the sounds emerging therefrom will mingle so as to produce a melodious whole of peculiarly clear, distinct and amplified character.

To guide and support the sound box and the inner ends of the cylinder, 40, and inner tube, 49, while traveling radially across the record and at the same time permit the sound box to be raised from the record for replacing the record on the stylus, I fasten a rail, 63, on top of the cabinet parallel with the axis of the motion of the sound box. One end of the rail, 63, is fastened detachably in a bracket, 64, attached to the end of the outer sound tube, 58, and the other end of the rail, 63, is fastened detachably by means of a set screw, 65, in a slotted standard, 66, erected on the top of the cabinet, 10. The rail, 63, is formed with an upwardly curved flange, 67, running along its upper and inner side. On the side of the sound box, 32, is secured a short axle, 68, on which is mounted to rotate freely an antifriction roller, 69, having a concave face, 70, to run on the rail, 63, an annular groove, 71, to engage and run on the flange, 67 and an annular shoulder, 72, also to engage the flange, 67, as best shown in Figs. 6, 7, and 8. With this construction when the stylus, 25, is traveling across the record, the concave face, 70, of the roller, 69, runs along the rail, 63, and the groove, 71, on the flange, 67, as best shown in Fig. 6, so that the sound box and its attachments, while traveling across the record is supported by the stylus, 25, the rail, 63, and the roller, 73. A large part of the weight of the sound tube and attachments is therefore taken off the stylus which bears upon the record with just sufficient weight to receive the vibrations thereof and the grinding noise peculiar to most talking machines

is entirely done away with. When it is desired to replace the record, the sound box is withdrawn to the end of the rail, 63, by means of its handle, 34, so that the ends of the outer tube, 40, and inner tube, 49, will be freed from the sound tubes, 58 and 59, as indicated in Fig. 5. The sound box is then raised until the flange, 67, on the rail, 63 is disengaged from the groove, 71, on the roller, 69, and the shoulder, 72, is rested on the flange, 67, as shown in Fig. 7. The stylus is thus held above the record so that the same can be removed and replaced at will. On the shaft, 68, of the roller, 69, is fixed a hook, 74, curving around the under side of the rail, 63, which keeps the roller, 69, from being thrown off the rail, 63, as indicated in Figs. 6, 7 and 8. When it is desired to replace the stylus, the sound box is raised still farther above the record, as indicated in Fig. 5, until the groove, 71, and shoulder, 72, are completely disengaged from the flange, 67, and the hook, 74, engages the rail, 63, and supports the sound box in its uppermost position, as indicated in Fig. 8. The stylus may then be removed and replaced at will. Conversely to replace the stylus on the record, the sound box is swung over on the record until the roller, 69 and groove, 71, engage the rail, 63, and flange, 67, as previously described and shown in Fig. 6.

By the arrangement thus described, the sound tubes and horns are firmly secured to the cabinet and the sound box and attachments securely confined within their limit of motion, so that the whole machine can be jarred or moved without disturbing its action and without scratching the record even when the stylus is shifted across its face.

It is evident that the concentric sound tubes and horns herein described may also be applied to the ordinary phonograph in which the stylus swings on a pivoted elbow, but I prefer the axial motion of the diaphragm with respect to the sound tubes as giving a very much clearer and better production of the sounds impressed on the record.

It is evident that the reproducing mechanism herein described may be used with a cylinder record as well as with the disk record shown. It is also evident that a common spirit level may be employed on top of the cabinet to show the inclination of the cabinet and thus of the record when the same is adjusted as herein described to cause the motion of the stylus to be aided by gravity.

Having thus described my invention and the mode in which I carry the same into practice, I claim as new and desire to secure by Letters Patent,

1. In a talking machine, the combination, with the record and its actuating mechanism, of a sound box carrying the reproducing mechanism, a traveling sound tube at-

attached to the sound box, and carrying a roller, a fixed sound tube within which the traveling sound tube moves telescopically, its roller running along the interior of the fixed sound tube, a roller on the sound box and a rail on which the latter roller runs, so that the said sound box and its attached tube are carried by the two rollers and the stylus in a straight line across the record.

2. In a talking machine, the combination, with the record and its actuating mechanism, of a sound box carrying the reproducing mechanism, a traveling sound tube attached to the sound box, a fixed sound tube along which the traveling sound tube travels telescopically, a roller carried by the sound box, a rail along which said roller runs to guide the sound box across the record, and a flange along said rail to engage the roller and hold the sound box in an elevated position for replacing the record.

3. In a talking machine, the combination, with the record and its actuating mechanism, of a sound box carrying the reproducing mechanism, a traveling sound tube attached to the sound box, a fixed sound tube along which the traveling sound tube moves telescopically, a roller carried by the sound box having an annular groove, a rail on which said roller runs and a flange along said rail to engage the annular groove on the roller.

4. In a talking machine, the combination, with the record and its actuating mechanism, of a sound box carrying the reproducing mechanism, a traveling sound tube attached to the sound box, a fixed sound tube along which the traveling sound tube moves telescopically, a roller carried by said sound box and having an annular shoulder, a rail on which said roller runs, and a flange on said rail to engage said shoulder on the roller and support the sound box in an elevated position for replacing the record.

5. In a talking machine, the combination, with the record and its actuating mechanism, of a sound box carrying the reproducing mechanism, a traveling sound tube attached to the sound box, a fixed sound tube along which the traveling sound tube moves telescopically, a roller carried by the sound box having an annular groove and an annular shoulder, and a rail having a flange on which said roller runs with its groove engaging said flange, the sound box to be raised until the shoulder on said roller engages the flange on said rail so as to hold the sound box in an elevated position for replacing the record.

6. In a talking machine, the combination, with the record and its actuating mechanism, of a sound box carrying the reproducing mechanism, a traveling sound tube attached to said sound box, a fixed sound tube along which the traveling sound tube moves telescopically, a roller carried by the sound box,

a rail on which said roller runs, and a hook-like projection carried by the sound box to extend under said rail and engage and hold the sound box when swung over the rail to replace the stylus.

7. In a talking machine, the combination, with the cabinet holding the record and its actuating mechanism, of a fixed sound tube, a socket, standard and set screw for securing the said sound tube to the cabinet, a sound box and attached sound tube traveling telescopically along said fixed sound tube, a roller carried by said sound box, a bracket on said fixed sound tube, a standard on the cabinet and a rail on which said roller runs connecting the bracket on the fixed sound tube with the standard on the cabinet and serving rigidly to hold the fixed sound tube as well as itself in place.

8. In a talking machine, the combination, with the record and its actuating mechanism, of a stylus, a sound box and a diaphragm fixed thereon, so as to leave an opening in front of the diaphragm and an open space behind and around the diaphragm, an outer sound tube communicating with the space around the diaphragm for conveying the reflected vibrations from behind the diaphragm, an inner sound tube communicating with the opening in front of the diaphragm so as to convey the vibrations directly therefrom, and means for guiding the sound box across the record.

9. In a talking machine, the combination, with the record and its actuating mechanism, of a stylus, a sound box and a diaphragm fixed therein, so as to leave an opening in front of and a space behind and around the diaphragm, and concentric sound tubes communicating with the opening in front of the diaphragm and with the space around the diaphragm respectively, concentric amplifying horns, communicating with the inner and outer sound tubes respectively, and means for guiding the sound box across the record.

10. In a talking machine, the combination, with the record and its actuating mechanism, of a stylus, a sound box and a diaphragm fixed therein so as to leave openings in front of, behind and around the diaphragm, concentric traveling sound tubes fixed to the sound box axially in line with the center of the diaphragm and communicating with the openings in front of and around the diaphragm respectively, and fixed concentric sound tubes along which respectively the concentric traveling sound tubes move telescopically with the sound box.

11. In a talking machine, the combination, with the record and its actuating mechanism, and the fixed concentric sound tubes, of concentric sound tubes traveling telescopically along the fixed concentric sound

tubes respectively, a sound box having its cylindrical wall joined to the outer traveling sound tube, a diaphragm ring fixed within the sound box and connected to the inner traveling sound tube, a diaphragm in said ring, and a stylus connected to said diaphragm.

12. In a talking machine of the character described, the combination, with the outer traveling sound tube, having an annular ring and flange on the end thereof, of the sound box having its cylindrical wall joined detachably to said ring and flange, substantially as described.

13. In a talking machine of the character described, the combination, with the sound box having the axially slotted rests on the interior thereof, of the diaphragm ring having the radial studs to fit detachably in said rests and leave a space behind the diaphragm

and between the diaphragm ring and wall of the sound box.

14. In a talking machine, the combination, with the record and its actuating mechanism, the sound box carrying the diaphragm ring and diaphragm therein, and means for guiding the sound box across the record, of a thin spring plate fixed to the periphery of the diaphragm ring in a plane substantially parallel to that of the diaphragm, a stylus clamp fixed to said spring plate, and a vibration-transmitting connection between the diaphragm and the stylus clamp.

In testimony whereof I have hereunto set my hand April 1908.

JAMES H. MOUNT.

In presence of—

GUY J. AGRATI,

CLARENCE L. BURGER.