

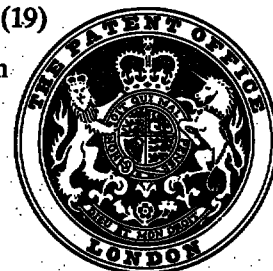
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(54) STEREOPHONIC REPRODUCTION SYSTEM FOR PERSONAL WEAR

(71) I, ANDREAS PAVEL, of Via Gustavo Modena, 20 Milano, Italy, a German citizen do hereby declare the invention, for which I pray that a patent may be granted to me, and the method by which it is to be performed, to be described in and by the following statement:

The present invention relates to an audio listening apparatus, including a belt, for the hearing of music and other sounds in high fidelity stereophonic reproduction.

Conventional high fidelity stereo assemblies commonly comprise a reproducing device and/or a tuner, and an amplifier which is made to drive a number of loud-speakers.

Besides being costly and of considerable bulk, these assemblies usually need to be installed at a fixed location, so that use of the assembly is restricted to the current location of the assembly.

It is the object of the present invention to provide an audio listening apparatus which eliminates the aforesaid drawback.

According to the present invention, an audio listening apparatus comprises, in combination:

(i) a belt for personal wear having attached thereto an audio system including an interconnected stereo audio signal source and stereo amplifier means and a battery power source therefor, and

(ii) stereo headphones or earphones electrically connected to the stereo amplifier means.

The listener, wearing the belt, can listen to recorded, broadcast or live-captured music or other sounds in high fidelity stereo reproduction.

The signal source may be a playing device for a magnetic tape cassette or other form of audio recording.

In a preferred arrangement, electrical connection between the signal source and the amplifier, or between the power source and the remainder of the audio system, is

provided by cable means positioned within the belt or fixed onto the belt.

The belt may be provided with one or more containers to enclose power-supplying batteries, or the batteries may be housed inside the devices which they supply power to.

The amplifier may be provided with a plurality of outlets for headphones or other transducers, or with a transmitting device, for simultaneous listening by a plurality of listeners.

Where the stereo audio signal source is a magnetic tape playing device, it may be provided with a preamplifying stage for sending an amplified signal to the stereo amplifier.

The stereo audio signal source may consist of, or include, a stereo tuner for the reception of broadcast transmissions.

Said tuner, where provided, may include station preselection, noise reduction, digital read-out and wave frequency synthesizing.

An antenna for said tuner may be positioned within the belt or fixed onto the belt.

Additionally the belt may be provided with a transmitter for cordless linkage to remote systems.

The preamplifier means may be provided with signal modifying circuits to obtain, for example, noise reduction, dynamic expansion, binaural expansion or other type of sound space projection, or signal equalization.

Further devices for generating, processing, equalizing, receiving, mixing, recording, transmitting or transducing, audio signals, of high fidelity stereophonic type may be included in the audio system, e.g. microphones, transmitter-receivers, electronic sound synthesizers, rhythm generators, musical instruments (through sensing elements), bio-feed-back instruments and loudspeakers. In the case in which the belt is provided with a mixer, signals from more

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than one source may be played through the headphones or earphones simultaneously.

The audio system may provide with four-channel or quadraphonic reproduction.

The microphones may be connected either to the preamplifier or to the mixer, and they may be used for live sound recording or live sound amplifying. These microphones may be either attached to the belt, or to the headphones or earphones, or connected through cable means, or through a transmitting/receiving system.

All the circuits are advantageously miniaturized, and they may be incorporated with the playback unit, which unit may be attached to the belt, or they may be distributed, on plate members, along said belt.

Controls, preferably of the sensor type, may be positioned, at least in part, along the belt.

At least one other casing may be attached to or incorporated in the belt, for the storage of tape cassettes or other carriers of recorded audio signals, or folded headphones or earphones.

According to another aspect of the invention, a personal stereo audio listening apparatus, to be worn by an individual listener, comprises in combination:-

(i) a reproduction playback device arranged to produce stereo programme output signals;

(ii) at least one microphone;

(iii) a mixer to which said playback device and said at least one microphone are connected.

(iv) amplifier means connected to receive output signals from said mixer,

(v) stereo headphones connected to receive the outputs of said amplifier means;

(vi) power source means comprising a battery electrically connected to the playback device and to said amplifier means, and

(vii) a belt, for personal wear, said belt having attached thereto said playback device, said amplifier means, and said battery power source means.

An embodiment of apparatus in accordance with the invention is hereinafter particularly described by way of non-limiting example with reference to the accompanying drawings, wherein:-

Figure 1 is a perspective view of a belt for use in the invention;

Figure 2 is a perspective view of the belt of Figure 1, fitted with items of the apparatus;

Figure 3 is a perspective view illustrating a manner of use of the apparatus on the body.

The stereo audio listening apparatus is preferably so designed that all of the items thereof are miniaturized to the utmost and incorporated on the belt in a compact and integral manner, and such items may be

contained in any convenient number of housings on the belt.

The belt 1 comprises a strip of any suitable flexible material of appropriate strength.

The belt 1 is provided with a buckle 2 as illustrated, but the buckle 2 could be replaced by any other convenient means to connect the two belt ends. The belt is preferably formed with an adjustable extensible portion 3.

On the belt 1 there is engaged a magnetic tape player device 4 optionally provided with a preamplifying device.

Also on the belt 1 there is engaged an amplifying device 5 to which are connected one or more pairs of lightweight headphones 6, preferably of a collapsible type, or a pair of earpieces.

The amplifier 5 may be substituted by a tuner-amplifier, for receiving FM stereophonic broadcasts.

A power supply for the aforesaid items consists of one or more batteries 7, which may be primary cells or rechargeable, which are housed in a container 8 also engaged on the belt 1.

There may also be engaged on the belt 1 a further casing 9 to receive cassettes 10.

Electric connection between the power source and the various items, and between the player device 4 and the amplifier 5, in the case in which these items are separate, is obtained by small cables 11 running preferably within belt 1.

All of the items, devices 4, 5, 8 and 9 are preferably readily removable to permit replacement of the belt 1.

The apparatus is particularly effective in that, by reason of the belt-headphone combination, it permits the playing back of stored audio signals in true hifi-stereo without restricting the user's movements to locations within range of a conventional playing apparatus. The apparatus is able to provide the user with personalised listening and the enhanced realism of binaural stereo reproduction, without restricting the listener's movements by a wire link to a conventional playback apparatus, and thus giving total mobility during use.

WHAT I CLAIM IS:

1. An audio listening apparatus comprising, in combination,

(i) a belt for personal wear having attached thereto an audio system including an interconnected stereo audio signal source and stereo amplifier means and a battery power source therefor, and

(ii) stereo headphones or earphones electrically connected to the stereo amplifier means.

2. An audio listening apparatus, as claimed in claim 1, wherein electrical connection between the signal source and the



than one source may be played through the headphones or earphones simultaneously.

The audio system may provide with four-channel or quadraphonic reproduction.

The microphones may be connected either to the preamplifier or to the mixer, and they may be used for live sound recording or live sound amplifying. These microphones may be either attached to the belt, or to the headphones or earphones, or connected through cable means, or through a transmitting/receiving system.

All the circuits are advantageously miniaturized, and they may be incorporated with the playback unit, which unit may be attached to the belt, or they may be distributed, on plate members, along said belt.

Controls, preferably of the sensor type, may be positioned, at least in part, along the belt.

At least one other casing may be attached to or incorporated in the belt, for the storage of tape cassettes or other carriers of recorded audio signals, or folded headphones or earphones.

According to another aspect of the invention, a personal stereo audio listening apparatus, to be worn by an individual listener, comprises in combination:-

(i) a reproduction playback device arranged to produce stereo programme output signals;

(ii) at least one microphone;

(iii) a mixer to which said playback device and said at least one microphone are connected.

(iv) amplifier means connected to receive output signals from said mixer,

(v) stereo headphones connected to receive the outputs of said amplifier means;

(vi) power source means comprising a battery electrically connected to the playback device and to said amplifier means, and

(vii) a belt, for personal wear, said belt having attached thereto said playback device, said amplifier means, and said battery power source means.

An embodiment of apparatus in accordance with the invention is hereinafter particularly described by way of non-limiting example with reference to the accompanying drawings, wherein:-

Figure 1 is a perspective view of a belt for use in the invention;

Figure 2 is a perspective view of the belt of Figure 1, fitted with items of the apparatus;

Figure 3 is a perspective view illustrating a manner of use of the apparatus on the body.

The stereo audio listening apparatus is preferably so designed that all of the items thereof are miniaturized to the utmost and incorporated on the belt in a compact and integral manner, and such items may be

contained in any convenient number of housings on the belt.

The belt 1 comprises a strip of any suitable flexible material of appropriate strength.

The belt 1 is provided with a buckle 2 as illustrated, but the buckle 2 could be replaced by any other convenient means to connect the two belt ends. The belt is preferably formed with an adjustable extensible portion 3.

On the belt 1 there is engaged a magnetic tape player device 4 optionally provided with a preamplifying device.

Also on the belt 1 there is engaged an amplifying device 5 to which are connected one or more pairs of lightweight headphones 6, preferably of a collapsible type, or a pair of earpieces.

The amplifier 5 may be substituted by a tuner-amplifier, for receiving FM stereophonic broadcasts.

A power supply for the aforesaid items consists of one or more batteries 7, which may be primary cells or rechargeable, which are housed in a container 8 also engaged on the belt 1.

There may also be engaged on the belt 1 a further casing 9 to receive cassettes 10.

Electric connection between the power source and the various items, and between the player device 4 and the amplifier 5, in the case in which these items are separate, is obtained by small cables 11 running preferably within belt 1.

All of the items, devices 4, 5, 8 and 9 are preferably readily removable to permit replacement of the belt 1.

The apparatus is particularly effective in that, by reason of the belt-headphone combination, it permits the playing back of stored audio signals in true hifi-stereo without restricting the user's movements to locations within range of a conventional playing apparatus. The apparatus is able to provide the user with personalised listening and the enhanced realism of binaural stereo reproduction, without restricting the listener's movements by a wire link to a conventional playback apparatus, and thus giving total mobility during use.

WHAT I CLAIM IS:

1. An audio listening apparatus comprising, in combination,

(i) a belt for personal wear having attached thereto an audio system including an interconnected stereo audio signal source and stereo amplifier means and a battery power source therefor, and

(ii) stereo headphones or earphones electrically connected to the stereo amplifier means.

2. An audio listening apparatus, as claimed in claim 1, wherein electrical connection between the signal source and the



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amplifier, or between the power source and the remainder of the audio system, is provided by cable means positioned within the belt or fixed to the belt.

5 3. An audio listening apparatus, as claimed in either of claims 1 and 2, wherein the stereo audio signal source consists of or includes a stereo tuner capable of receiving radio signals and converting them to audio output signals corresponding to a received broadcast.

10 4. An audio listening apparatus, as claimed in claim 3, comprising an antenna positioned within the belt or fixed thereto.

15 5. An audio listening apparatus, as claimed in any one of claims 1 to 4, wherein the audio system further includes at least two microphones electrically connected to respective channels of the stereo amplifier means.

20 6. An audio listening apparatus, as claimed in any one of the preceding claims, wherein the stereo audio signal source comprises means for stereo recording.

25 7. An audio listening apparatus, as claimed in any one of claims 1 to 6, wherein the audio system provides four-channel reproduction.

30 8. An audio listening apparatus, as claimed in any one of claims 1 to 7, wherein the audio system includes means connected to the amplifier means for generating, processing, equalizing, receiving, mixing, recording, transmitting, or transducing audio signals, or for converting other signals into audio signals.

35 9. An audio listening apparatus, as claimed in any one of the preceding claims, including at least one casing attached to or incorporated in the belt for the storage of tape cassettes or other carriers of recorded audio signals, or folded headphones or earphones.

40 10. A personal stereo audio listening apparatus, to be worn by an individual listener, comprising in combination:

45 (i) a reproduction playback device arranged to produce stereo programme output signals;

50 (ii) at least one microphone;

(iii) a mixer to which said playback device and said at least one microphone are connected;

55 (iv) amplifier means connected to receive output signals from said mixer.

(v) stereo headphones connected to receive the output signals of the amplifier means;

60 (vi) power source means comprising a battery electrically connected to the playback device and to amplifier means,

65 (vii) a belt, for personal wear, said belt having attached thereto the playback device, the amplifier means, and the battery power source means.

11. An audio listening apparatus substantially as described herein with reference to all of the figures of the accompanying drawings.

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