Nov. 24, 1970 J. G. BOSCH ET AL 3,542,973

HEARING AID WITH RIGIDLY COUPLED EXTERNALLY MOUNTED RECEIVER

Original Filed Dec. 7, 1966

Fig. 1

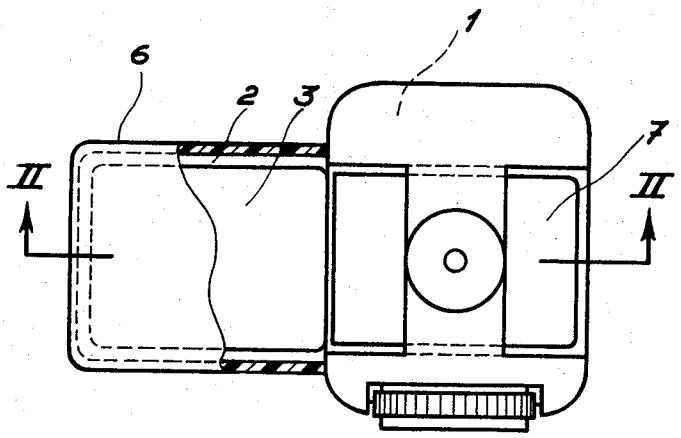
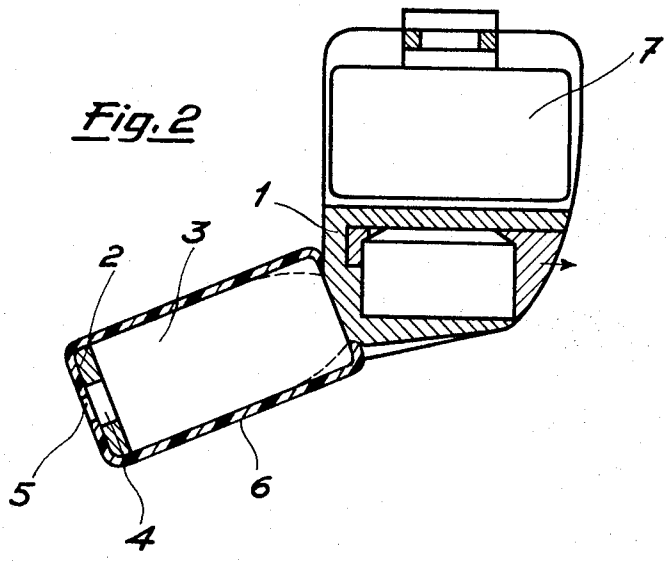


Fig. 2



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HEARING AID WITH RIGIDLY COUPLED EXTERNALLY MOUNTED RECEIVER

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Continuation of application Ser. No. 599,755, Dec. 7, 1966. This application Oct. 17, 1969, Ser. No. 867,422
Claims priority, application Spain, July 30, 1966, 330,123
Int. Cl. H04r 25/02
U.S. Cl. 179—107 3 Claims

ABSTRACT OF THE DISCLOSURE

A hearing aid comprises a housing of substantially rigid material and containing the necessary amplification components, a microphone mounted on the housing and a receiver arranged to fit into an ear canal and having a sound output opening at one end. A rigid substantially U-shaped strap member forms an extension of the housing and embraces the receiver along two sides and the sound output end thereof. The bight of the strap member has an opening aligned with the sound output opening.

This is a continuation of Ser. No. 599,755, filed Dec. 7, 1966 and now abandoned.

This invention relates to new and useful improvements in the design and assembly of hearing aids.

More specifically, such improvements concern a hearing aid for use by deaf persons, consisting of a tiny housing containing amplifier elements for the amplification of sound signals received, this housing being adapted for fitting into the ear of the user, the receiver proper fitting into the ear canal.

The invention concerns more specifically the design and assembly of the receiver, in order to provide the device with a high level of performance to avoid resonance effects that might be detrimental for a perfect reception of sound signals.

Apart from the good mechanical conditions required for the assembly of the receiver for its better fitting into the ear canal, it is further advisable for the receiver not to be enclosed in a rigid chamber, in order to avoid the distorted reproduction of sound.

For this purpose, and in accordance with the invention, the receiver is rigidly coupled to the housing while being supported externally of the housing in a rigid extension of the housing. This extension, and the receiver, are surrounded by a protective sheath which helps fitting of the receiver into an ear canal.

In the drawings:

FIG. 1 is a top plan view of a hearing aid designed in accordance with the improvements of the invention, and

FIG. 2 is a sectional view of the hearing aid taken along line II—II of FIG. 1.

Referring to the drawings more in detail, the housing 1 has, at one of its ends, an extension 2 in the form of a bridging clasp, band or strap member embracing the receiver 3, so that receiver 3 remains free of suport or enclosure along two of its longer sides or faces.

The middle portion or bight of the member 2 is formed with a hole 4 for the output of sound signals, this hole being coaxial with another hole 5 in a protective sheath 6 for permitting a more perfect fitting of the receiver into the ear canal. The sheath 6 is preferably made of a resilient material, but it may also be made of a more or less rigid material, such as a pre-moulded material formed according to the specific design of the ear canal of particular users.

As mentioned above, the receiver is rigidly coupled to the housing 1, but this is no obstacle to the avoidance of accidental mechanical and electrical couplings with regard to the microphone 7, since the latter is mounted in a resilient manner on the housing 1 of the device.

Through this assembly, in which the receiver is rigidly coupled to the housing while being supported substantially completely externally of the housing, all resonance effects around the receiver are avoided, and through the sheath enclosing the clasp, band or strap members that carries the receiver, a more perfect fitting of the device into the ear is achieved.

In a hearing aid in accordance with the invention, there is thus an improved rigid coupling of the receiver to the housing. Additionally, the fit of the receiver into the ear canal of a user of the hearing aid can be readily adapted to each particular case by appropriate changes in the contour of the sheath 6.

What is claimed is:

1. In a hearing aid, a housing of substantially rigid material and containing electrical and electronic amplification components; a microphone mounted on said housing; a receiver arranged to fit into an ear canal and having a sound output opening at one end; and a rigid substantially U-shaped extension of said housing embracing said receiver along two sides and said one end thereof, the bight of said U-shaped extension having an opening aligned with said sound output opening; whereby said receiver is rigidly coupled with said housing while being supported externally of said housing, so that resonance effects on said receiver are avoided.

2. In a hearing aid, as claimed in claim 1, a protective sheath surrounding said U-shaped extension and said receiver.

3. In a hearing aid, as claimed in claim 2, said sheath having an opening aligned with the opening in the bight of said U-shaped extension.

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