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J. JETTER.

SELF ADJUSTING ARM FOR TALKING MACHINES.

APPLICATION FILED MAR. 7, 1903.

NO MODEL.

Fig. 4.

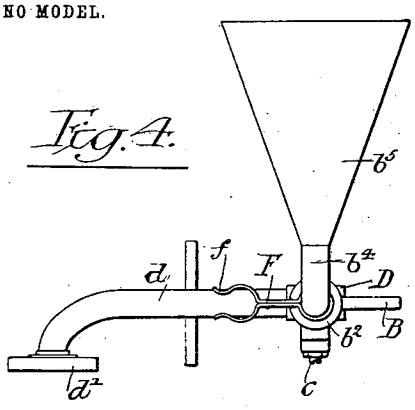


Fig. 1.

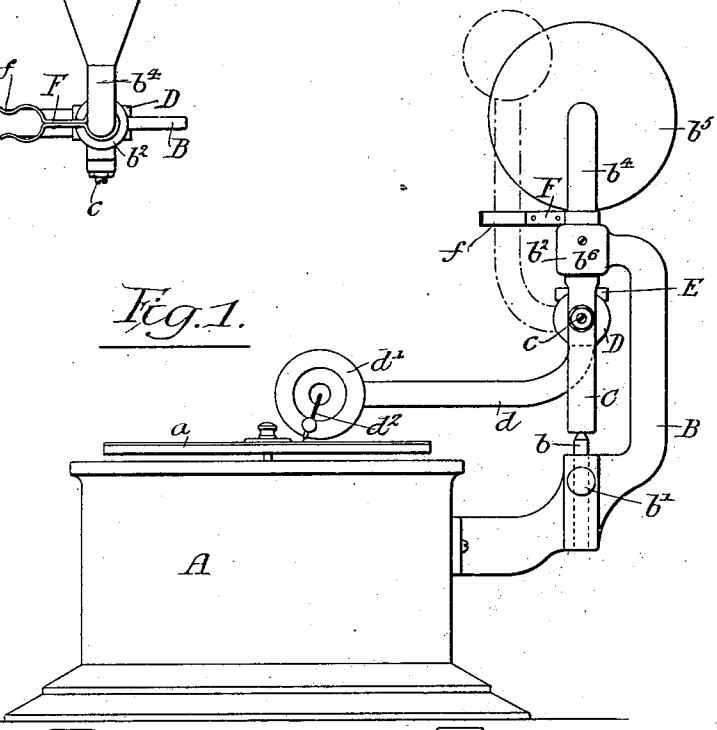


Fig. 2.

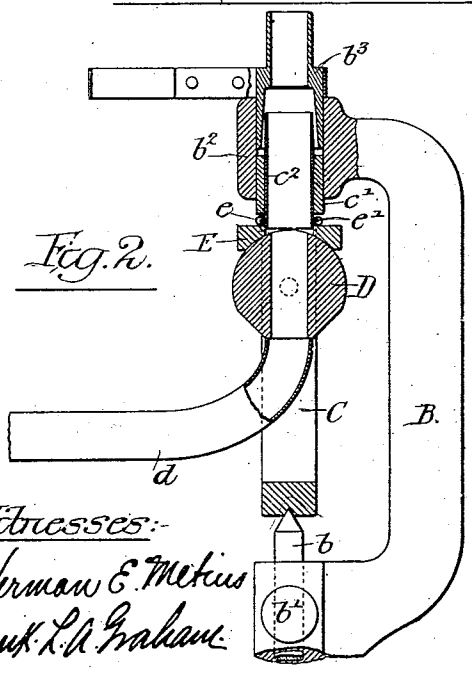
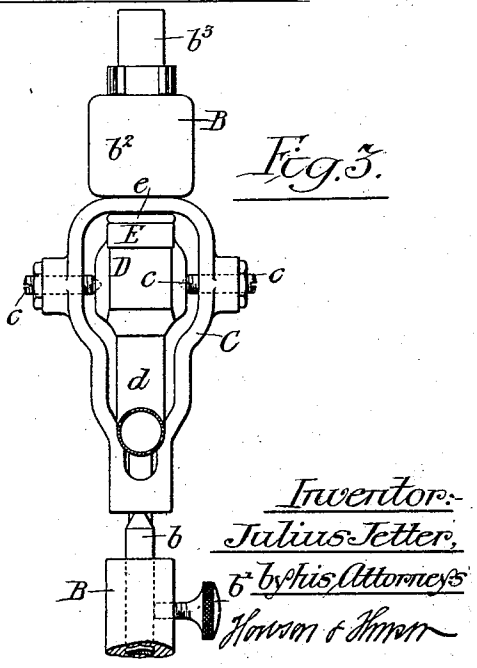


Fig. 3.



Witnesses:-

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No. 750,977. Patented February 2, 1904.

UNITED STATES PATENT OFFICE.

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SELF-ADJUSTING ARM FOR TALKING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 750,977, dated February 2, 1904.

Application filed March 7, 1903. Serial No. 146,706. (No model.)

To all whom it may concern:

Be it known that I, JULIUS JETTER, a citizen of the United States, residing at Camden, New Jersey, have invented certain Improvements in Self-Adjusting Arms for Talking-Machines, of which the following is a specification.

My invention relates to certain improvements in the detail construction of that part of a talking-machine particularly designed for the support of what is known as the "sound-box," and incidentally for the support of the horn.

The object of the invention is to provide an improved sound-box connection and support of such a design and construction that it shall be free to accommodate itself to records of different thicknesses as well as to unevennesses in the record itself.

The invention further provides means for adjusting at will the vertical height of the sound-box carrying-arm and is intended, moreover, to provide a conduit from the sound-box to the horn of such a construction and arrangement of parts that the volume of sound delivered from a given record shall be greater than has hitherto been obtainable and at the same time shall be free from certain objectionable elements usually noted.

These objects I attain as hereinafter set forth, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation of my improved device, showing it as mounted upon a talking-machine. Fig. 2 is a sectional elevation showing the detail construction of the device illustrated in Fig. 1. Fig. 3 is a front elevation of my improved device, showing the trunnion-support for the box-carrying tubular arm; and Fig. 4 is a plan view of the structure shown in the preceding figures.

In the above drawings, A represents the casing of a talking-machine, having within it any desired form of mechanism (not shown) by which a record *a* in the shape of a disk may be rotated on a vertical axis.

B is a casting forming a standard, preferably held by screws or bolts to the side of the casing A and made with a recess or opening in its lower portion, in which is carried a vertically-adjustable spindle or pivot *b*, this being held in any desired position by means of a set-screw *b'*. The upper portion of the standard is constructed to form a bearing (illustrated at b^2) whose center line is preferably coincident with the center line of the spindle *b*. Within the upper part of this bearing is fitted a tubular piece or bushing b^3, held in position by a set-screw b^6 and made with its upper end of a reduced diameter for the accommodation of an arm b^4, which is tubular and carries upon its end a horn b^5.

Fitting into the bearing b^2 from beneath and provided at its lower portion with a recess for the end of the spindle *b* is a yoke-piece C, which, as shown in Fig. 2, has at its top an upwardly-extending tubular portion *c'*, fitting in the bearing b^2, above mentioned, so that as a whole the yoke is free to rotate on a vertical axis. I preferably so design this part *c'* so that it does not under any circumstances directly touch the piece b^3 fitting within it, a tube c^2 having its walls reduced in thickness at the upper end, so that it extends into but is out of contact with said piece. This latter is provided with a tapering cavity formed in continuation of the passage through it for the accommodation of the tube c^2, which, as above noted, should not touch the interior of said part. Projecting through the sides of the yoke-piece are trunnion screws or bolts *c*, serving to support on a horizontal axis a preferably cylindrical piece D, formed with a passage through it and carrying as a continuation of said passage a tubular arm *d*, which is curved downwardly and outwardly. It will be understood that while for ease of construction I use a cylindrical piece, as shown, a spherical piece may in some cases be substituted. The end of the arm *d* is again bent at right angles and has fixed to it a sound-box *d'*, provided with a stylus d^2 for engagement with the record *a*. It is to be noted that wherever the arm *d* changes its direction such change is made in as gentle a curve as possible, it being desired to avoid abrupt turns and sharp corners in the various passages between the sound-box and the horn, thereby interfering to the

least practical extent with the sound-waves during their movement between these parts of the apparatus.

The outer cylindrical surface of the piece D is carefully finished and has bearing upon it a saddle-piece E of rectangular outline when viewed from above and made so that its under surface conforms to the said cylindrical surface of the piece D. This piece E is yieldingly pressed against the piece D by any desired form of spring, which in the recent instance is made in the form of a ring of rubber tubing *e*, having within it a resilient wire *e'*. As shown in the drawings, the piece E has through it a circular opening, preferably larger in diameter than the channel or passage through the piece D, into which fits the lower end of the tube c^2, and it is to be noted that when the arm *d* is in its normal position—that is, with the stylus in engagement with the record—there is a continuous channel or passage from said arm through the pieces D and E, through the spring-ring *e*, the tube c^2 of the yoke C, bushing b^3, and through the tube b^4 to the horn b^5.

I preferably place on the upper portion of the bushing b^3 a spring-clip F, which is freely movable in a horizontal plane and is provided with resilient jaws *f* for the reception of the arm *d* when this is turned on its trunnion-screws *c* into the position shown in dotted lines in Fig. 1.

It will be seen that in operation as the record *a* is turned on its vertical spindle the tubular arm *d*, being freely movable up and down, can accommodate itself not only to inequalities in the surface of the record, but also automatically adapts itself to the changes in level of said record where for any reason this does not revolve in a truly horizontal plane. It has been found by experiment that in operation this device results in the production of a greatly-increased volume of sound from which most of the objectionable scratching and unnecessary noise is absent. The weight of the arm *d*, with the sound-box *d'*, is to a great extent balanced, since it will be understood that the spring-ring *e* presses the piece E against the cylindrical surface of the piece D with a force sufficient to neutralize to a great extent the tendency of the arm *d* to revolve on its trunnion-screw under the action of gravity. It will further be noted that the yoke-piece C as a whole may be adjusted vertically, so as to retain the arm *d* and the sound-box *d'* in what has been found to be the most advantageous position relative to a record regardless of variations in the thickness of different records. When it is desired to remove a record, the arm *d* can be turned on its trunnion-screws and inserted in the jaws *f* of the spring-clip F, in addition to which the whole device can be turned on its vertical axis, so as to be completely out of the way.

By constructing the various parts connecting the sound-box and the horn so as to avoid sharp corners or turns I am enabled to produce sounds of greater clearness and volume than have hitherto been obtainable, which desirable result is still further aided by avoiding direct contact between the parts c^2 and b^3.

In addition to the advantages noted in connection with the operation of my invention it will also be seen that it may be constructed with ease and comparatively low cost, there being not only few parts, but very little soldering or machine-work necessary thereon.

I claim as my invention—

1. The combination of a casing of a talking-machine, a standard, a yoke-piece supported by said standard and free to revolve on a vertical axis, a piece engaged by said yoke at two points in such manner as to be free to turn on a horizontal axis and having through it a passage, a device, for receiving sound-waves, in communication with said passage, a conduit connected to said piece, and a sound-box attached to said conduit so as to form a continuous passage therefrom to the receiving device, substantially as described.

2. The combination of the casing of a talking-machine, a standard, a pivotal supporting structure and a bearing on the standard, a yoke engaged by said structure and entering the bearing, a sound-box and a tubular arm carried by said yoke-piece so as to be free to move around a horizontal axis, and means extending through the bearing and connecting the tubular arm with a sound-transmitting device, substantially as described.

3. The combination of the casing of a talking-machine, a standard, a horn supported by the standard, a yoke-piece also carried by the standard and free to turn on a vertical axis, a substantially cylindrical piece supported so as to be free to turn on a horizontal axis in said yoke and having through it a passage normally in connection with the horn, a tubular arm also in connection with the passage and a sound-box on said arm, substantially as described.

4. The combination with the casing of a talking-machine of a standard, a sound-transmitting device supported thereby, a yoke-piece carried by said standard, a substantially cylindrical piece supported by the yoke and free to turn on a horizontal axis, said cylindrical piece having through it a passage, a tubular arm connected to said piece in continuation of said passage, a piece fitting the curved surface of the cylindrical piece, with means for yieldingly pressing said two pieces together, substantially as described.

5. The combination of a standard, the casing of a talking-machine having mechanism for operating a record, a sound-transmitting device carried by the standard, said standard having a bearing, a tubular connection extending through the bearing and connected to said sound-transmitting device, a piece car-

ried by the standard and free to turn on a horizontal axis, said piece having fixed to it a tubular arm, a sound-box on said arm and means frictionally acting on said piece whereby the tendency of said arm to turn said supporting-piece is counteracted, substantially as described.

6. The combination of the casing of a talking-machine, a standard having a pivot and a bearing, a yoke-piece having a portion extending into said bearing and engaging said pivot, a piece having a passage through it and carried by the yoke so as to be free to turn on a horizontal axis, a saddle-piece fitted to the surface of said revoluble piece, means for pressing said two pieces together, and a tubular arm connected to said passage, with a sound-box carried on said arm, substantially as described.

7. The combination of a standard, a sound-transmitting device supported thereon, a tubular arm in connection with said device, a sound-box carried by said arm, the arm and the sound-box having means whereby they are supported so as to be free to turn on a horizontal axis, with a device carried by the standard for engaging said arm and retaining the same in a fixed position, substantially as described.

8. The combination of a standard, a vertically-adjustable pivot structure carried thereby, a yoke-piece engaging said structure and held by the standard so as to be free to turn on a vertical axis, with a tubular arm having a sound-box carried by said yoke so as to be movable on a horizonal axis, with a sound-transmitting device connected to said tubular arm, substantially as described.

9. The combination of a standard having a bearing, a tube fixed therein, a yoke-piece carried by the standard and having a portion extending into the bearing, a sound-box, a tubular arm carrying the same and movably supported by the yoke-piece, a saddle-piece bearing upon a portion of the tubular arm, and a second tube extending from the said saddle-piece to the tube fixed in said bearing, substantially as described.

10. The combination of a standard having a bearing, a tube fixed therein, a yoke-piece carried by the standard, and having a portion extending into the bearing, a sound-box, a tubular arm carrying the same and movably supported by the yoke-piece, and a second tube having means whereby it is operatively connected to the movable arm and extended into said first tube, substantially as described.

11. The combination of a standard, a tube carried thereby for connection to a sound-transmitting device, a tubular arm having a sound-box and supported so as to be free to turn on both a horizontal and on a vertical axis, and a tubular connecting-piece extending between said arm and the tube, with means for supporting said piece out of direct contact with the tube, substantially as described.

12. The combination of a standard, a tube carried thereby for connection to a sound-transmitting device, a tubular arm having a sound-box and supported so as to be free to turn on both a horizontal and on a vertical axis, and a tubular connecting-piece extending between said arm and the tube, said tube having a tapered recess for the reception of said connecting-piece, with means for supporting said piece in movable contact with the said arm and out of direct contact with said tube, substantially as described.

13. The combination of a standard having a bearing, a yoke-piece movably carried by the standard and having a tubular portion extending into said bearing, a tubular arm having an enlarged end portion and movably supported by the yoke-piece, a saddle-piece between the said end portion of the arm and the tubular portion of the yoke-piece, and an annular spring for pressing together said saddle-piece and the end of the arm, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JULIUS JETTER.

Witnesses:
HARRY E. MORGAN,
JOS. H. KLEIN.