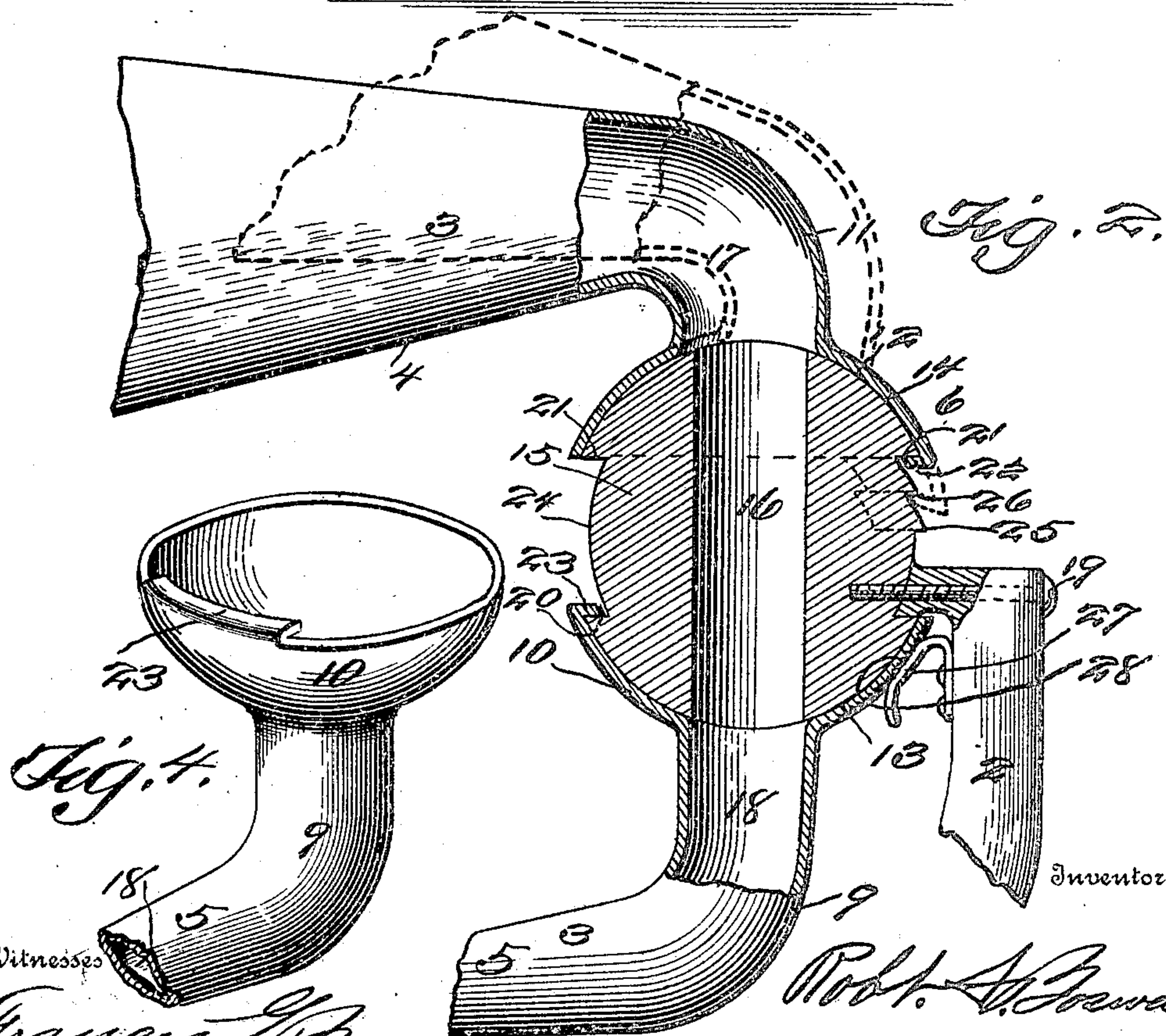
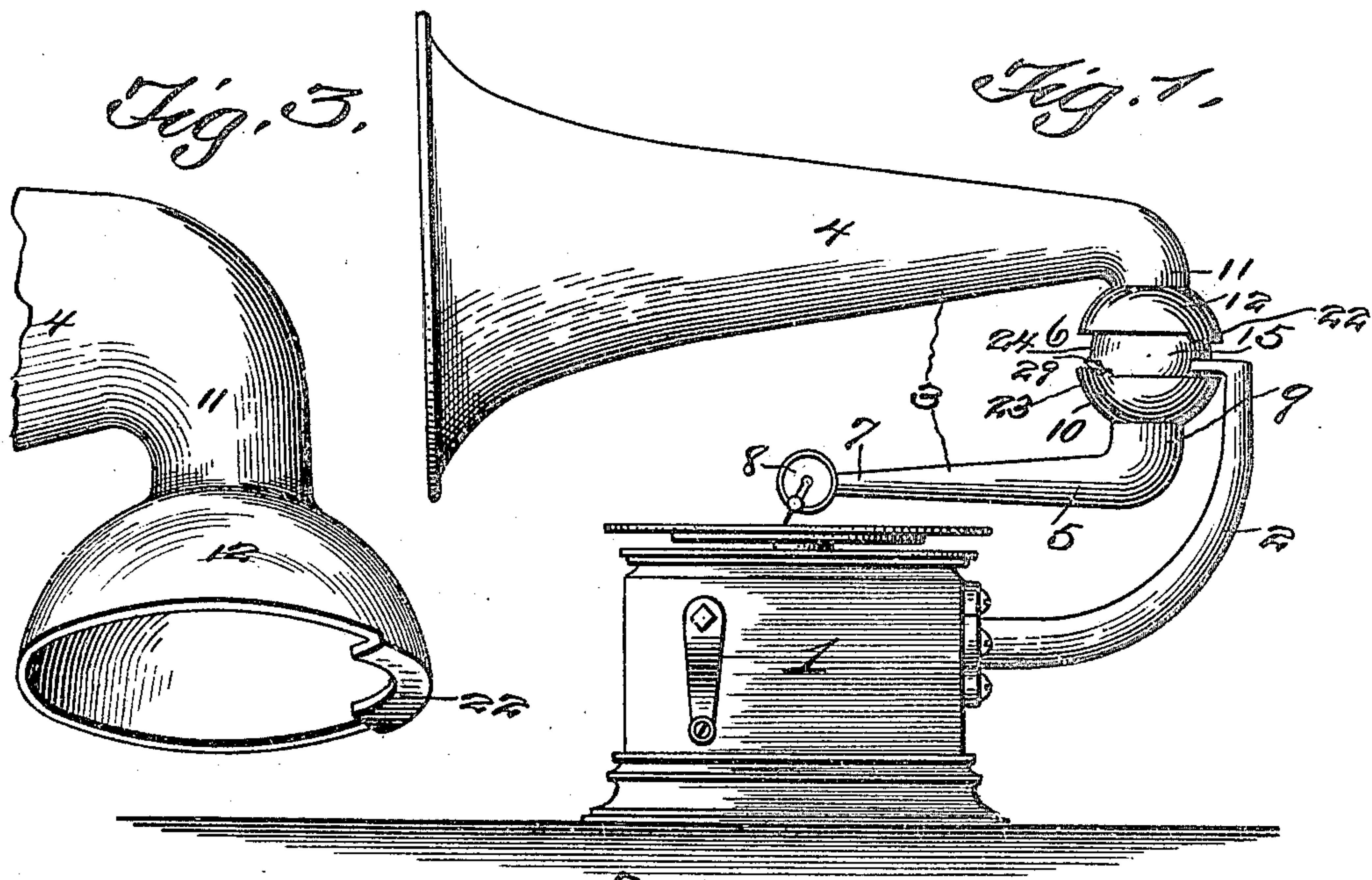


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SOUND CONVEYING TUBE FOR TALKING MACHINES.
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SOUND-CONVEYING TUBE FOR TALKING-MACHINES.

951,998.

Specification of Letters Patent.

Patented Mar. 15, 1910.

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To all whom it may concern:

Be it known that I, ROBERT A. BOSWELL, a citizen of the United States of America, residing at Washington city, District of Columbia, have invented a new and useful Sound-Conveying Tube for Talking-Machines.

The invention about to be set forth and claimed belongs to the art of acoustics, and it particularly pertains to a new and useful sound-conveying tube having a joint located at a point between the free ends thereof, and adapted for use upon talking machines and the like; and the object of the invention is to improve and simplify the structure shown, set forth and claimed in the Patent No. 859,165.

A further object of the invention is to provide an amplifying horn having a flexible ball joint breaking at a point between the free ends thereof, said ball having means to be engaged by the parts of the amplifying horn, for the purpose of retaining them in their proper correlative positions, and in order to allow them to have universal movements.

A further object of the invention is to provide the ball and one of the parts of the amplifying horn with means, by which the said parts may be held in raised positions, as desired.

In the exposition of this specification, a particular design of machine is adhered to but the invention is not to be confined to this special design. Its reduction to practice may require certain changes and alterations which the right is claimed to make, provided such changes and alterations are comprehended by the appended claims.

With the above described objects in view as well as others hereinafter set forth, the invention consists in the construction and combination of elements hereinafter described and pointed out in the claims.

Referring to the drawings: Figure 1 is a side elevation of a talking machine, showing an amplifying horn having a flexible ball joint breaking at a point between the free ends thereof. Fig. 2 is a vertical sectional view through the flexible ball joint, showing parts of the amplifying horn connected to the ball. Fig. 3 is a perspective

view of the upper half or part of the amplifying horn, showing the spherical flange to engage the ball of the joint. Fig. 4 is a perspective view of the lower half of the amplifying horn, or, in other words, the reproducer arm, also having a spherical flange to engage said ball.

In the drawings, 1 denotes the casing of a talking machine, containing the usual mechanism, (not shown) for rotating the table carrying the record.

2 is a bracket secured to one side of the casing for supporting the amplifying horn 3.

The amplifying horn comprises the horn proper 4 and the reproducer arm 5, which are joined together by the flexible ball joint 6. To the end 7 of the reproducer arm is attached the usual sound box 8, while the rear portion of the reproducer arm is provided with an upwardly curved elbow 9, to the upper end of which a spherical flange 10 is formed.

The amplifying horn proper is of the usual form having at the end opposite its flaring mouth an elbow 11, to the lower portion of which a spherical flange 12 is formed (which is similar to the flange 10); these flanges 10 and 12 are designed to engage separate bearings 13 and 14 of the spherical bearing member 15, as clearly shown in Figs. 1 and 2. This spherical bearing member or ball is provided with a central vertical bore or sound duct 16, which is designed to register (at times) with the sound ducts 17 and 18 of the amplifying horn proper and the reproducer arm. This spherical member may be integrally connected with the bracket, as shown in Fig. 1, or it may be a separate member detachably secured to the bracket 2, as shown clearly in Fig. 2, by means of a screw or other means 19, which penetrates through the upper part of the bracket and into the said member, as clearly shown. This spherical member or ball 15 is provided above and below with annular shoulders 20 and 21, which are designed to be engaged by the lips 22 and 23, which are formed with the spherical flanges 10 and 12. When the spherical flanges 10 and 12 are connected to the spherical member or ball, as shown clearly in Figs. 1 and 2, the lips 22 and 23 are arranged upon opposite sides

of said spherical bearing member or ball, in order to maintain the amplifying horn proper and the reproducer arm in connection with the said spherical member or ball, and in their proper correlative positions. The portion of the spherical bearing member or ball designated by the numeral 24, and between the annular shoulders 20 and 21, has its surface concentric with the center of the member or ball and the separate bearing surfaces 13 and 14 thereof.

Upon the rear portion of the surface between the said annular shoulders are formed shoulders 25 and 26, which are designed for the purpose of being engaged by the lip 22 of the flange 12, when it is desired to hold the amplifying horn proper in various raised positions, as shown clearly in dotted lines in Fig. 2. To dispose the amplifying horn proper in the position shown in dotted lines in Fig. 2, the said horn is swung directly at right angles to that shown in Fig. 2, and then slightly raised, thence returned to the position shown in dotted lines, which position is approximately in vertical alinement with the position seen in full lines, as will be clearly manifest.

When the reproducer arm is being slightly raised, for the purpose of changing the record, or changing the needle of the sound box, a suitable spring member 27 is provided, as shown in Fig. 2, to hold the flange 10 reasonably in close contact with the lower bearing surface 13 of the said member 15, in order to prevent displacement of the said arm. This member 27 may be made of any suitable metal, so long as it affords rigidity, sufficient to hold the reproducer arm in a raised position. To insure this feature of the invention, the said member 27 or the flange 10, or both, may be provided with roughened surfaces, as shown at 28 in Fig. 2.

In Fig. 4 the roughened surface 28 is dispensed with, as will be observed, and in Fig. 1 the member 27 is also not shown.

In Fig. 1, the shoulders 25 and 26 are dispensed with, and on the forward portion of the surface between the annular shoulders 20 and 21, a shoulder 29 is provided, which may be engaged by the lip 23 of the flange 10, when it is desired to support the reproducer arm in a raised position. This structure of device materially facilitates the connection of the amplifying horn proper and the reproducer arm (which is the fundamental principle and the object of this invention); for instance, an operator may connect the amplifying horn and the reproducer arm simultaneously to the spherical member by holding the amplifying horn proper in one hand and the reproducer arm in the other hand, and disposing these parts in an inclined position (while the flanges 10

and 12 are in close proximity to the spherical member or ball 15) so that the lips 22 and 23 are somewhat adjacent the annular shoulders 20 and 21, and in contact with the surfaces between the said shoulders, after which the amplifying horn proper and the reproducer arm are gradually lowered to the positions shown in full lines in Fig. 2, as will be clearly apparent.

From the foregoing, the essential features, elements and the operation of the device, together with the simplicity thereof, will be clearly apparent.

Having thus fully described the invention, what is claimed as new and useful is:—

1. A reproducer arm and horn; a spherical member having separate bearing surfaces and provided with means between the bearing surfaces to be engaged by the reproducer arm and horn in order to be maintained in position.

2. A spherical bearing member having annular shoulders; a reproducer arm and horn having means to engage said shoulders.

3. A spherical bearing member having annular shoulders; a reproducer arm and horn having means to engage said shoulders; said member having means to support the horn in a raised position.

4. A spherical bearing member having annular shoulders; a reproducer arm and horn having means to engage said shoulders; said member having means to support the arm in a raised position.

5. A spherical bearing member having annular shoulders; a reproducer arm and horn having lips to engage said shoulders.

6. A reproducer arm and horn having spherical members provided with lips; a spherical bearing member having means to be engaged by said lips.

7. An amplifying horn comprising a reproducer arm and horn; a flexible ball joint therebetween; said ball having annular shoulders; said reproducer arm and horn having means to engage said shoulders; said joint having means to support the arm and horn in various raised positions.

8. An amplifying horn; a flexible ball joint breaking at a point between its free ends and provided with means to be engaged by the adjacent connected ends of the horn; said joint having means to support the adjacent connected ends in various raised positions.

9. A talking machine; a reproducer arm and horn therefor; a flexible ball joint connected therebetween; said reproducer arm and horn having spherical members provided with lips; said ball having means to be engaged by said lips; said joint having means to support the arm and horn in various raised positions.

10. A talking machine; a reproducer arm

and horn therefor; a flexible ball joint connected therebetween; said reproducer arm and horn having spherical members provided with lips; said ball having annular
5 shoulders to be engaged by said lips; said joint having means to support the arm and horn in various raised positions.

In witness whereof, the applicant's signature, is hereunto affixed in the presence of two witnesses.

ROBERT A. BOSWELL.

Witnesses:

G. PERCY MCGHEE,
GEORGE I. BORGER.