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(54) **Portable radio/transmitter**

(57) A portable radio transmitter and receiver construction which is arranged for being carried entirely on the head of a user, the radio 1 comprises an adjustable headband 2 which supports two earpieces, in which a first earpiece 3 includes a battery compartment, a power lead from said compartment extending along the headband to the second earpiece 4, the second earpiece comprises a frequency modulation transmitter/receiver radio, an earphone and a microphone, an on/off and a volume control switch, with an aerial lead for said radio being located along the length of the headband 2.

This gives a compact radio construction which, if necessary, can be worn beneath a protective safety helmet.

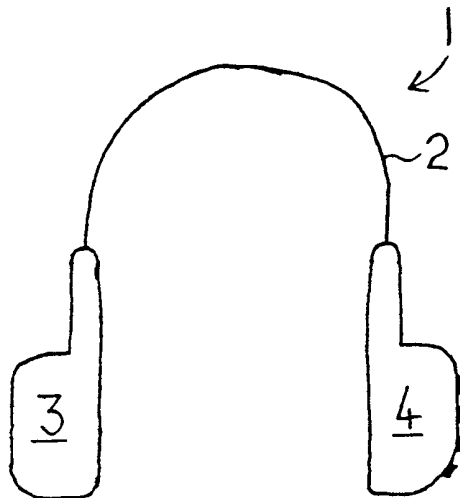


Fig. 1

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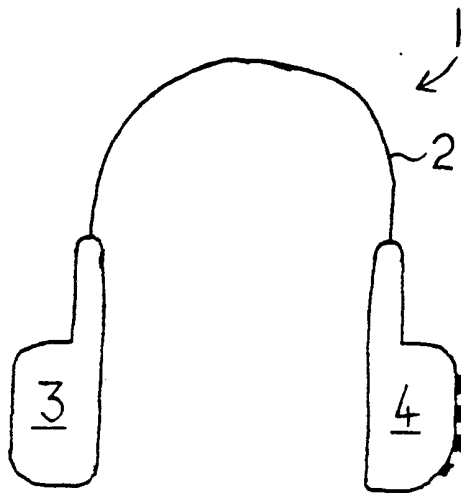


Fig. 1

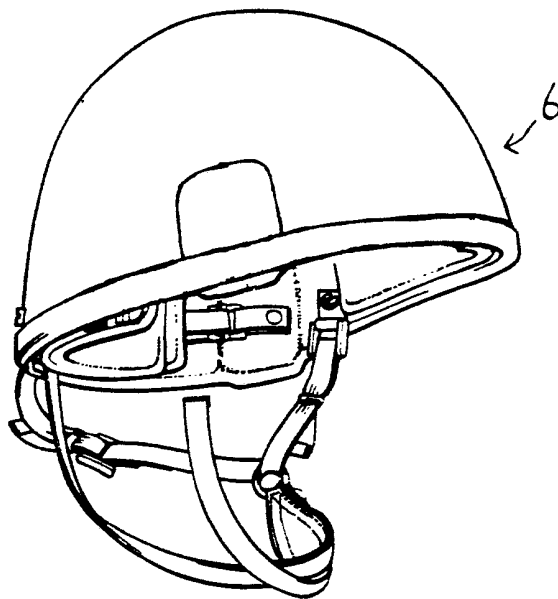


Fig. 2

PORTABLE RADIO

This invention relates to a portable radio. The invention relates particularly to a portable radio transmitter and receiver construction which is able to be carried entirely on the body of a user.

In the provision of a portable radio transmitter and receiver unit which is intended for some active service use, such as for a military application, it does not give optimum convenience if a separate battery pack or a lengthy telescopic or rod aerial must be attached. The present invention was devised to provide a portable radio which has a simplified mechanical construction with all the necessary components being grouped together in a single compact unit.

According to the invention, there is provided a portable radio transmitter and receiver construction which is arranged for being carried entirely on the head of the user, the radio comprising an adjustable headband which supports two earpieces, in which a first one of said earpieces includes a battery compartment, a power lead from said compartment extending along the said headband to the second earpiece, a second one of said earpieces comprising a frequency modulation transmitter/receiver radio, an earphone and a microphone, an on/off and a volume control switch, with an aerial lead for said radio being located along the length of said headband. The microphone may be a bone-conduction microphone.

In one embodiment, the said radio additionally includes a signal anti-jamming circuit. The anti-jamming circuit may employ a non-linear signal processor.

The radio may be arranged to be tuneable by means of a switch capable of selecting one of a set of predetermined frequency channels. The earpieces of the headband may have an earshell shape arranged such that the radio is capable of being worn under a protective safety helmet.

By way of example, a particular embodiment of the invention will now be described with reference to the accompanying drawing, in which:

Figure 1 is a front view of the portable radio construction, and, Figure 2 is a side view of one type of helmet with which the portable radio could be used.

As shown in Figure 1, the portable radio 1 has a general appearance similar to that of a pair of headphones. A headband 2 which is adjustable and made of a resilient material supports a first earpiece 3 and on an opposite side a second earpiece 4.

The first earpiece 3 houses a battery compartment which is capable of accommodating battery cells of the standard AA size. The cells intended to be used could thus be primary cells or, for example, rechargeable secondary cells. The first earpiece 3 therefore does not serve any audio function but it is provided with ventilation holes to allow normal external hearing to the user on the side of the relevant ear.

The battery compartment is connected to the second earpiece 4 by means of a power lead, which is attached to the headband 2.

The second earpiece 4 is similar in external shape to the first earpiece 3 but it is arranged to accommodate all of the electronic circuit parts of the radio. These circuit parts include a frequency

modulation combined radio transmitter and receiver which has predetermined frequency channels for the communication signals. The choice of the particular channel which is to be used is controlled by a selection switch.

The operation of the radio is also controlled by an on/off switch which is combined with a volume control switch.

The radio circuit in addition includes an anti-jamming circuit which is intended to reduce deliberate interference with the communications process, and which employs a non-linear signal processor. The operation of the anti-jamming function is controlled by a second on/off switch.

A further control switch allows the radio transmission to be effected by means of a press-to-talk (PTT) operation or by an automatic voice-operated switch (VOX) function.

The radio is provided with a single earphone for the output signals and a sound input from the user is obtained from a bone conduction microphone located adjacent the user's cheekbone. An aerial lead for the radio is located along the length of the headband.

In the electronic design of the radio, it was considered that this should be capable of being tuned over a ten MHz portion within the 30-88 MHz frequency band. Three preset frequency channels were able to be provided. The output power could be usefully 0.5W, but preferably would be 1.0W. The value for Signal, Noise and Distortion Measurement (SINAD) in the reception mode should be not worse than -113 dBm for 10 dB SINAD.

The invention has been found to be capable of being made in the form of a ruggedised infantry type headset radio having a range

of about one kilometre. The shape of the earshells on each side are such that they can be worn beneath a conventional infantry headset helmet 6 (Figure 2). With this arrangement, in order to avoid any screening of radio frequency signals from or to the aerial, the helmet should be of a non-electrically conductive material. The user, therefore, can be free to choose whether to wear these two items together or just to wear the portable radio on its own.

The foregoing description of an embodiment of the invention has been given by way of example only and a number of modifications may be made without departing from the scope of the invention as defined in the appended claims. For instance, use by military personnel is not the only possibility and the portable radio is also likely to be extremely helpful for two-way communication between workers in other fields such as the police, firemen and mountain rescue services. Instead of requiring standard primary cells for the battery compartment, the design might be rearranged so that a special rechargeable battery unit could be accommodated.

CLAIMS:-

1. A portable radio transmitter and receiver construction which is arranged for being carried entirely on the head of a user, the radio comprising an adjustable headband which supports two earpieces, in which a first one of said earpieces includes a battery compartment, a power lead from said compartment extending along the said headband to the second earpiece, a second one of said earpieces comprising a frequency modulation transmitter/receiver radio, a earphone and a microphone, an on/off and a volume control switch, with an aerial lead for said radio being located along the length of said headband.
2. A portable radio as claimed in Claim 1, in which the microphone is a bone-conduction microphone.
3. A portable radio as claimed in Claim 1 or 2, in which the said radio additionally includes a signal anti-jamming circuit.
4. A portable radio as claimed in Claim 3, in which the anti-jamming circuit employs a non-linear signal processor.
5. A portable radio as claimed in any one of Claims 1 to 4, in which the said radio is arranged to be tuneable by means of a switch capable of selecting one of a set of predetermined frequency channels.
6. A portable radio as claimed in any one of Claims 1 to 5, in which the earpieces of the headband have an earshell shape arranged such that the radio is capable of being worn under a protective safety helmet.

7. A portable radio substantially as hereinbefore described with reference to the accompanying drawing.