CLAIMS

1.- An acoustic device (2) capable of producing active noise reduction, which may be positioned on the head of a user, comprising at least one microphone able to sense a representative sound signal of ambient noise, characterized in that it includes at least one acoustic module (4) for active noise reduction comprising an osteophonic transducer (8, 8'), capable of being positioned on a side flank of the head of the user, and of transmitting a vibratory signal transformed by bone conduction into an acoustic signal which may be perceived by the user, connected to said microphone, and in that said at least one acoustic module (4) includes an electronic circuit (30) capable of generating a vibratory signal giving the possibility of attenuating the perception of said ambient noise by the user.

2.- The acoustic device according to claim 1, characterized in that said electronic circuit (30) implements a filter (32) defined by a transfer function (H_{FO}) for noise reduction, said transfer function (H_{FO}) being determined in order to produce noise attenuation according to direct bone conduction between the osteophonic transducer (8, 8') and the inner ear of a user located on the same side as said transducer (8, 8').

3.- The acoustic device according to claim 2, characterized in that said noise reduction transfer function (H_{FO}) depends on a ratio of a direct bone conduction transfer function (H_{CO}) representative of said bone conduction and of an airborne conduction transfer function (H_{CA}) representative of the conduction of an airborne acoustic signal between an outer ear and an inner ear located on a same side.

4.- The device according to claim 3, characterized in that said transfer function is defined by the formula:

$$H_{FO} = -R \cdot \frac{H_b^G}{H_m . H_{TO}}$$

wherein R is said ratio of a direct bone conduction transfer function (H_{CO}) and of the airborne conduction transfer function (H_{CA}), H_b^G is a characteristic transfer function of ambient noise, H_m is the transfer function of said microphone and H_{TO} is the transfer function of said osteophonic transducer (8,8').

5.- The acoustic device according to claim 1, characterized in that it includes two so called active noise reduction acoustic modules (4) capable of being positioned on the opposite lateral sides of the head of a user.

6.- The acoustic device according to claim 5, characterized in that each active noise reduction acoustic module (4) includes an osteophonic transducer (8,8') and an electronic circuit (30) implementing a filter (32) defined by a noise reduction transfer function (H_{FO}), said transfer function (H_{FO}) being determined according to direct bone conduction (H_{CO}) and transverse bone conduction (H_{CO}') of a vibratory signal from the opposite osteophonic transducer.

7.- The acoustic device according to one of the preceding claims, characterized in that it further includes an active noise reduction module for transmitting an airborne counter-noise signal.

CLAIMS

1.- An acoustic device (2) capable of producing active noise reduction, which may be positioned on the head of a user, comprising at least one microphone able to sense a representative sound signal of ambient noise, and including at least one acoustic module (4) for active noise reduction comprising an osteophonic transducer (8, 8'), capable of being positioned on a side flank of the head of the user, and of transmitting a vibratory signal transformed by bone conduction into an acoustic signal which may be perceived by the user, connected to said microphone, and said at least one acoustic module (4) including an electronic circuit (30) capable of generating a vibratory signal giving the possibility of attenuating the perception of said ambient noise by the user,

the acoustic device (2) being characterized in that said electronic circuit (30) implements a filter (32) defined by a transfer function (H_{FO}) for noise reduction, said noise reduction transfer function (H_{FO}) being determined in order to produce noise attenuation according to direct bone conduction between the osteophonic transducer (8, 8') and an inner ear of the user located on the same side as said transducer (8, 8'),

and in that said noise reduction transfer function is defined by the formula:

$$H_{FO} = -R \cdot \frac{H_b^G}{H_m . H_{TO}}$$

wherein R is a ratio of a direct bone conduction transfer function (H_{CO}) and of the airborne conduction transfer function (H_{CA}), H_b^G is a characteristic transfer function of ambient noise, H_m is the transfer function of said microphone and H_{TO} is the transfer function of said osteophonic transducer (8,8').

2.- The acoustic device according to claim 1, characterized in that said noise reduction transfer function (H_{FO}) depends on a ratio of said direct bone conduction transfer function (H_{CO}) representative of said bone conduction and of an airborne conduction transfer function (H_{CA}) representative of the conduction of an airborne acoustic signal between an outer ear and an inner ear located on a same side.

3.- The acoustic device according to claim 1, characterized in that it includes two so called active noise reduction acoustic modules (4) capable of being positioned on the opposite lateral sides of the head of the user.

4.- The acoustic device according to claim 3, characterized in that each active noise reduction acoustic module (4) includes an osteophonic transducer (8,8') and an electronic circuit (30) implementing a filter (32) defined by a noise reduction transfer function (H_{FO}), said transfer function (H_{FO}) being determined according to direct bone conduction (H_{CO}) and transverse bone conduction (H_{CO}') of a vibratory signal from the opposite osteophonic transducer.

5.- The acoustic device according to one of the preceding claims, characterized in that the acoustic device further includes an active noise reduction module for transmitting an airborne counter-noise signal.