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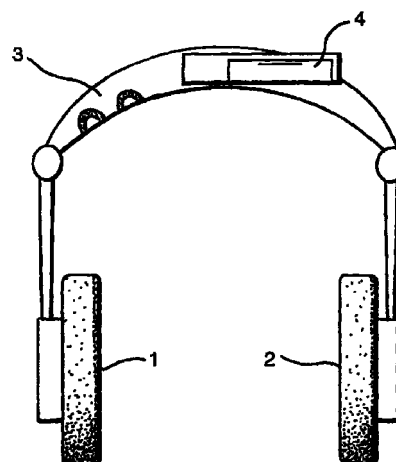
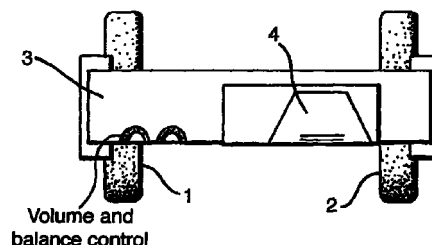
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(54) **A headphone system**

(57) A headphone system comprises a pair of loudspeakers (1,2) carried by a resilient headband (3), the headband being adapted to carry an interchangeable unit (4) which provides one or more of a plurality of sources of audio signals. The interchangeable unit may comprise a radio receiver, a disc player, an MP3 player, a tape player, a mobile phone or a TV tuner. The headphone system may further comprise a system for cancelling external noise.

Fig.1.



EP 1 094 685 A2

Description

[0001] The present invention relates to a headphone system, and relates particularly, though not exclusively, to lightweight compact headphones for mobile use.

[0002] Listening to music and radio programme material using headphones is becoming ever more popular for consumers, both in the home and for travellers and pedestrians. The most important characteristics for such headphones (apart from sound quality) are that they are comfortable to wear, that they are compact and lightweight. It is also important that they are convenient to use and have good ergonomics. For example, cordless headphones which have a wireless connection to a listener's audio system are proving popular because elimination of the cable provides more freedom of movement.

[0003] A known headphone system having an integral source of music signals is disclosed in US 5,640,458.

[0004] According to the present invention, there is provided a headphone system as specified in the claims.

[0005] Embodiments of the invention will now be described, by way of example only, with reference to the drawings, in which:

Figure 1 shows a plan view and a front elevation of a headphone system according to the present invention.

[0006] Several headphone systems are known which include an integral source of audio signals. For example, headphone systems including a receiver for radio broadcasts are known, but the headphones in such systems cannot be used with other sources of audio signals, such as a MiniDisc® player or the MP3 player described in US 5,640,458. They are also bulky. Similarly, the headphone system disclosed in US 5,640,458 is a dedicated system which cannot be used to listen to other sources. Further, only about 30 minutes worth of programme can be held in the semiconductor memory described in US 5,640,458, which would not be long enough for a long-haul flight, for example.

[0007] The present invention, shown in Figure 1, comprises a headphone system, having a pair of loudspeakers (1,2) coupled to a headband (3), in the present example a horseshoe or U shape made of a resilient material, which is integrated with a removable securable cartridge system (4), where the cartridge is a music/sound source which is interchangeable, so that for example an MP3 player cartridge can be exchanged for another with different programme material stored in it, or exchanged for a radio receiver or a MiniDisc® player. The sound/source cartridge can be one of several types, for example :-

- a) An FM/AM radio for receiving local radio stations;
- b) A radio or infra-red link to interface with the user's own dedicated audio system in the home without cables;
- c) An MP3 Storage/Player cartridge for the replay of pre-loaded, compressed music material;
- d) A MiniDisc® Player cartridge to replay pre-recorded sounds;
- e) An inductive loop pickup for guided tours of museums and other exhibitions.

[0008] In addition, it should soon prove technically feasible to use a very small hard magnetic disc unit as further storage for the MP3 player.

[0009] The radio link option b) above would be useful for electronic musical instrument applications, where a musician wishes to practice a "silent" instrument and listen to the synthesised sounds via headphones, and for a cordless interface to aircraft entertainment systems.

[0010] The MP3 player option c) is also valuable in non-domestic applications, such as the "Audio Guide", where the unit is used to guide visitors around a place of interest, and also provide an informative commentary, cued by location. MP3 cartridges may be loaded with different language options, or different levels of detail for example, such that the headphone system of the present invention can be loaded with custom material for different users.

[0011] A major advantage of the cordless aspect of the invention will be in aircraft. Current headphone cables interfere with activities such as eating, reading, leaving the seat, and so on. When the audio source is integrated with the headphone system, however, there is no cable with which the user can become entangled.

[0012] The headphone system of the present invention has a number of advantages. The system is flexible, because a user can for example use one cartridge whilst at home and another whilst travelling. The headphones are lightweight, because only a single source is carried by the headband at any given time. The user need purchase only those cartridges they require, and the user does not need to purchase an additional set of headphones with each new function.

[0013] To provide added functionality, it is possible to incorporate a mobile phone cartridge and a microphone, or a TV tuner cartridge and a head mounted display unit. It is also possible to include digital signal processing circuitry to provide enhanced audio or virtualised surround sound etc. It is also simple to include an external noise cancellation system into the headphones, such that external noise is detected by an externally mounted microphone and cancelled by electronic subtraction, which is well known in the art.

Claims

1. A headphone system having a pair of loudspeakers

(1,2) carried by a headband (3), the headband being adapted to carry an interchangeable unit (4) which provides one or more of a plurality of sources of audio signals.

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2. A headphone system as claimed in claim 1 further comprising a system for cancelling external noise.

3. An interchangeable unit for a headphone system as claimed in claim 1 or claim 2, the unit consisting of one or more of the members of the group comprising: a radio receiver; a disc player; an MP3 player; a tape player; a mobile phone; a TV tuner.

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Fig.1.

