

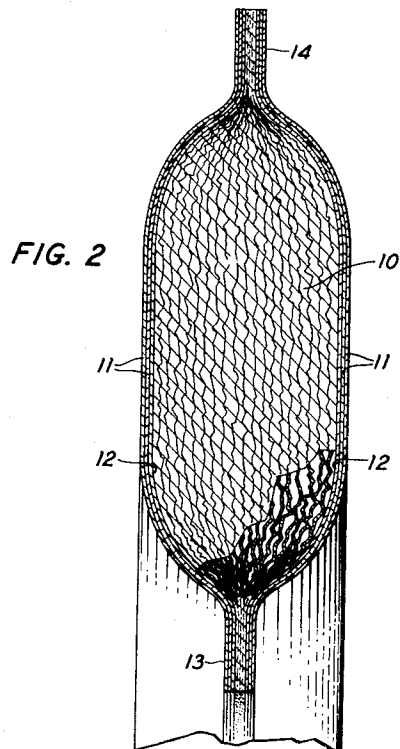
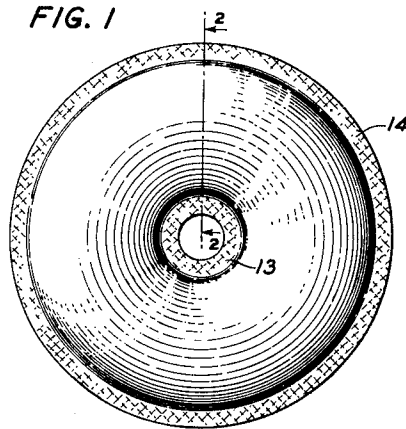
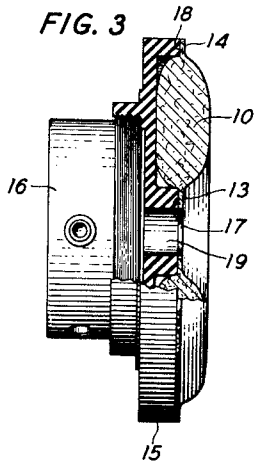
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L. S. HULIN

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EARPIECE

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INVENTOR
L. S. HULIN
BY
Walter C. Kiesel
ATTORNEY

UNITED STATES PATENT OFFICE

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EARPIECE

Lynford S. Hulin, Nyack, N. Y., assignor to Bell Telephone Laboratories, Incorporated, New York, N. Y., a corporation of New York

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5 Claims. (Cl. 179—182)

This invention relates to earpieces and more particularly to earpieces for acoustic devices such as telephone receivers.

One object of this invention is to enable the manufacture, in quantity and at low cost, of earpieces for acoustic devices such as telephone receivers.

Another object of this invention is to improve the acoustic characteristics of earpieces for telephone receivers so that such earpieces will not deleteriously affect the transmission of sound from the receivers to the ears of the user thereof.

Still another object of this invention is to facilitate the mounting and the replacement of earpieces upon telephone receivers.

In one illustrative embodiment of this invention, an earpiece for telephone receivers comprises a laminated annular pad or cushion including a central section or core of soft material or wadding, outer layers of soft pliant tissue, and intermediate layers of acoustically opaque and moisture-proof material, the central section and the several layers being joined at their inner and outer edges to provide acoustic seals at these edges.

The invention and the various features thereof will be understood clearly and fully from the following detailed description with reference to the accompanying drawing in which:

Fig. 1 is a front view of an earpiece for telephone receivers, constructed in accordance with this invention;

Fig. 2 is an enlarged detail view in section along line 2—2 of Fig. 1, illustrating the composition of the earpiece, portions of the wadding being enlarged further to show the character thereof; and

Fig. 3 is a side view partly in section and partly broken away, of a telephone receiver and earpiece illustrating the association of the earpiece and the receiver.

Referring now to the drawing, the earpiece is in the form of an annular pad or cushion comprising a central section or core 10 of soft material or wadding, outer layers 11 of soft pliant material and intermediate layers 12. The central section or core 10 may be fabricated, for example, of a multiplicity of layers such as sheets of crepe tissue paper. The outer layers 11 may be of soft, pliant tissue sheets, having a high lateral acoustic impedance and good moisture-absorbing properties. Paper commercially known as "Kleenex" may be used satisfactorily. The intermediate layers 12 may be thin, flexible annuli of acoustically opaque material, such, for example,

as wax impregnated tissue paper. It is desirable also that the layers 12 be somewhat moisture absorbent.

In the fabrication of the earpiece, the various laminae or layers may be aligned and the inner and outer edges embossed and pressed together to form flanges 13 and 14 at these edges. In the course of the embossing and pressing operation, some of the wax in the intermediate layers 12 permeates the edge portions of the outer layers 11 and the laminae of the section 10 so that a firm adhesion of the several layers is obtained at the edges thereof. Furthermore, this embossment and pressing provides acoustic seals at the inner and outer edges of the earpiece.

As shown in Fig. 3, the earpiece may be fitted in a shallow annular cavity in a cap 15 carried by a telephone receiver 16, the flanges 13 and 14 being seated upon annular surfaces 17 and 18, respectively, upon the cap 15. Because of the suppleness of the pad or cushion it may be retained in the cavity of the cap 15 solely by friction so that the use of clamping means is obviated. Hence, the earpiece may be mounted and replaced with great facility.

Inasmuch as, as heretofore described, the flanges 13 and 14 provide acoustic seals between the various layers of the earpiece, lateral dispersion through the earpiece of sound waves, particularly those emanating from the receiver and passing through the aperture 19 in the receiver cap 15, is prevented. The intermediate layers 12, being acoustically opaque, prevent the transmission of sound through the faces of the earpiece, and the outer layers 11, because of their high lateral acoustic impedance, prevent transmission of sound along the surfaces of the earpiece. Hence, earpieces constructed in accordance with this invention enable the attainment of an acoustic seal between the receiver and the ear of the user without distortion of the sound waves emanating from the receiver or substantial reduction in the intensity thereof.

Preferably, as shown clearly in Fig. 3, the central aperture or opening in the flange 13 is of a diameter commensurate with the diameter of the aperture 19 in the receiver cap so that undesirable resonance effects will not be introduced.

It will be noted that when one surface of the earpiece becomes soiled, the earpiece may be reversed in position upon the receiver cap. The pliability of the earpiece as a whole and the softness and the absorbent properties of the outer layers 11 assure comfort to a user of the telephone receiver. This feature, it will be appre-

ciated, is particularly desirable to those, such as telephone operators or aviators, who use headset receivers for extended periods. It may be noted further that the earpieces, being readily mountable and replaceable, are desirable from a sanitary standpoint. In addition, earpieces constructed in accordance with this invention may be manufactured expeditiously in quantity and at low cost.

Although a specific embodiment of this invention has been illustrated and described, it will be understood, of course, that various modifications may be made therein without departing from the scope and spirit of this invention as defined in the appended claims.

What is claimed is:

1. A telephone earpiece comprising an annular core of soft material, flexible annuli of acoustically opaque material on opposite sides of said core, and annuli of soft moisture-absorbent material having high lateral acoustic impedance, outside of said first annuli, said first and second annuli being joined at their edges to form acoustic seals at said edges.

2. A telephone earpiece comprising an annular central section of crepe paper, annuli of impregnated paper on opposite sides of said central section, and annuli of pliant moisture-absorbent material covering said first annuli, said first and second annuli being sealed to one another at their

edges and defining a covering enclosing said central section.

3. A telephone earpiece comprising an annular laminated core of crepe paper, annuli of soft tissue paper on opposite sides of said core and having a high lateral acoustic impedance, and annuli of wax impregnated tissue paper between said core and said first annuli, the laminae of said core, and said first and second annuli being joined at their inner and outer edges to form acoustic seals at said edges.

4. A telephone earpiece comprising a cap having a sound passageway therethrough, an annular seating surface adjacent one end of said passageway and an annular cavity disposed about said passageway, and an annular pliant pad seated in said cavity and held therein solely by friction, said pad comprising annular laminae coaxial with said passageway and joined to one another at their inner edges to form a flange seated on said surface.

5. A telephone earpiece comprising a laminated annular core of crepe tissue paper, flexible annuli of acoustically opaque impregnated material on opposite surfaces of said core, and a covering of soft pliant annuli of absorbent material, the laminae of said core and said first and second annuli being pressed together at the inner edge thereof to form an annular acoustically sealed flange.

LYNFORD S. HULIN.