Dec. 27, 1927. 1,653,727

F. OBERST

RADIOREPRODUCER

Filed Sept. 6, 1924

Fig. 1

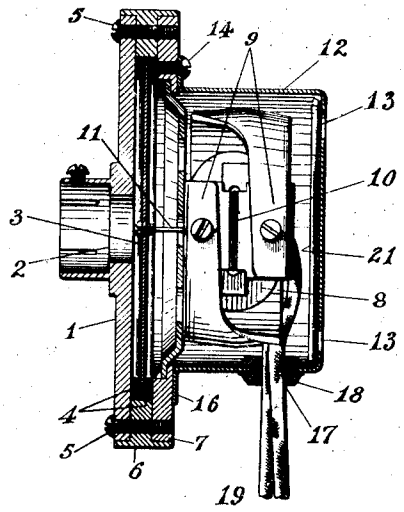


Fig. 2

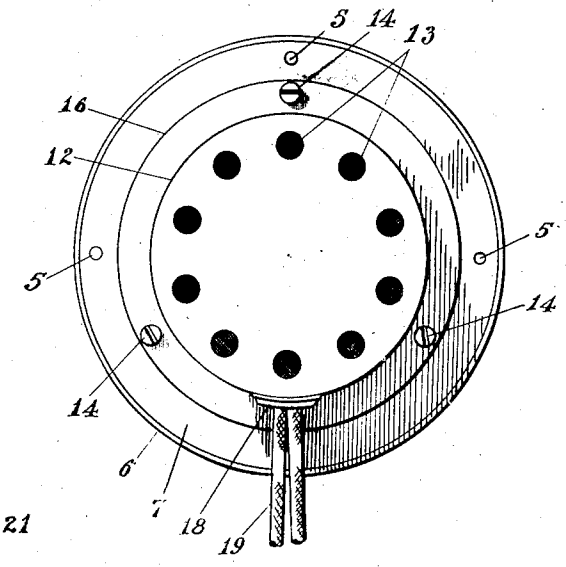
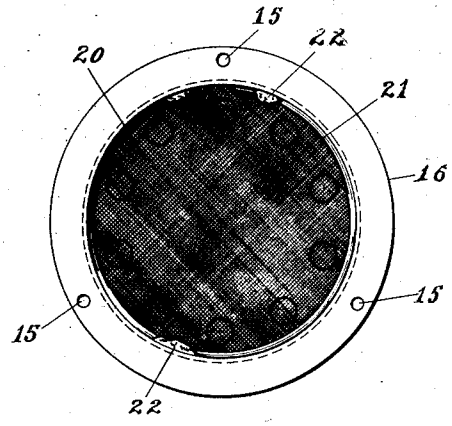


Fig. 3



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UNITED STATES PATENT OFFICE.

FRANK OBERST, OF NEW YORK, N. Y., ASSIGNOR TO SONORA PHONOGRAPH COMPANY, INC., A CORPORATION OF NEW YORK.

RADIOREPRODUCER.

Application filed September 6, 1924. Serial No. 736,234.

The present invention relates generally to the free operation of a diaphragm by impulses at audio frequency for reproduction of sound and more particularly to the employment of means which will improve the acoustic and resonant qualities of the reproduction. In order that a diaphragm may freely vibrate thus giving best results, it is necessary that the air pressure on each face must at all times be equalized. In the present state of the art radio reproducers are so constructed as to have one side of the diaphragm open to atmospheric pressure, to allow free egress of the sound, while the other side containing the actuating elements, is enclosed in a substantially air and sound proof housing to protect these elements. Thus, in vibrating, the diaphragm is subjected to atmospheric pressure on the one side, and on the other, the air trapped in this protective housing is subjected to alternate compression and expansion. This latter acts as an air-brake in restraining the free vibrations of the diaphragm, thus producing a somewhat muffled sound, and greatly detracting from its efficiency.

One of the objects of my invention is to provide a radio reproducer with means so constructed and arranged as to improve the acoustic and resonant qualities of the reproduction.

A further object of my invention is to provide an improved radio construction which has no trapped air, and which, at all times, subjects both faces of the radio reproducer diaphragm to equal air pressure, so that its vibrations are unrestrained, and the sound is entirely unmuffled, and the quality and volume of the reproduced sound will be greatly improved.

A further object of my invention due to equalizing the air pressure, is that the operating parts of the radio reproducer expend all their energy in vibrating the diaphragm, and none in useless expansion and contraction of idle air, thus promoting much higher efficiency, lengthening the life of the parts, and with less likelihood of their getting out of order.

With this and other objects in view, to be more fully set forth hereinafter, the invention consists in the novel construction, combination of elements, and arrangement of parts, which will be exemplified in the operation and construction herein described in the following specification and illustrated in the accompanying drawings.

The inventive idea involved is capable of receiving a variety of mechanical expressions, one of which, for the purpose of illustration, is shown in the accompanying drawings.

The invention will first be described in connection with the accompanying drawings, wherein similar reference characters are used to designate corresponding parts throughout the several views, and then more specifically defined and indicated in the appended claims.

Attention is directed to the drawings in which:—

Figure 1 is a central sectional elevation, of a radio reproducer with my improved housing mounted thereon.

Figure 2 is a rear elevation of a radio reproducer with my improved housing mounted thereon, and,

Figure 3 is a detail view of my improved radio reproducer housing showing the protective screen.

For purpose of illustration I show my invention applied to the usual electro-magnetic radio reproducer, which has face plate 1 with central opening 2 for the ready exit of the sound set up by diaphragm 3 clamped between annular rings 4 by means of screws 5 passing through face plate 1, annular member 6 and ring 7 as shown in Fig. 1.

The diaphragm 3 is actuated in the usual manner by electric impulses passing through coils 8 surrounding a portion of the magnets 9 which oscillate armature 10. These oscillations are transferred to the diaphragm by means of link 11. Enclosing these operating parts, and secured to ring 7 by means of screws 14 through holes 15 (Fig. 3) in flange 16 is my improved housing 12 having perforations 13.

In the lower part of housing 12 is provided an opening 17 for the admission of wires 19 to carry the electric pulsations to the coil 8. These wires are protected in passing through this housing opening by soft gasket 18.

It is important that perforations 13 should be as free from obstructions as possible, however it is necessary to protect the operating parts from the sifting in of dust

or dirt or the introduction of foreign matter, therefore I provide inside the housing 12, and covering these perforations, a finely mesh screen 20 held in place firmly by annular wire ring 21 soldered to the housing 12 as at 22 (see Fig. 3).

As will be readily seen this improved housing provides a construction which at all times allows the alternate compression and expansion of air, caused by the vibration of the dipahragm, to have free and continuous access to the outside atmosphere both in back as well as in front of the diaphragm. Thus there is no opportunity for the air to be trapped and the diaphragm's action or movement is entirely free from dampening or muffling, and the sound produced is of highly efficient volume and the acoustic and resonant qualities of the sound greatly improved.

In accordance with the provisions of the patent statute, I have described the principle of my invention together with the construction which I now consider to represent the best embodiment thereof, but I desire it understood that my invention is not confined to the particular form shown and described, the same being merely illustrative, and that the invention can be carried out in other ways without departing from the spirit of my invention, and, therefore, I claim broadly the right to employ all equivalent instrumentalities coming within the scope of the appended claims, and by means of which objects of my invention are attained, and new results accomplished, as herein set forth, as it is obvious that the particular embodiments herein shown and described are only some of many that can be employed to attain these objects and accomplish these results.

Having now described my invention, what I claim and desire to secure by Letters Patent, is:—

1. In a telephone receiver, a diaphragm chamber comprising an annular body member having a peripheral flange, an annular face plate and an annular back plate both seated against said body member within said flange to form a cylindrical diaphragm chamber, means to support telephone magnetic elements from said back plate and beyond said chamber and a cylindrical housing covering said magnetic elements and secured to said diaphragm chamber.

2. In a telephone receiver, a diaphragm chamber comprising an annular body member having a peripheral flange, an annular face plate and an annular back plate both seated against said body member within said flange to form a cylindrical diaphragm chamber, means to support telephone magnetic elements from said back plate and beyond said chamber and a cylindrical apertured housing covering said magnetic elements and secured to said diaphragm chamber.

3. In a telephone receiver, a diaphragm chamber, telephone magnetic elements supported to the rear of said chamber, a cylindrical cap attached to the wall of said chamber and enclosing said magnetic elements, said cap provided with a plurality of large area apertures.

4. In a telephone receiver, a diaphragm chamber, telephone magnetic elements supported to the rear of said chamber, a cylindrical cap of thin sheet material attached to the wall of said chamber and enclosing said magnetic elements, said cap provided with a plurality of large area apertures.

5. In a telephone receiver, a diaphragm chamber, telephone magnetic elements supported from the walls of and in the rear of said chamber, a cylindrical cap of thin sheet material enclosing said magnetic elements said cap being supported from the walls of said chamber and having a flat rear wall provided with a row of relatively large area apertures adjacent the edge of said wall.

This specification signed and witnessed this 20th day of August, 1924.

FRANK OBERST.