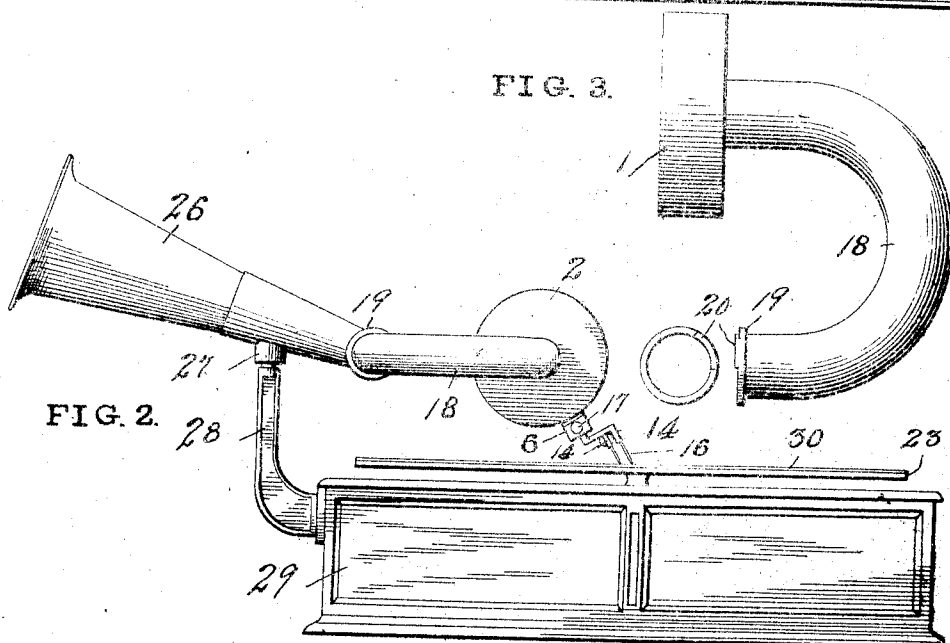
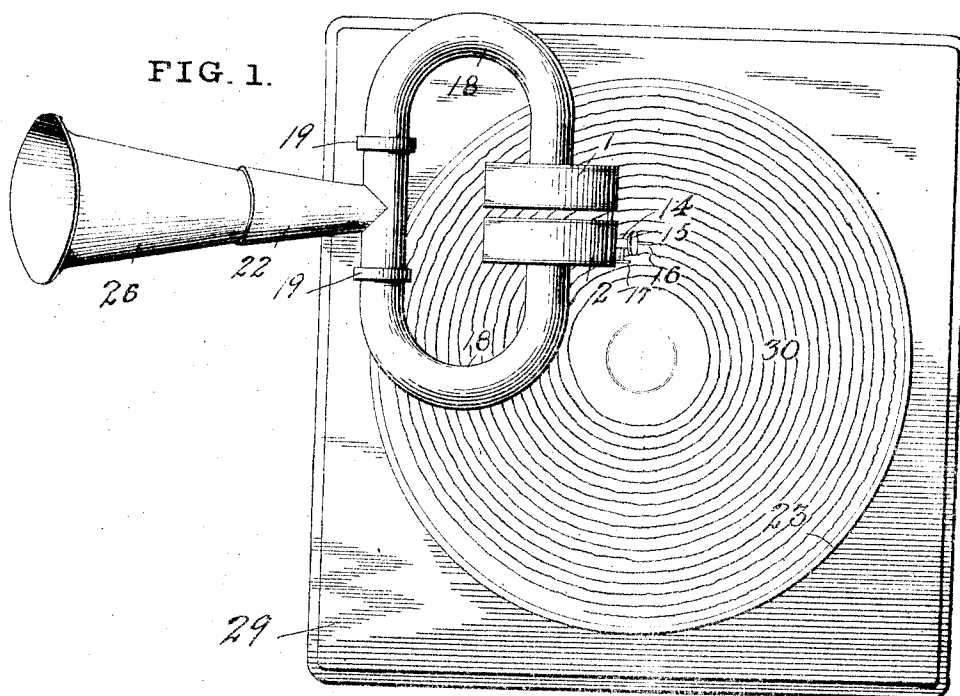


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TALKING MACHINE.  
APPLICATION FILED DEC. 22, 1903.

Patented Apr. 2, 1912.

2 SHEETS-SHEET 1.



Witnesses

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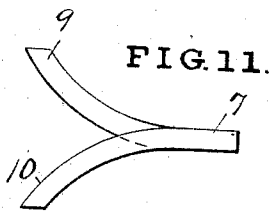


FIG. 6. FIG. 7.

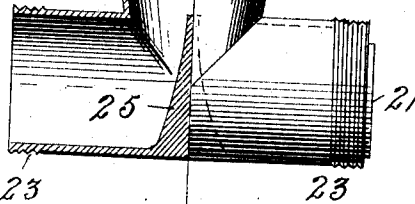
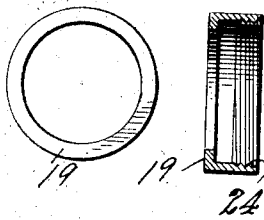


FIG. 4.

FIG. 5.

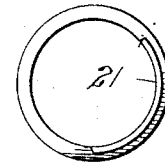


FIG. 8.

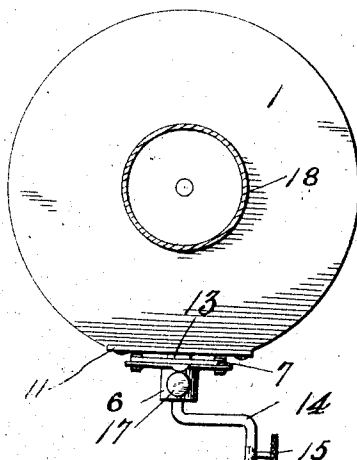


FIG. 10.

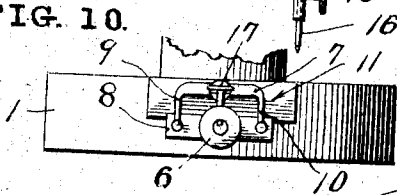
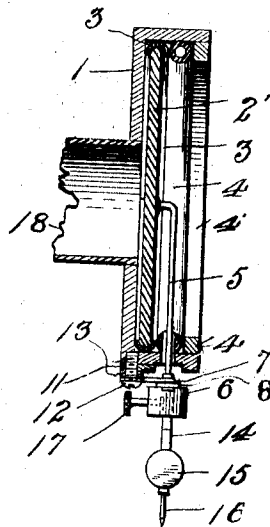


FIG. 9.



Witnesses

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# UNITED STATES PATENT OFFICE.

JOHN B. BROWNING, OF CAMDEN, NEW JERSEY, ASSIGNOR TO VICTOR TALKING MACHINE COMPANY, OF CAMDEN, NEW JERSEY, A CORPORATION OF NEW JERSEY.

## TALKING-MACHINE.

1,022,180.

Specification of Letters Patent.

Patented Apr. 2, 1912.

Application filed December 22, 1903. Serial No. 186,197.

*To all whom it may concern:*

Be it known that I, JOHN B. BROWNING, a citizen of the United States, and a resident of Camden, county of Camden, and State of New Jersey, have invented certain new and useful Improvements in Talking-Machines, of which the following is a full, complete, and exact disclosure, reference being had to the accompanying drawings, forming a part of this specification.

The objects of this invention are to provide in a talking machine a plurality of sound boxes arranged to reproduce either simultaneously or separately the same tones from a single record, and to arrange the said boxes so that the operator is enabled to change the volume and quality of the sound at will, by raising one box while the other continues playing; to provide means where- by a pair of independent sound boxes may be supported by a single sound tube; and to provide other improvements, as will appear hereinafter.

In the accompanying drawings, Figure 1 is a plan view of a talking machine constructed in accordance with this invention; Fig. 2 a side elevation of the same; Fig. 3 an enlarged plan and partial end view of a detail of the same; Fig. 4 an enlarged top plan view one-half in longitudinal central section of a detail of the same; Fig. 5 a side elevation of one portion of Fig. 4; Figs. 6 and 7 are a side elevation and a longitudinal central section respectively of a detail of the same; Figs. 8, 9 and 10 are a rear, a fragmentary central sectional, and a fragmentary bottom view respectively, of an improved sound box forming a part of this invention, and Fig. 11 is a diagrammatic view of a detail of the same.

Referring to the drawings, one embodiment of this invention comprises two independent sound boxes or reproducers having casings 1 and 2 respectively, each having a cylindrical bore, and containing a circular diaphragm 2' made of any suitable material, preferably mica having a transversely rounded peripheral edge. Each diaphragm is mounted in a split annular rubber tube or gasket 3, which contacts only with the rounded peripheral edge of the diaphragm and the outer surface of which is rounded transversely and contacts with the surface of the bore and the inner surface of the end of the casing and prevents the diaphragm

from contacting with any part of the casing. This split gasket also serves as a packing and as an insulator for the diaphragm and prevents the edge of the diaphragm from splitting, and engaging the rounded edge only of the diaphragm, forms a mounting which permits the diaphragm to vibrate very freely throughout its entire area.

A tubular rubber gasket 4 is inserted in each sound box casing to hold the split gasket 3 and its diaphragm 2' in position, and both gaskets are held in place by a metallic ring 4' which is inserted through the open face of the casing and fits snugly within the bore of the casing, and which may be attached to the casing in any suitable manner.

A stylus bar 5, is phonetically connected to each diaphragm 2' by my approved means and extends through openings provided therefor in the gasket 4 and in the sound box casing. The free end of the stylus bar 5 is enlarged to form a cylindrical portion 6 which is provided with an axial socket opening into the end thereof as shown and with oppositely extending rigid arms, rigid therewith, formed by the transverse plate or portion 8. To the ends of these arms are rigidly secured by rivets or otherwise, the outer ends respectively of two spring arms 9 and 10 which are connected at their opposite ends by the comparatively rigid flat portion 7 forming a U-shaped spring support for the stylus bar. The stylus bar 5 and its transverse arms or plate 8 are preferably made in one piece of metal so as to be substantially rigid to impart a positive vibratory motion to the diaphragm.

The U-shaped support for the stylus bar is preferably made of spring steel and the arms 9 and 10 are preferably deflected in opposite directions before being tempered to assume the position shown in Fig. 11 and the support is then tempered uniformly. When secured in place between the sound box casing and the rigid arms of the stylus bar, the arms 9 and 10 are held parallel, in a plane perpendicular to the diaphragm, and under balanced stresses.

For connecting the U-shaped spring support rigidly to the sound box casing, one side of the casing is flattened and is provided with a plate 11 secured thereto, upon which is mounted a washer 13, against the outer surface of which is rigidly secured the

intermediate portion 7 of the U-shaped support by means of a screw 12 which passes freely through the spring support, washer 13, and plate 11, and is threaded into the sound box casing. This construction holds the intermediate portion 7 of the spring support in fixed position but permits the free elastic motion of its arms 9 and 10. Each stylus bar is therefore free to oscillate in a plane perpendicular to its diaphragm but is held comparatively rigid against movement in any other direction.

A rotatively and longitudinally adjustable crank shaped stylus arm 14 is secured in the socket of the free end 6 of each stylus bar by a set screw 17, and the outer end of each stylus arm 14 is provided with a socket for holding a stylus 16, and with a thumb screw 15 for clamping the stylus in position. The construction is such that by adjusting the stylus arms 14 the stylus of one sound box may be arranged to track closely after the stylus of the other sound box in the same track or groove of the record so that the two boxes will reproduce practically simultaneously the same tones from the record.

For supporting the sound boxes, a metallic U-shaped tube 18 is secured at one end in the opening in the back of the casing of each sound box by a driving fit, and the other end of the tube is provided with a flange or collar 19 rigid therewith, provided with a segmental stop plate 20 concentric and rigid therewith, which interlocks with a segmental stop plate 21 concentric and rigid with one end of a hollow T coupling 22. The T coupling 22 comprises a transverse substantially cylindrical tubular portion extending between the ends of the U-shaped tubes 18, and a substantially conical tubular portion flaring centrally, rearwardly and upwardly therefrom, substantially at right angles thereto. The ends of the transverse cylindrical portion of the T are each provided with external screw threads 23 which are right and left hand respectively, and upon each end is threaded a union collar 19' having internal threads 24 and whereby the flanged ends of the U tubes are rotatably secured to the ends of the transverse portion of the T.

The T coupling 22 is provided with a circular baffle plate or deflector 25 arranged transversely of the cylindrical portion of the T and in alinement with the axial plane of the conical portion of the T substantially perpendicular to the axis of the transverse portion of the T. This deflector is preferably integral with the T and tapers in thickness toward the conical portion of the T, the sides of the deflector being slightly curved.

The purpose of the deflector 25 is to direct the sound waves, coming from the sound boxes through the U tubes 18, into the lon-

gitudinal central portion of the T and toward the horn or sound amplifier 26 which is threaded into the outer end of the conical portion of the T. The deflector therefore transmits the full phonetic effect of both sound boxes through a single channel to the amplifier without any nullifying effect of one sound box upon the other.

The T coupling 22 carrying the sound boxes and the horn 26, is rotatably supported by a vertical post 27 which is mounted to rotate upon a vertical axis in the upper end of a rigid metal arm or bracket 28 which is rigidly secured to the usual talking machine cabinet 29 by any suitable means. The cabinet 29 contains the usual motor for rotating the usual turn table 23 which is mounted upon the cabinet for carrying a record 30. By this construction the sound boxes when in operative position, are arranged close to and facing each other and substantially in axial alinement, and are free to swing in unison across the face of a record, or to be moved separately or in unison toward or away from the record. The sound boxes are also free when in operative position, to move either up or down sufficiently to conform to any unevenness in the surface of the record. When not in operative position on the record, the sound boxes are supported by means of the stop plates or projections 20 engaging with the corresponding plates 21, and either sound box may be inverted to rest in an inoperative position while the other sound box is left in operation.

Although this invention has been here shown in only one of the forms in which it may be embodied, it is obvious that many changes might be made in the construction herein set forth without departing from the spirit of the invention, or the scope of the appended claims.

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

1. In a talking machine a plurality of sound reproducers connected to a common outlet, each of said sound reproducers having a vibrating arm and a needle point connected thereto by an adjustable arm, and a compensating spring attached to each sound reproducer and also to each of the vibrating arms.

2. A talking machine, comprising a T shaped sound conveyer mounted upon a vertical axis, and a sound conveyer connected with each lateral arm of the T to swing vertically and sound box mechanism connected with the free end of said latter conveyers.

3. A device of the class described comprising a record tablet, a plurality of sound conveying tubes mounted to swing about a fixed axis and in a plane parallel to said tablet, a sound box carried by each of said tubes and engaging said record tablet, and a

hollow sound collecting member connecting said tubes.

4. In a talking machine, the combination with a pivoted swinging sound conveying arm provided with a sound conduit, of a plurality of separately movable sound boxes carried thereby and communicating with said conduit.

5. A talking machine comprising a pivoted movable arm provided with a sound conduit and a plurality of sound boxes carried by said arm and communicating with said conduit, each sound box being provided with an independent stylus bar.

6. In a talking machine, the combination with a pivoted swinging sound conveying arm provided with a sound conduit, of separately movable sound boxes carried thereby and communicating with said conduit, each sound box being provided with an independent stylus bar.

7. In a talking machine, a record support, a sound arm mounted to rotate about a single axis and provided with a sound conduit, a plurality of sound boxes carried by said arm and communicating with said conduit, means for supporting a stylus carried by each of said boxes, each of said boxes being movable with respect to said arm and away from said support a sufficient distance to permit of the removal or insertion of a stylus.

8. In a talking machine, the combination with a flat disk record having an undulatory line thereon corresponding to a sound wave, of a plurality of sound boxes mounted to swing about an axis perpendicular to said disk provided with separate stylus needles arranged to engage simultaneously said line.

9. In a talking machine, the combination with a sound tube, of a pair of oppositely disposed lateral tubular U-shaped extensions carried thereby and movable with respect thereto, and a sound box carried by each of said extensions.

10. In a talking machine, the combination with a swinging sound tube, of a pair of oppositely disposed lateral tubular U-shaped extensions carried thereby and movable with respect thereto, and a sound box carried by each of said extensions.

11. In a talking machine, the combination with a sound tube, of a pair of oppositely disposed inwardly facing sound boxes carried thereby and communicating therewith, each of said boxes being provided with a separate stylus bar.

12. In a talking machine, the combination with a sound tube, of a pair of oppositely disposed inwardly facing sound boxes carried thereby and communicating therewith and movable independently of each other thereon.

13. In a talking machine, the combination with a sound tube, of a pair of oppositely

disposed sound boxes carried thereby and communicating therewith, each of said boxes being provided with a separate stylus bar, and one of said bars being provided with a laterally extending needle holding arm.

14. In a talking machine, the combination with a tubular sound conveyer, of a pair of oppositely disposed tubular extensions carried thereby and movable with respect thereto, and a sound box carried by each of said extensions.

15. In a talking machine, the combination with a plurality of sound reproducers communicating with a common outlet, of a stylus bar mounted to oscillate on each reproducer and an arm adjustably connected to each stylus bar for holding a stylus.

16. In a talking machine the combination with a sound record, of a plurality of sound boxes engaging said record and sound conveying means mounted to swing about a fixed axis and connecting said sound boxes.

17. In a talking machine, the combination with a hollow movable member mounted to swing upon a fixed axis, of a plurality of sound boxes carried thereby and communicating therewith.

18. In a talking machine, the combination with a hollow movable member, of a plurality of sound boxes carried thereby and communicating therewith and movable independently thereof.

19. In a talking machine, the combination with a member rotatably mounted upon a vertical axis, of a plurality of sound boxes carried thereby.

20. In a talking machine, the combination with a horizontal rotary record support, of a sound conveyer mounted to swing upon a vertical axis over said support and having a sound conducting passage, and a plurality of sound boxes carried by said conveyer, movable with respect thereto, and communicating with said passage.

21. In a talking machine, the combination with a member rotatably mounted upon a vertical axis, of a plurality of sound boxes carried thereby, each of said sound boxes being independently movable, upon a substantially horizontal axis.

22. In a talking machine, the combination with a plurality of sound boxes, each provided with a separate stylus, of means for the separate adjustment of each of said styluses laterally to hold the same in alignment.

23. In a talking machine, the combination with a sound record, of a plurality of styluses mounted to swing about a common axis to engage said record and free to be vibrated and propelled by the same to reproduce practically simultaneously the same sounds.

24. In a talking machine, the combination with a single flat disk sound record, of a

plurality of reproducers mounted to swing about an axis perpendicular to said disk and separately actuated by said record to reproduce practically simultaneously the same sounds.

25. In a talking machine, the combination with a tubular sound conveyer, of a sound box carried thereby and movable with respect thereto, and means between the sound box and the conveyer for limiting the extent of movement of the sound box.

26. In a talking machine, the combination with a tubular sound conveyer having a tubular end portion extending laterally therefrom, of a tubular section connected to the end of said transverse portion and movable with respect thereto, a sound box carried by said tubular section, and means between said transverse portion and said tubular section for limiting the movement of said tubular section.

27. In a talking machine, the combination with a support, of a section carried by said support and movable with respect thereto, a sound box carried by said section, and means between said section and said support for limiting the movement of said section.

28. In a talking machine, the combination with a tubular support, of a tubular member movable with respect thereto, a union collar between one end of said support and said member for connecting the same, and a sound box carried by said movable member.

29. In a talking machine, the combination with a tubular support having one end externally threaded, of a movable tubular member having one end provided with an external flange, a union collar threaded upon the threaded end of said support and engaging over said flange to connect said movable member to said support, and a sound box carried by said movable member.

30. In a talking machine, the combination with a tubular support, of a movable tubular member having one end communicating with one end of said support, a stop upon said end of said support, a stop upon said end of said movable member adapted to engage said first mentioned stop to limit the movement of said movable member, and a sound box carried by said movable member.

31. In a talking machine, the combination with a support, of a member movably connected to said support, a sound box carried by said movable member and invertible with respect to said support, and means between said movable member and said support for holding said sound box in its inverted position.

32. The combination with a rotatably mounted hollow coupling having a longitudinal portion and a transverse end portion, of sound amplifying means carried by and communicating with said longitudinal portion, and a sound box connected to and communicating with each end of said transverse portion.

33. The combination with a hollow coupling having a longitudinal portion and a transverse end portion, of a sound amplifier carried by one end of said longitudinal portion and communicating therewith, a laterally extending tube carried by each end of said transverse portion and movable with respect thereto, and a sound box carried by each of said tubes.

34. In a talking machine, the combination with a record support, of a rotatably mounted tubular support, and a plurality of sound boxes connected to and communicating with said tubular support and movable independently toward and away from said record support.

35. In a talking machine, the combination with a support, of a member carried by and movable with respect to said support, a sound box carried by said movable member and movable with respect thereto, and means carried by said movable member for holding said sound box in an inoperative position.

36. In a talking machine, the combination with a support, of a member movably carried by said support, a sound box carried by said movable member and invertible with respect to said support, and means to hold said sound box in its inverted position.

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

JOHN B. BROWNING.

Witnesses:

E. H. MUNDAY,  
M. G. COOMBS.