

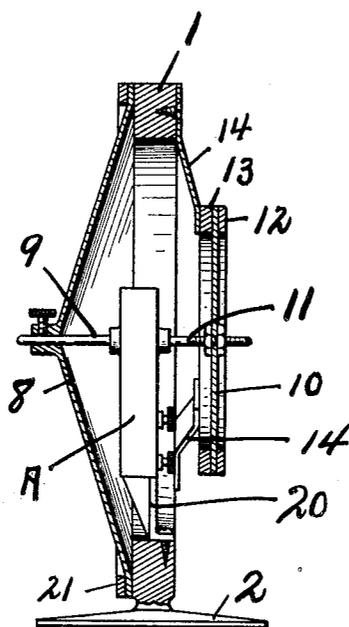
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W. SEFTON ET AL

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LOUDSPEAKER

Original Filed May 18, 1927



WITNESS

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# UNITED STATES PATENT OFFICE

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## LOUDSPEAKER

Original application filed May 18, 1927, Serial No. 192,256, now Patent No. 1,773,605, dated August 19, 1930.

Divided and this application filed February 3, 1930. Serial No. 425,622.

This invention relates to certain new and useful improvements in loud speakers.

The main object of the invention is the production of a loud speaker of improved characteristics in the production and amplification of sounds, especially in that the reproduction is clearer, more distinct and accurate.

A further advantage resides in the provision of two or more simultaneously actuated diaphragms of different characteristics and, preferably, of different sizes and formed of different materials and each adapted for more effective reproduction of sounds of particular pitches.

Other objects and advantages relate to the details of the structure and the parts thereof, all as will more fully appear from the following description taken in connection with the accompanying drawing in which:—

The figure is a sectional view of a loud speaker of this invention.

Loud speaking devices of the cone diaphragm type with an electric motor for actuating the same, are well known, and in the apparatus here shown, a suitable motor is diagrammatically illustrated at —A—. The form and structure of the motor itself forms no portion of this invention and any one of the commonly used motors may be provided.

The structure, as illustrated, comprises a circular frame —1— carried by a base —2— and the motor —A—, may, as shown, be mounted upon this base as by a bracket —20—. The diaphragm —8— is in the form of a complete cone and is connected at its central portion in any suitable and well known manner to the rod —9—, which rod is reciprocated by a motor —A— in accordance with electrical variations in the circuit connected to the motor whereby cone diaphragm —8— is vibrated to reproduce the original sounds. The diaphragm —8— is preferably formed of suitable material such as paper or other thin vibratory material and constitutes, in itself, a complete operable sound reproducing apparatus.

The structure further comprises a second

diaphragm —10— which may, as shown, be substantially flat, or of other forms if desired, for the purpose of producing the desired characteristics. The diaphragm —10— may be clamped at its edge between rings —12— and —13—, the former of which is carried from the frame —1— by means of brackets —14—. The diaphragm —10— is connected at its central portion in any suitable manner to the rod —11—, which rod, in like manner as the rod —9—, is reciprocated by motor —A— in accordance with the electrical variations in the motor circuit.

The diaphragm —10—, as illustrated, is of considerably less diameter than diaphragm —8— and may, perhaps, preferably be formed of thin sheet metal and acts more effectively to reproduce the higher tones, whereas cone diaphragm —8— acts more effectively to reproduce the lower tones, so that when both diaphragms are simultaneously actuated by the same motor, a unitary sound of good characteristics as to both high and low tones is produced.

The diaphragms are selected as to material, size and shape to reproduce the desired characteristics when simultaneously actuated to reproduce sounds. It will be apparent that both diaphragms are operable sound reproducing structures in themselves, and when actuated in unison, will give to the reproduced sound an improved quality resultant from the union of their joint special characteristics.

This application is a division of our Patent No. 1,773,605 for loud speakers, issued August 19th, 1930.

Although we have shown and described specific structures as constituting perhaps preferred embodiments of our invention, it will be apparent that various and other modifications may be made in the details of the structure and the form and arrangement thereof, all within the scope of the appended claims.

We claim:

1. In a loud speaker a pair of spaced diaphragms of different characteristics concentrically arranged and supported at their peripheral edges, a motor, a connection from

the motor to each of the diaphragms separately to effect their simultaneous vibration.

2. In a loud speaker, a pair of spaced diaphragms of different characteristics supported at their peripheral edges, a motor supported between the diaphragms, a connection from one side of the motor to one of the diaphragms, and a connection from the other side of the motor to the other diaphragm.

3. A loud speaker comprising a pair of spaced diaphragms of different characteristics supported at their peripheral edges, a motor arranged between the diaphragms and connections leading from opposite sides of the motor to the central portions of respective diaphragms.

4. A loud speaker comprising a ring member, a motor supported on the ring member, a diaphragm arranged on one side of said ring member and supported thereby, a second diaphragm of different characteristics arranged upon the opposite side of the ring member and supported thereby, and means connecting the motor to the respective diaphragms.

5. A loud speaker comprising a ring member, a motor supported on the ring member, a paper cone diaphragm arranged on one side of said ring member, a second diaphragm of different characteristics arranged upon the opposite side of the ring member, and means connecting the motor to the respective diaphragms.

6. A loud speaker comprising a ring member, a motor supported on the ring member, a paper cone diaphragm arranged on one side of said ring member, a second and smaller metallic diaphragm of different characteristics arranged upon the opposite side of the ring member, and means connecting the motor to the respective diaphragms.

7. A loud speaker comprising two opposed diaphragms of different sound-producing characteristics, a motor disposed between said diaphragms, connections from said motor to said respective diaphragms, peripheral support means for one of said diaphragms, and means secured to said support means for supporting said second diaphragm.

In witness whereof we have hereunto set our hands this 21st day of January 1930.

WILFRED SEFTON.  
PENNINGTON SEFTON.