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(54) **METHOD AND APPARATUS FOR DETERMINING IN SITU THE ACOUSTIC SEAL PROVIDED BY AN IN-EAR DEVICE**

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(57) **ABSTRACT**

The present invention provides an apparatus for determining in situ the acoustic seal provided by an in-ear device of a hearing protection/aid nature inserted into the ear canal of an individual. The in-ear device having a sound bore with an environment opening and an ear opening outside and inside the ear canal respectively, the environment opening is adapted to be removably engaged by a remote device such as a sound measurement device, a filter device, an amplifier device, a plug device and the like. The apparatus includes a sound measurement device having a probe microphone and a reference microphone isolated from each other and connected to a data processing unit having a control box and a speaker, both connected to a computer unit. Both microphones are adapted for measuring sound pressure levels inside said ear canal and outside in close proximity of said in-ear device respectively, the sound pressure levels corresponding to a known noise signal created by the speaker. The data processing unit being adapted for recording and processing the sound pressure levels read by both microphones corresponding to said known noise signal to provide a corresponding calculated value of a sound pressure level difference provided by the in-ear device. Used in conjunction with an expandable in-ear device, the apparatus monitors the acoustic seal in real time during the occlusion process of the in-ear device and determines when to stop the process. The present invention also refers to a corresponding method for determining in situ the acoustic seal provided by an in-ear device.

20 Claims, 3 Drawing Sheets