Nov. 10, 1964 W. KUSKIN 3,156,788

DAMPED MAGNETIC TELEPHONE RECEIVER

Filed Jan. 6, 1961

Fig. 1

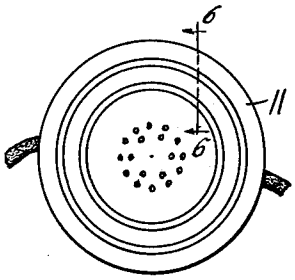


Fig. 2

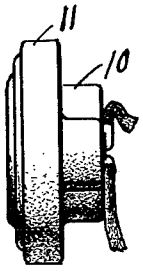


Fig. 3

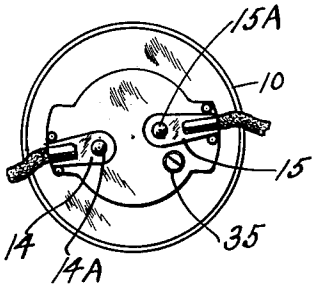


Fig. 7

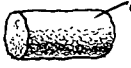


Fig. 6

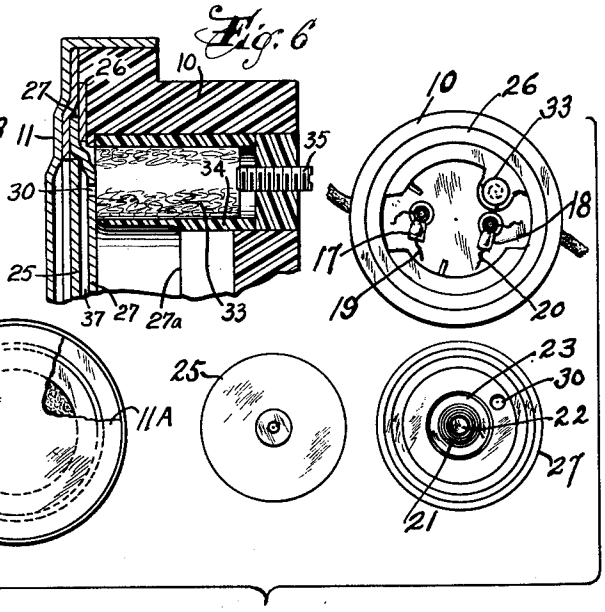


Fig. 4

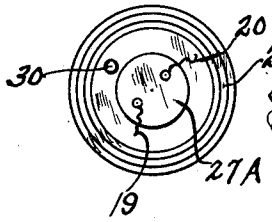


Fig. 5

INVENTOR.
William Kuskin
BY
Roy Griffith Jones
ATTORNEY.

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DAMPED MAGNETIC TELEPHONE RECEIVER

William Kuskin, Rahway, N.J., assignor, by mesne assignments, to Theodore H. Egley, Avon, N.J.

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2 Claims. (Cl. 179—115)

This invention relates to a damped magnetic receiver, especially for use in head sets for military use or otherwise.

The receiver herein shown, described and claimed, develops, due to accurate damping, a substantially uniform acoustic output throughout the usual audio frequency range, as contrasted with previous receivers wherein the amplitude of vibration is excessive at frequencies near that of resonance. And another advantage of the present receiver is that it may be readily adjusted to give the uniform output, thus very substantially shortening production time, it being understood that, due to inevitable non-uniformity, or variations, in the components, the receivers must, or should, be adjusted, to provide proper and uniform action.

In the present receiver, the amplitude of vibration of the diaphragm is controlled by precision means for regulating the air passage between partitioned air spaces on one side of the diaphragm and according to a preferred form, illustrated in the drawing and described below, the said passageway contains a porous, compressible element the porosity of which is accurately regulated by the pressure of a screw thereon, to compress it to the extent desired and thereby regulate its porosity.

In the drawings, which illustrate one embodiment of the invention,

FIGURES 1, 2 and 3 are respectively front, side and rear views of a receiver;

FIG. 4 is an exploded view of components of the receiver, comprising, from left to right, an inside plan of the cover of the receiver casing, front side of the vibratory disk, front side of supporting disk, with coil and electromagnet, and inside view of the rear section of the casing;

FIG. 5 is a rear view of the supporting disk of FIG. 4;

FIG. 6 is a fragmentary sectional view of the receiver, on line 6—6 of FIG. 1, showing means for regulating the damping of the vibratory diaphragm; and

FIG. 7 is a perspective of a porous, compressible element, shown in FIG. 6, and functioning by varying pressure of a screw.

Referring to the drawings for a detailed description, the casing of the receiver includes a hollow rear section 10, and an apertured cover or front section 11 fitting thereover, as indicated in FIG. 6. Section 11 has the usual membrane 11A interiorly. For connection of the receiver to a line, connectors 14 and 15 (FIG. 3) are secured to the back of the rear section, and the fastening elements 14A and 15A thereof extend through the back and are there fastened to clips 17 and 18, to which are secured the terminals 19 and 20 of a solenoidal coil 21, the core of which is designated 22. The coil is surrounded by an annular magnetic member 23.

A circular vibratory disk 25 (FIGS. 4 and 6) is peripherally supported on an annular, sunken, inner ledge 27B of a centrally apertured disk 27. The latter disk has its peripheral margin formed with stepped annular flanges, and its inner portion is spaced from the vibratory disk, providing air space 37. Disk 27 carries a rearwardly extending well 27A secured around its central aperture, which well extends into the hollow of the rear section 10. The peripheral margin of the disk 27 rests on a resilient,

annular member 26, and the latter is in a recess in the face of the rear section 10. The mentioned coil 21, the annular magnet 23, and the core 22 are in the mentioned well, said core being integral with the inner face of the bottom of the well, through which bottom the terminal portions of the coil 21 extend to terminals 17 and 18. The disk 27 has an aperture 30 (FIGS. 4 and 6) between its periphery and the well. Within the hollow of rear section 10, a porous, compressible cylinder 33 (FIGS. 4 and 6), formed of fibers of cotton or other suitable material, is held in a pocket 34 and is disposed endwise against the disk 25 and covers the aperture 30 of the latter, being of somewhat greater diameter than the aperture. A screw 35 threadedly engages the back of the rear section 10 of the casing. The inner end of the screw presses against the porous and compressible cylinder 33, the degree of pressure being accurately adjusted to regulate the passage of air through the aperture 30 from the air space on opposite sides of disk 27 and thereby damp the vibratory disk 25 to the correct extent as shown by testing means. It may be added that the cylinder 33 is a rather compact mass, and that, in addition to being porous and compressible, is somewhat resilient, so that it contracts on increased pressure of the screw, and expands as the pressure is diminished. After the final adjustment of the screw, a suitable adhesive compound is applied to the head of the screw to lock the latter in position.

What is claimed is:

1. In a receiver of the character described, a casing comprising a hollow rear section providing a first closed air space, a front cover connected to the rear section, a vibratory disk back of and adjacent to the front cover, a second disk closing the front of the first air space and disposed back of but spaced from the vibratory disk to provide a second closed air space, said second disk separating the mentioned air spaces and having an aperture transversely therethrough and connecting said air spaces, means for vibrating the vibratory disk, and adjustable means for regulating the air flow from one air space to the other through said aperture, said means comprising a porous compressible element and precision means for varying the pressure on said element.

2. In a receiver of the character described, a casing comprising a hollow rear section providing a first closed air space, a front cover connected to the rear section, a vibratory disk back of and adjacent to the front cover, a second disk closing the front of the first air space and disposed back of but spaced from the vibratory disk to provide a second closed air space, said second disk separating the mentioned air spaces and having an aperture transversely therethrough and connecting said air spaces, means for vibrating the vibratory disk and adjustable means for regulating the air flow from one air space to the other through said aperture, said means comprising a porous, compressible, and resilient element and an adjustable screw for varying the pressure against said element.

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ROBERT H. ROSE, *Primary Examiner.*

L. MILLER ANDRUS, *Examiner.*