

Sept. 18., 1923.

1,468,455

W. H. BRISTOL

MULTIPLE SOUND REPRODUCING APPARATUS

Filed Feb. 4, 1922

2 Sheets-Sheet 1

Fig. 1.

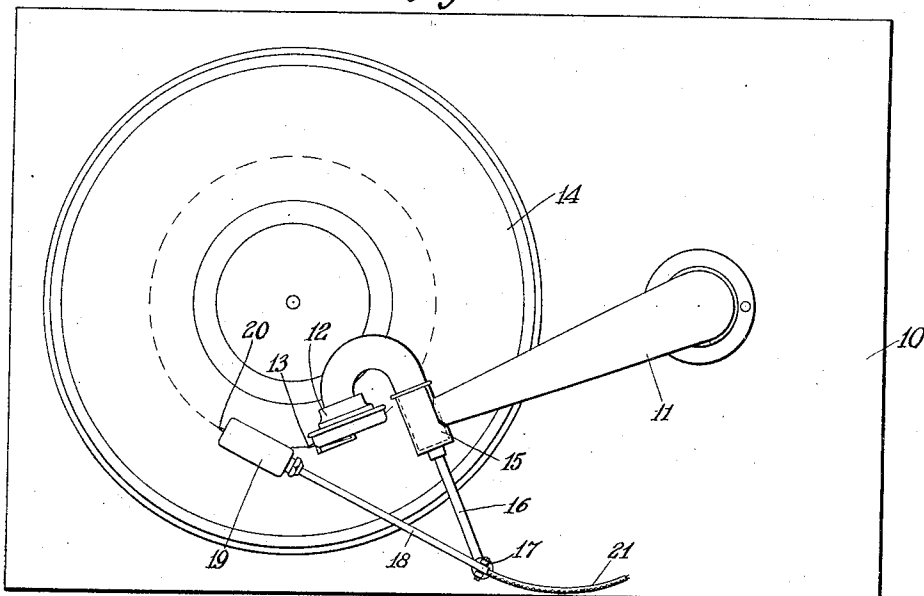
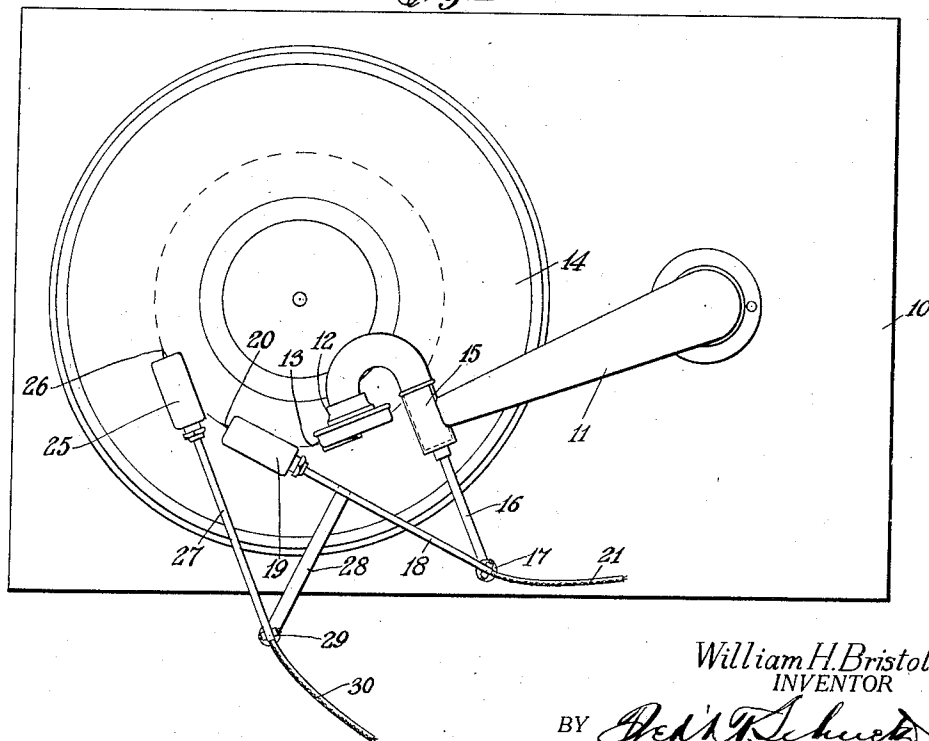


Fig. 2.



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Fig. 3.

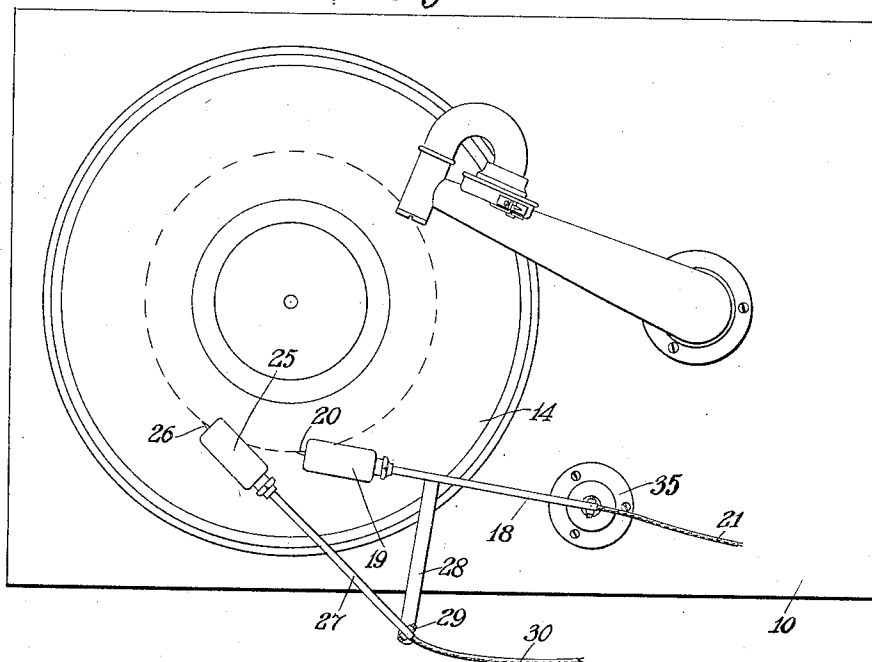


Fig. 4.

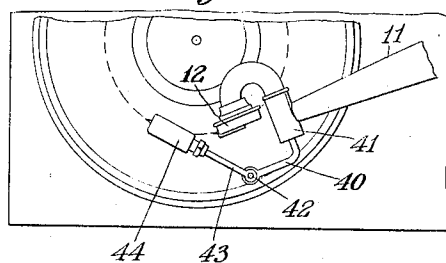


Fig. 6.

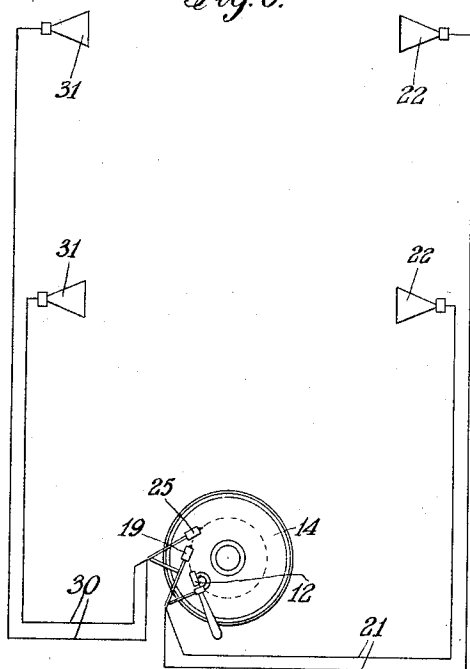
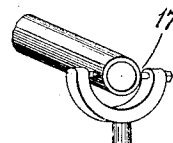


Fig. 5.



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UNITED STATES PATENT OFFICE.

WILLIAM H. BRISTOL, OF WATERBURY, CONNECTICUT.

MULTIPLE SOUND-REPRODUCING APPARATUS.

Application filed February 4, 1922. Serial No. 534,008.

To all whom it may concern:

Be it known that I, WILLIAM H. BRISTOL, a citizen of the United States, and a resident of Waterbury, in the county of New Haven and State of Connecticut, have invented certain new and useful Multiple Sound-Reproducing Apparatus, of which the following is a specification.

The invention relates to improvements in sound reproducing apparatus, and more particularly to apparatus of this character employing a plurality of sound reproducing members, that is to say apparatus in which a plurality of styli track tandem in the record grooves.

It has for its object to carry the various reproducers, which may be of the direct or of the electrical transmitter type, or both, from a common movable arm, as the tone arm of the talking machine proper; and to provide convenient means for independently setting each stylus in the same groove of the record, including a universal joint between the reproducers so that there will be no tendency for the styli to leave the groove, in which they are originally set, during reproduction of the entire record. A further object of the invention consists in maintaining a substantially fixed distance between the styli during operation.

The nature of the invention, however, will best be understood when described in connection with the accompanying drawings, in which—

Fig. 1 is a plan of a talking machine of well-known type, having the improved mechanism attached thereto.

Fig. 2 is a similar view illustrating a further embodiment of the invention.

Fig. 3 illustrates a modification whereby the tone arm may be dispensed with entirely if electrical reproduction only is desired.

Fig. 4 illustrates a modification in the carrying arm.

Fig. 5 is a detail perspective view of universal joint which may be employed in connection with the mounting of the electrical reproducers.

Fig. 6 is a diagrammatic view illustrating the manner in which sound may be distributed by means of the improved arrangement of reproducers.

Similar characters of reference designate

corresponding parts thruout the several views.

Referring more particularly to Fig. 1 of the drawings, 10 designates the top of a talking machine cabinet or the like upon which is mounted to swing in usual manner the tone arm 11, of well-known or special design, and carrying a sound box 12 provided with the usual stylus 13 for tracking in the grooves of the record 14.

In accordance with the invention, one or more additional sound reproducing elements in the nature of electrical transmitters are to be associated with the sound box 12 and its stylus 13 in the reproduction of sound from the record 14. To this end, there may be mounted over the end of the tone arm 11 a suitable sleeve or adapter 15 from which extends at right angles to the tone arm axis a bracket 16. At the end of this bracket is secured, as by a universal connection 17, more particularly shown in Fig. 5, an arm 18 for the electrical transmitter 19. This is located at the extreme outer end of the arm 18, said transmitter extending beyond the sound box 12 and carrying a stylus 20 for tracking in the grooves of the record 14 ahead of the stylus 13. Leads 21 are taken from the transmitter to a suitable horn or horns 22, Fig. 6, for reproduction of the sound simultaneously with the sound reproduced by the reproducer 12 of the tone arm, or independently at some distant point thru the horn or horns 22.

In Fig. 2 there is shown an additional electrical transmitter 25 with stylus 26, said transmitter being mounted at the end of an arm 27 and extending beyond the transmitter 19. Arm 27 is carried by a bracket 28 rigidly secured to the arm 18 and at right angles thereto, a universal connection 29, similar to the connection 17, being provided at the junction of arm 27 with bracket 28. Leads 30 from the transmitter 25 enable the sound reproduced thereby to be given out at the desired point, for example, at a distance as thru horns 31. As a rule, I found that it is preferable to confine the reproduction from a single transmitter to two horns; and, with the arrangement set forth in Fig. 2 at least four horns may be caused to emit the sound developed from the simultaneously operating transmitters 19 and 25.

The horns, of course, will embody suitable receiver mechanism and a source of electricity (not shown), all of which is well understood and forms no particular part of the invention.

In case it be desired to employ only electrical transmitters, the transmitters 19 and 25 may be employed as set forth in connection with the description of Fig. 2, but the carrying arm 18 will then be mounted to swing in a suitable base member 35, Fig. 3, and the arm 16 and adapter 15 dispensed with. This will permit of the device being conveniently set on the top 10 of the talking machine in position such that the arms 18 and 27 are substantially tangential to the middle groove of the record. A fixed distance between the styli 20 and 26 is maintained thruout the playing of the record and it is of insufficient length to cause any noticeable discord in the reproduction.

In Fig. 4, a modified form of the carrying arm is disclosed, an arm 40 curved from the adapter 41, is connected by a universal joint 42 to the carrying arm 43 of the transmitter 44. This will provide for more compact mechanism while still allowing of both the reproducer 12 and the transmitter 44 being carried from a single controlling arm.

I claim:—

1. In a talking machine; a swinging arm,

a plurality of sound reproducing elements, and means to connect same with the swinging arm to move therewith, one of the means including a universal connection.

2. In a talking machine; a swinging tone arm, and reproducer carried thereby, an adapter secured to said tone arm, and a second sound reproducing element carried by said adapter and including an intermediate universal connection.

3. In a talking machine; a swinging tone arm and reproducer carried thereby, an adapter secured to the said tone arm, a bracket secured to the adapter, an arm carried by said bracket and including an intermediate universal connection, and a sound reproducing element carried by said arm.

4. In a talking machine; a swinging tone arm and reproducer carried thereby, an adapter secured to said tone arm, a bracket secured to the adapter at right angles to the axis of the tone arm, an arm carried by said bracket and including an intermediate universal connection, and an electrical transmitter carried by said arm, the stylus of the transmitter extending beyond the stylus of the tone arm reproducer.

Signed at Waterbury, in the county of New Haven and State of Connecticut this 1st day of February A. D. 1922.

WILLIAM H. BRISTOL.