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REPLACEDApparatus for indicating correct or
faulty back posture

- 5 The present invention relates to a device for placing on a person's head to indicate correct or incorrect upright posture during the performance of various activities in a standing or sitting position, comprising a balance element connected to a headband, a hairband, an ear clip or other appropriate means for attachment to a person's head.
- 10 A device of this kind is taught in the applicant's own Norwegian Patent 171,349. This device consists of a balance body which is attached to a U-shaped band, which in turn is attached to a hairband or similar. A spring or similar is located between the legs of the U-band so that the balance body will tip forward when the head is moved too far forward and out of a correct head position. When this happens, a signal will be given to
- 15 indicate that the user has assumed an incorrect sitting posture.

This device functions extremely well under qualified guidance, but nevertheless is encumbered with certain weaknesses. For example, the device is rather large and lumpy and projects quite high above the user's head. This means that the device could easily

20 be torn off the head if the user knocks into a low door frame or similar.

Further, the device has proven to be somewhat difficult to calibrate and is very sensitive to deviations from the correct calibration. Moreover, it is difficult for the user to perceive when the balance body of the device tips forward, and he or she is therefore

25 dependent on either a mirror or having another person present as an observer.

Moreover, the device will only indicate incorrect head position when the head is tipped too far forward. It will not indicate an incorrect head position when the head is tipped sideways.

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In order to eliminate these disadvantages it is therefore proposed to design the device as described in the characterising clause of independent claim 1 below, and also in the subsequent dependent claims.

- 35 The device will be described in more detail below with reference to the accompanying drawings, wherein:

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Figure 1 illustrates a device where the moveable body is a slide which can move in a channel in the fixed body.

Figure 2 shows a device where the moveable body is a pin which, when the head
5 position is incorrect, will move out of a recess in the fixed body.

Figures 3a and 3b show the movement of the moveable body according to Figure 2.

Figure 4 illustrates a device where the moveable body is a ball which will roll along an
10 inclined plane when the head position is incorrect.

Figure 5 shows a section through the device in Figure 4 along the line V-V.

Figures 6 - 9 show a moveable body made of a disc which is designed to move in a hole
15 in the fixed body:

Figure 6 shows the device from above and with the moveable body in a neutral position;

Figure 7 shows a section along the line VII-VII in Figure 6;

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Figure 8 shows the device from above with the moveable body displaced from the neutral position;

Figure 9 shows a section along the line IX-IX in Figure 8.

25

In Figure 1, a device 1 is shown placed on a person's head 2 with the aid of an attachment means 3, which may be a hairband, a headband or another appropriate means. The device 1 consists of a fixed body 4, which is firmly secured to the attachment means 3, and a moveable body 5, which can move translationally relative to
30 the fixed body 4.

In the exemplary embodiment according to Figure 1, the moveable body 5 consists of a slide block 5a which is designed to move in a channel 6 in the fixed body 4. When the position of the head is correct, the block 5a will preferably be at the highest point of the
35 head and preferably in the rear end of the channel 6. If the head is bent too far forward, the weight of the block 5a will overcome the frictional forces against the channel 6 and the block 5a will move forward in the channel 6. The materials and design of the block

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5a and the fixed body can be chosen so that an audible sound is made when the block 5a strikes the end of the channel 6.

In Figure 2, a second embodiment of the device is shown. Here, the moveable body 5 consists of a pin 5b and the fixed body consists of a holder 4b equipped with a through-going slot 7 which defines a plane 8 having a recess 9 at the rear end thereof. When the position of the head is correct, the pin 5b is in the recess 9, but when the head is tipped too far forward, it will roll out of the recess 9 and down the plane 8 and preferably make an audible sound when it strikes against the end of the holder 4b. Figures 3a and 3b show the position of the pin 5b when the position of the head is correct and incorrect, respectively.

An embodiment is shown in Figure 4 where the moveable body consists of a ball 5c and the fixed body of a box 4c. The box 4c is equipped with an inclined plane 10 which is preferably curved in such a way that it inclines from the edges of the box and down towards a bottom point 11 at the back edge 12 of the box. In the neutral position, the ball 5c will be at the lowest point 11 of the inclined plane. When the head is tipped too far forward or perhaps to the side, the inclined plane will move past the horizontal position and the lowest point 11 will thereby come to be higher than the inclined plane at the opposite end thereof. The ball will thus roll down the inclined plane and strike against the box wall, preferably making an audible sound in doing so. The box 4c is preferably closed so that the ball 5c is prevented from falling out. The box 4c is attached in an appropriate manner to a headband or similar.

Figures 6 - 9 show a fourth embodiment where the moveable body consists of a disc 5d and the fixed body consists similarly of a disc 4d of greater diameter. As can best be seen in Figure 7, the disc 4d is double and in one wall has a hole 13 of a smaller diameter than the diameter of the disc 5d. Said disc 5d is also double, but the walls in this case are only connected in the centre of the disc. The disc 5d is placed in the hole 13 so that one of the walls 14 of the disc 5d is on the inside of the edge of the hole, whilst the other wall 15 is on the outside. When the position of the head is correct, the disc 5d is centred in the hole 13. On deviation from the correct head position, the disc 5d will shift relative to the hole 13 and clearly indicate that the head position is incorrect. Also in this case, an audible sound will preferably be made when the disc 5d reaches its outermost position. Both the disc 5d and the disc 4d are preferably double curved, so that the device is less sensitive to movement. The curve can be varied according to the desired degree of sensitivity.



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In an embodiment that is not illustrated, the moveable body may consist of a mercury ball or similar which on deviation from the correct head position moves in such a way that it closes an electronic circuit. The electronic circuit may be formed so that it emits
5 an audible sound, e.g., a piping sound, actuates a vibration device, gives a light signal or in another manner indicates that an incorrect head position has been assumed.

The device may also be equipped with a proximity sensor which detects the position of the moveable body and gives a continuous or stepwise signal dependent on the position.

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Patent claims

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1.

A device (1) for placing on a person's head (2) to indicate correct or incorrect upright posture during the performance of various activities in a standing or sitting position, comprising an inclination indicator connected to a headband, a hairband, an ear clip or other appropriate device (3) for attachment to a person's head, characterised in that the inclination indicator consists of a basic body (4) which is firmly secured to the headband (3) or similar and an indicator body (5) which is moveable in at least one direction from a start position, which indicates correct head position, relative to the basic body (4), essentially in or on a surface essentially parallel to or coincident with the horizontal plane, whereby the indicator body (5) is designed to move relative to the basic body (4) when a certain degree of deviation from the correct head position occurs and returns to the start position when the correct head position is once more assumed.

20 2.

A device according to claim 1, characterised in that the moveable body (5) is a ball (5c) and the fixed body (4) comprises one or more inclined planes (10), where, when the head position is correct, the ball (5c) is at the lowest point (11) of the inclined plane (10) and is designed to roll to the opposite end of the inclined plane (10) when this is brought into opposite inclination by the head being in an incorrect position.

3.

A device according to claim 2, characterised in that the fixed body is equipped with a plurality of inclined planes (10) which have a coincident lowest point (11).

4.

A device according to claim 1, characterised in that the moveable body is a slide (5a) which is designed to move in a channel (6) in the fixed body (4).





5.

A device according to claim 1, characterised in that the moveable body is a cylinder (5b), pin or similar, and that the fixed body (4) comprises a plane (8) having a recess (9) at one end thereof, and that the moveable body (5) is in the recess (9) when the position of the head is correct and is designed to roll out of the recess (9) and down the plane (8) when the position of the head is incorrect.

6.

A device according to claim 1, characterised in that the moveable body (5) is a disc (5d) and that the fixed body (4) comprises a hole (13) having a slightly smaller diameter than the disc (5d), and that the disc (5d) at least in part is behind the edge of the hole and can shift relative to the hole (13) when the head position varies.

15

7.

A device according to claim 6, characterised in that the disc (5d) is designed to be able to shift in all directions in the main plane of the fixed body (4).

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8.

A device according to claims 6 - 8, characterised in that both the fixed body (4) and the moveable disc (5d) are curved with corresponding radius of curvature.

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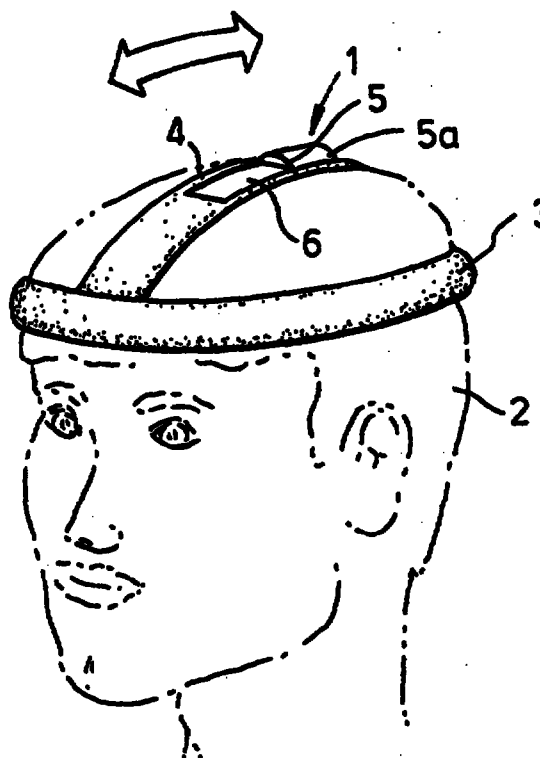
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(54) Title: APPARATUS FOR INDICATING CORRECT OR FAULTY BACK POSTURE

(57) Abstract

The invention relates to a device (1) for placing on a person's head (2) to indicate correct or incorrect upright posture during the performance of various activities in a standing or sitting position. The device comprises a balance element consisting of a fixed body (4) which is firmly secured to a headband or similar for attachment to the head (2), and a moveable body (5) which is translationally moveable relative to the fixed body (4), essentially in a plane parallel to or coincident with the main plane of the fixed body (4), whereby the moveable body (5) is designed to move translationally relative to the fixed body (4) when a certain degree of deviation from the correct head position occurs.



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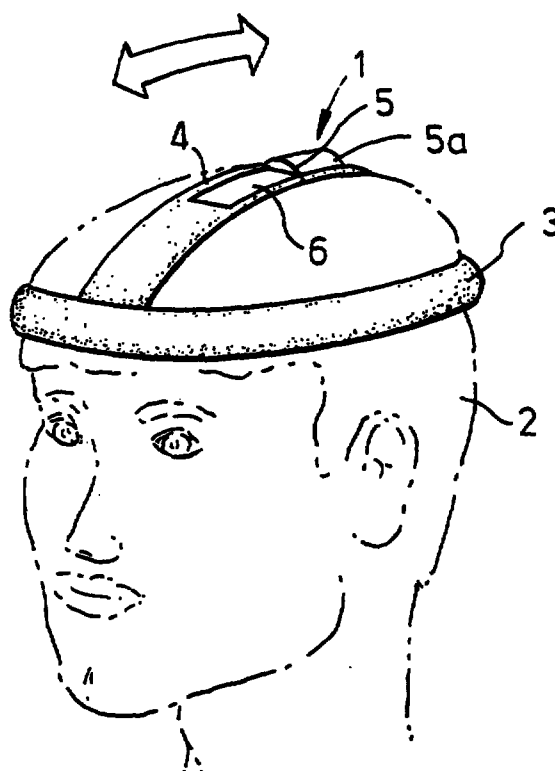


Fig.1.

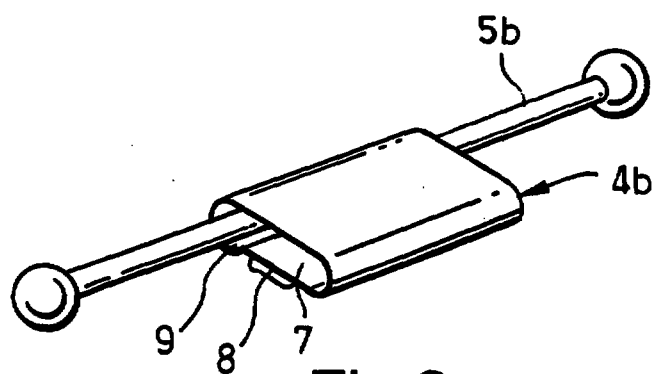


Fig.2.

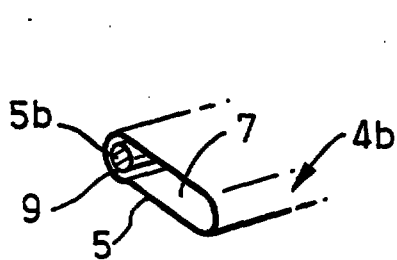


Fig.3(a)

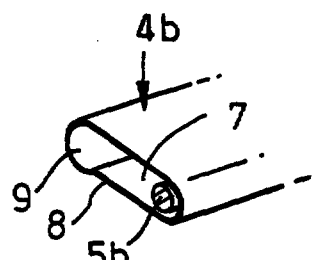


Fig.3(b)

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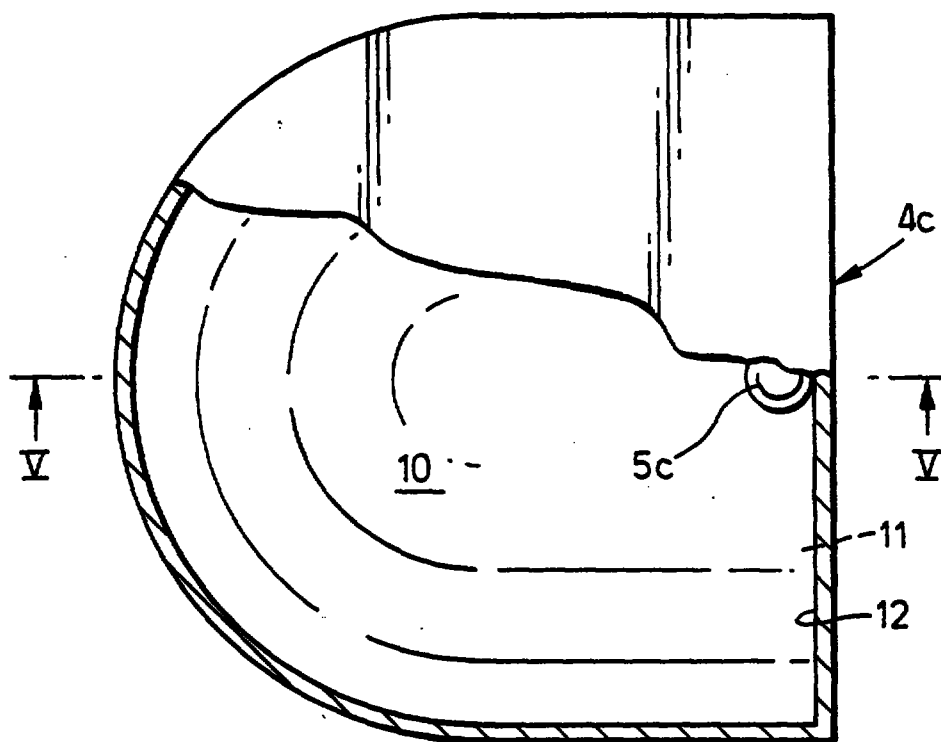


Fig. 4.

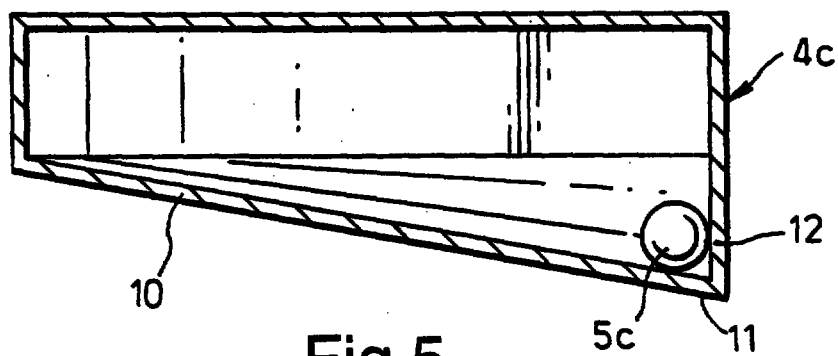


Fig. 5.

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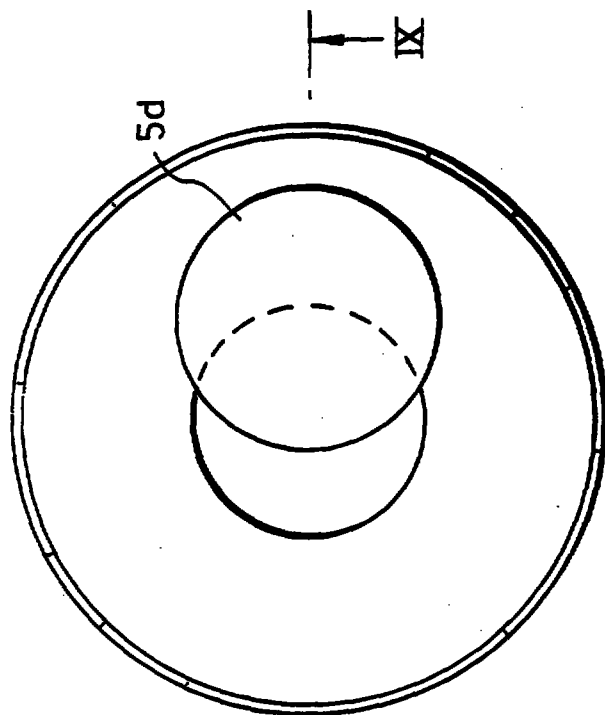


Fig. 8.

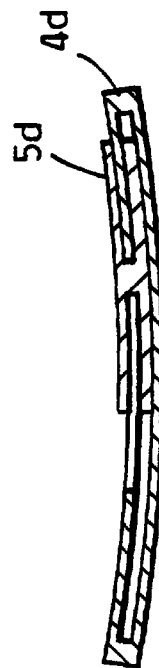


Fig. 9.

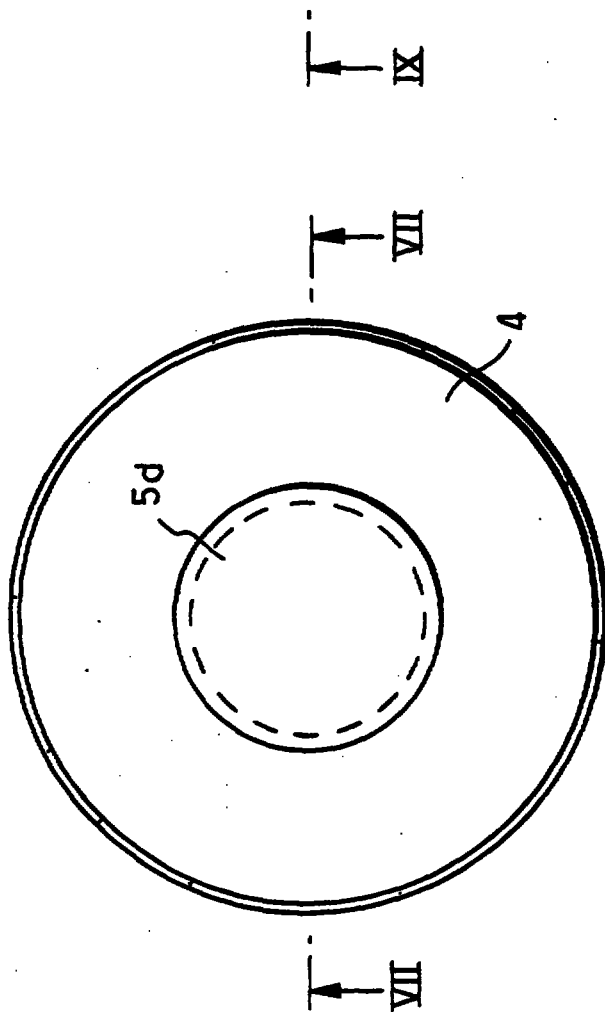


Fig. 6.

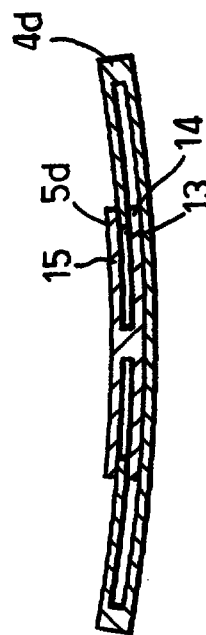
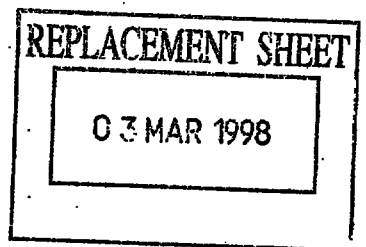


Fig. 7.

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APPARATUS FOR INDICATING CORRECT OF FAULTY BACK POSTURE

The Field of the Invention

The present invention relates to a device for placing on a person's head to indicate correct or incorrect upright posture during the performance of various activities in a standing or sitting position, comprising a balance element connected to a headband, a hairband, an ear clip or other appropriate means for attachment to a person's head.

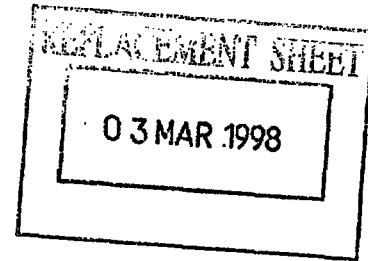
Background of the Invention

A device of this kind is taught in the applicant's own Norwegian Patent 171,349. This device consists of a balance body which is attached to a U-shaped band, which in turn is attached to a hairband or similar. A spring or similar is located between the legs of the U-band so that the balance body will tip forward when the head is moved too far forward and out of a correct head position. When this happens, a signal will be given to indicate that the user has assumed an incorrect sitting posture.

This device functions extremely well under qualified guidance, but nevertheless is encumbered with certain weaknesses. For example, the device is rather large and lumpy and projects quite high above the user's head. This means that the device could easily be torn off the head if the user knocks into a low door frame or similar.

Further, the device has proven to be somewhat difficult to calibrate and is very sensitive to deviations from the correct calibration. Moreover, it is difficult for the user to perceive when the balance body of the device tips forward, and he or she is therefore dependent on either a mirror or having another person present as an observer.

Moreover, the device will only indicate incorrect head position when the head is tipped too far forward. It will not indicate an incorrect head position when the head is tipped sideways.



Summary of the Invention

In order to eliminate these disadvantages it is therefore proposed to design the device as described in the characterising clause of independent claim 1 below, and also in the subsequent dependent claims.

Brief Description of the Drawings

The device will be described in more detail below with reference to the accompanying drawings, wherein:

Figure 1 illustrates a device where the moveable body is a slide which can move in a channel in the fixed body.

Figure 2 shows a device where the moveable body is a pin which, when the head position is incorrect, will move out of a recess in the fixed body.

Figures 3a and 3b show the movement of the moveable body according to Figure 2.

Figure 4 illustrates a device where the moveable body is a ball which will roll along an inclined plane when the head position is incorrect.

Figure 5 shows a section through the device in Figure 4 along the line V-V.

Figures 6 - 9 show a moveable body made of a disc which is designed to move in a hole in the fixed body:

Figure 6 shows the device from above and with the moveable body in a neutral position;

Figure 7 shows a section along the line VII-VII in Figure 6;

Figure 8 shows the device from above with the moveable body displaced from the neutral position;

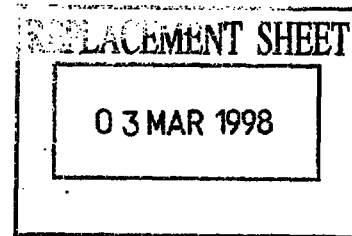


Figure 9 shows a section along the line IX-IX in Figure 8.

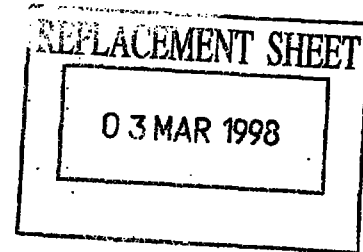
Detailed Description of the Preferred Embodiment

In Figure 1, a device 1 is shown placed on a person's head 2 with the aid of an attachment means 3, which may be a hairband, a headband or another appropriate means. The device 1 consists of a fixed body 4, which is firmly secured to the attachment means 3, and a moveable body 5, which can move translationally relative to the fixed body 4.

In the exemplary embodiment according to Figure 1, the moveable body 5 consists of a slide block 5a which is designed to move in a channel 6 in the fixed body 4. When the position of the head is correct, the block 5a will preferably be at the highest point of the head and preferably in the rear end of the channel 6. If the head is bent too far forward, the weight of the block 5a will overcome the frictional forces against the channel 6 and the block 5a will move forward in the channel 6. The materials and design of the block 5a and the fixed body can be chosen so that an audible sound is made when the block 5a strikes the end of the channel 6.

In Figure 2, a second embodiment of the device is shown. Here, the moveable body 5 consists of a pin 5b and the fixed body consists of a holder 4b equipped with a through-going slot 7 which defines a plane 8 having a recess 9 at the rear end thereof. When the position of the head is correct, the pin 5b is in the recess 9, but when the head is tipped too far forward, it will roll out of the recess 9 and down the plane 8 and preferably make an audible sound when it strikes against the end of the holder 4b. Figures 3a and 3b show the position of the pin 5b when the position of the head is correct and incorrect, respectively.

An embodiment is shown in Figure 4 where the moveable body consists of a ball 5c and the fixed body of a box 4c. The box 4c is equipped with an inclined plane 10 which is preferably curved in such a way that it inclines from the edges of the box and down towards a bottom point 11 at the back edge 12 of the box. In the neutral position, the

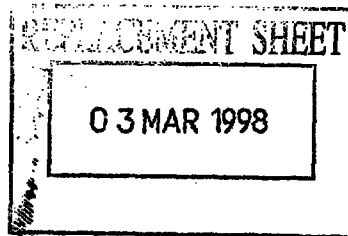


ball 5c will be at the lowest point 11 of the inclined plane. When the head is tipped too far forward or perhaps to the side, the inclined plane will move past the horizontal position and the lowest point 11 will thereby come to be higher than the inclined plane at the opposite end thereof. The ball will thus roll down the inclined plane and strike against the box wall, preferably making an audible sound in doing so. The box 4c is preferably closed so that the ball 5c is prevented from falling out. The box 4c is attached in an appropriate manner to a headband or similar.

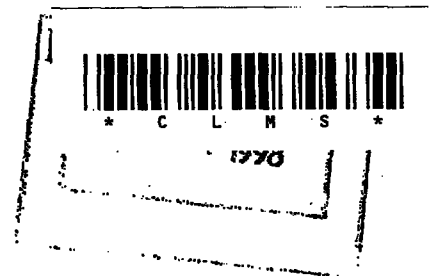
Figures 6 - 9 show a fourth embodiment where the moveable body consists of a disc 5d and the fixed body consists similarly of a disc 4d of greater diameter. As can best be seen in Figure 7, the disc 4d is double and in one wall has a hole 13 of a smaller diameter than the diameter of the disc 5d. Said disc 5d is also double, but the walls in this case are only connected in the centre of the disc. The disc 5d is placed in the hole 13 so that one of the walls 14 of the disc 5d is on the inside of the edge of the hole, whilst the other wall 15 is on the outside. When the position of the head is correct, the disc 5d is centred in the hole 13. On deviation from the correct head position, the disc 5d will shift relative to the hole 13 and clearly indicate that the head position is incorrect. Also in this case, an audible sound will preferably be made when the disc 5d reaches its outermost position. Both the disc 5d and the disc 4d are preferably double curved, so that the device is less sensitive to movement. The curve can be varied according to the desired degree of sensitivity.

In an embodiment that is not illustrated, the moveable body may consist of a mercury ball or similar which on deviation from the correct head position moves in such a way that it closes an electronic circuit. The electronic circuit may be formed so that it emits an audible sound, e.g., a piping sound, actuates a vibration device, gives a light signal or in another manner indicates that an incorrect head position has been assumed.

The device may also be equipped with a proximity sensor which detects the position of the moveable body and gives a continuous or stepwise signal dependent on the position.

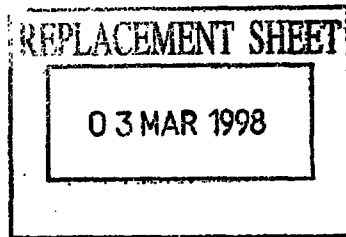


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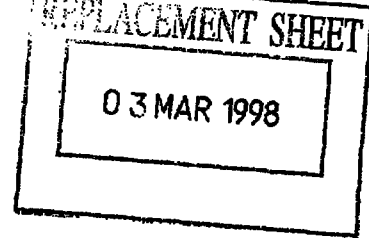
CLAIMS

1. A device for placing on a person's head to indicate correct or incorrect upright posture during performance of various activities in a standing or sitting position, comprising:
 - 5 a basis for attachment to the person's head; and
an inclination indicator connected to said basis, the inclination indicator having a basic body, the basic body being firmly secured to said basis, and an indicator body, the indicator body being moveable in a plurality of directions from a start position, the start position indicating correct head position, relative to the basic body, essentially on
10 a surface essentially coincident with a horizontal plane, and a signaling means associated with said basic body, whereby the indicator body is moveable relative to the basic body when a certain degree of deviation from the correct head position occurs and returns to the start position when the correct head position is once more assumed, whereby the signaling means is activated by the indicator body to give an audible signal in response
15 to the indicator body moving in one of the plurality of directions, wherein the plurality of directions comprise all directions within 360° about the start position.
2. A device according to claim 1, wherein the indicator body is a ball and the basic body comprises a plurality of inclined planes, said planes having a coincident lowest point, where, when the head position is correct, the ball is at the lowest point of the
20 plurality of inclined planes and is designed to roll to an opposite end of one of the multiple of the inclined planes when one plane is brought into opposite inclination by the head being in an incorrect position.
3. A device according to claim 1, wherein said indicator body is a disc, the basic body defining an edge of a hole through the basic body, the hole having a slightly
25 smaller diameter than the disc, and the disc at least in part being behind the edge of the hole and being movable relative to the hole when a position of the head varies.
4. A device according to claim 3, wherein the basic body and the disc are curved with corresponding radius of curvature.
5. A device according to any one of the preceding claims, wherein the indicator
30 body is designed to make an audible sound when it strikes the basic body on movement from the position when head position is correct to the position when the head position



is incorrect.

6. A device according to claim 1, wherein the indicator body is a mercury ball or similar which, on deviation from the correct head position, closes an electronic circuit, or where the position of the indicator body is detected by a vicinity sensor, and that the electronic circuit is designed to make an audible sound, vibration, light signal or similar.
7. A device for placing on a person's head to indicate correct or incorrect upright posture during performance of various activities in a standing or sitting position, comprising:
- a basis for attachment to the person's head;
 - an inclination indicator connected to said basis, the inclination indicator having a basic body firmly secured to the basis, and an indicator body moveable in a plurality of directions from a start position, the start position indicating correct head position, relative to the basic body, essentially on a surface essentially coincident with a horizontal plane, whereby the indicator body is moveable relative to the basic body when a certain degree of deviation from the correct head position occurs and returns to the start position when the correct head position is once more assumed;
 - wherein the indicator body is a disc, the basic body defining a hole which has a slightly smaller diameter than the disc, and the disc at least in part being behind an edge of the hole and being movable relative to the hole when a position of the head varies; and
 - wherein the disc is designed to shift in all directions in a main plane of the basic body.
8. A device for placing on a person's head to indicate correct or incorrect upright posture during performance of various activities in a standing or sitting position, comprising:
- a basis for attachment to the person's head;
 - an inclination indicator connected to said basis, the inclination indicator having a basic body firmly secured to the basis, and an indicator body moveable in a plurality of directions from a start position, the start position indicating correct head position, relative to the basic body, essentially on a surface essentially coincident with a horizontal



plane, whereby the indicator body is moveable relative to the basic body when a certain degree of deviation from the correct head position occurs and returns to the start position when the correct head position is once more assumed;

- 5 wherein the indicator body is a disc, the basic body defining a hole which has a slightly smaller diameter than the disc, and the disc at least in part being behind an edge of the hole and being movable relative to the hole when a position of the head varies; and

wherein the basic body and the disc are curved with corresponding radius of curvature.

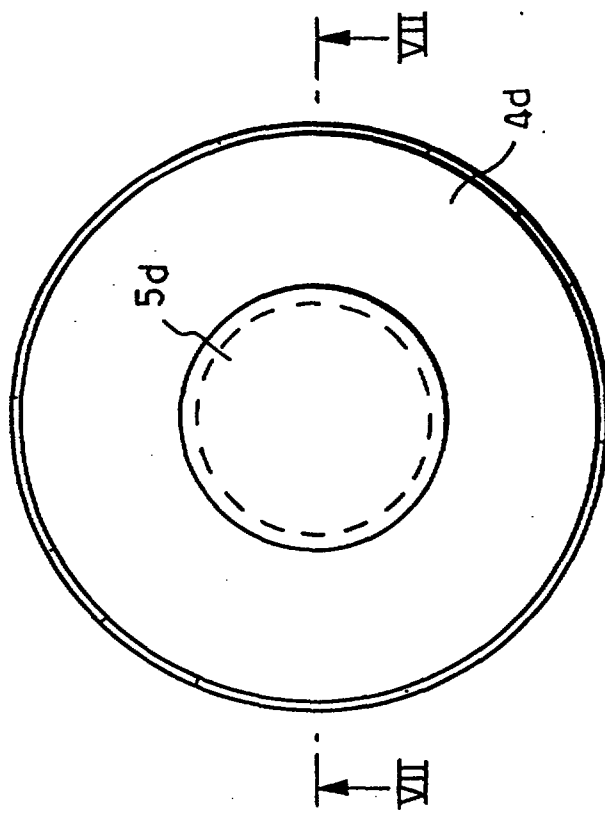


Fig. 6.

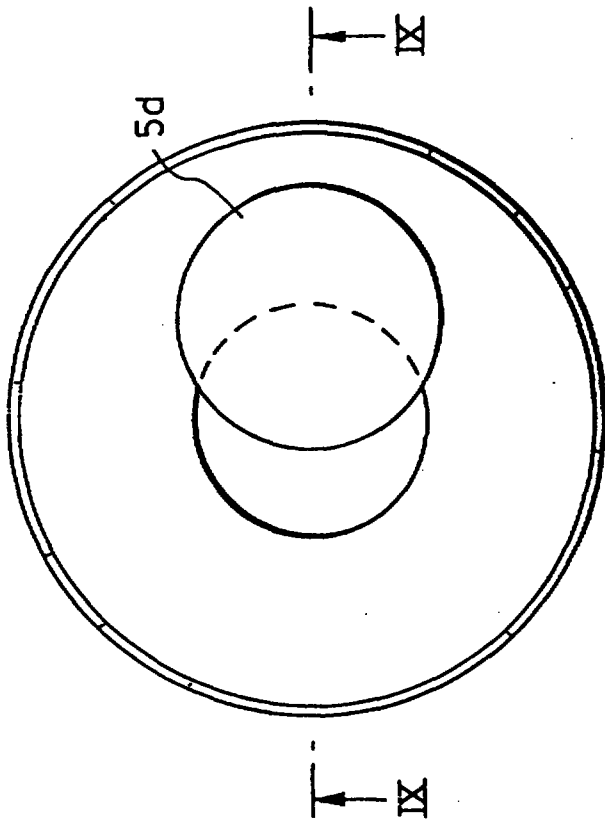


Fig. 8.

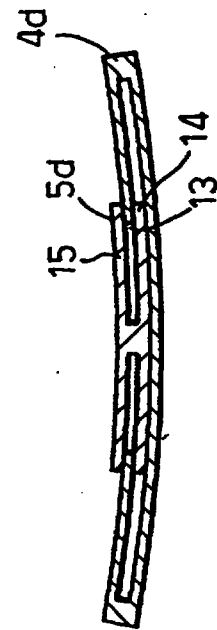


Fig. 7.



Fig. 9.