SELF-LEVELING HEAD SUPPORT

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by Emery, Prather, Johnson & Miller, Patents Attys.
SELF-LEVELING HEAD SUPPORT

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7 Claims. (Cl. 114—191)

My present invention relates to equipment for use by travelers, hospitals, households or otherwise, with a view to maintaining especially the head of the person or patient in a given or level position. The invention accordingly is particularly useful for preventing the condition commonly known as "seasickness," and has as an important object to provide simple, inexpensive and effective means for that purpose.

The term "seasickness" is herein used generically as inclusive of any indisposition due mainly to the instability of the carrier on which the person is present, whether it be a carrier of a water, air or land type. Hence it includes air-sickness, car-sickness and the like as well as sea-sickness in the more limited sense. This type of ailment is known to be closely connected with disorder of the static apparatus of the human ear, especially of the otolites or small stones in the ear resulting from the movements of the ship, aircraft or vehicle. In some instances it has been the practice to counteract or relieve this disorder by resting the patient on a bed, or like support for the entire body, which has to some extent been arranged to be free from oscillation. Such apparatus however is complicated and expensive, and not entirely effective for the purpose.

In the device according to the invention there is provided a head-support or support for a pillow, suspended in such a manner that notwithstanding the movements of the body or frame from which it is suspended, the support always maintains the same direction in space, provided that it be loaded. Such device takes advantage of the essential principle of keeping the patient's head as still as possible, attaining this object through means which may comprise a small number of parts and be of such light and portable construction that a traveler may conveniently carry the device with him, in his trunk or other baggage.

The device according to the invention has the further great advantage that it is not essential for the patient to lie on his back to eliminate the influence of the movement of the ship, aircraft, or vehicle on the otolites, as the head can be kept equally still when the patient lies on his side, in the best position for sleeping.

While having probably its major field of use as an aid to those susceptible to seasickness, in the generic sense of the term, the device of my invention has also been found beneficial for hospital use, particularly for persons suffering from nervous disorders, and in the transport of injured persons or those ill from any cause.

In the accompanying drawings illustrating by way of example certain embodiments of the invention,

Fig. 1 is a front elevation;
Fig. 2 is a plan view;
Fig. 3 is a view similar to Fig. 1 but showing another position of the pillow support relative to the suspending means; and

Figs. 4 and 5 illustrate modified forms of attachment of the standards to the base plate, enabling the standards to be detached easily and facilitating the ready folding and packing of the device for transport or storage.

The device as herein shown in Figs. 1, 2 and 3 has a base plate 1 appropriately recessed in its front edge, as at 15. U-shaped standards 2 and 15 are pivotally mounted on the base at 4, 5, 6, and 7.

The standards 2 and 3 may be erected from the plane of the base plate 1 and be supported by links 8, 9, 10, and 11, which are also pivoted to the base plate 1 and are each provided with a hook-shaped terminal slit, in the manner of a bayonet joint, as seen for example at 12 in Fig. 1, which slits may be engaged by studs 13 on the standards 2 and 3. A number of these studs 13 may be provided on each standard for adjusting the latter at various angles relative to the base plate 1. It will be clear that many other constructions for the adjustable support of the standards on the base plate are possible.

Suspending from the standards 2 and 3 are elastic elements, illustrated in the present example as two pairs of helicoidal springs 14, 15, 16, and 17, being in such manner as to carry a support 18 for a head rest, such for example as a pillow 19 formed from sponge rubber or other suitable material. The axes of each opposite elastic element or pair of springs intersect and converge towards each other at an acute angle. If these elements were parallel to each other, the support 18 would always remain parallel to the line c—d, Fig. 3, which constant parallelism is to be avoided.

By the arrangement according to the invention it is ensured that in case of displacement of the base plate 1 through an angle α, Fig. 3, the centre of gravity Z of the patient's head on the pillow, of the pillow 18, and of the support 18, seeks its lowest position, the springs at one side have a greater elongation than those at the other side, and the support 18 always maintains the same directions, that is to say, in the usual arrangement it always remains substantially horizontal or level.

As stated, the axes of the elastic elements or...
springs 14 and 15 are arranged to intersect or converge towards the axes of the springs 16 and 17 at an acute angle, which angle is made substantially as great or greater than the angle to which the base c—d is likely to be tilted, under ordinary conditions, in its relation to the horizontal. Accordingly, irrespective of the ordinary or likely movements of the base, in the manner illustrated in Fig. 3, said elements, such as 14 and 16 of said figure, always assume a position, in a transverse vertical plane perpendicular to the base. The headrest or pillow 19 when loaded accordingly always maintains its initial plane, remaining in parallelism with itself. Where the initial plane is horizontal, the rest or support accordingly is self-leveling, remaining horizontal. It may be noted that each end of the support 18 may alternatively be suspended from one single spring, the two springs being disposed in inverted V formation.

Obviously the dimensions and proportions of the elastic elements, and other parts may be varied to suit different installations. The following figures accordingly are merely illustrative, but nevertheless represent constructions found highly satisfactory in actual practice. A length of from 53 to 60 cm. has been found convenient for the base plate 1, depending largely on the width of the bunk or bed in steamer cabins, the width of bunks, or other supporting area available. The base plate may have a width of approximately 35 cm., and the standards a height of about 21 cm., desirably somewhat more in the case of bunks.

Preferably also the apparatus or initial equipment includes a set of so-called strong springs or the like, and a second set of so-called weak ones, either of which may be selected, depending on the particular load. I have employed springs, in the illustrative examples referred to, such that the strong springs when loaded with

<table>
<thead>
<tr>
<th>Load (kg)</th>
<th>Elongation (mm)</th>
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<tbody>
<tr>
<td>1</td>
<td>72</td>
</tr>
<tr>
<td>1.75</td>
<td>130</td>
</tr>
<tr>
<td>3.75</td>
<td>390</td>
</tr>
</tbody>
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and the weak springs have an elongation of

<table>
<thead>
<tr>
<th>Load (kg)</th>
<th>Elongation (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>56</td>
</tr>
<tr>
<td>1.75</td>
<td>190</td>
</tr>
<tr>
<td>3.75</td>
<td>590</td>
</tr>
</tbody>
</table>

In the modified forms illustrated in Figs. 4 and 5, Fig. 4 shows a standard 2' made of steel tubing, which by means of extensions 2a and 2b may be inserted in bushes or straps 22 attached to the base plate 1. The bushes may alternatively be attached to the edge 1a of the base plate. Furthermore they may be formed as extensions or sockets 22' such as shown in Fig. 5, in which case the standard 2' has no feet 2a and 2b such as are shown in Fig. 4.

From the foregoing it will be apparent that in accordance with the invention the head rest or pillow support is suspended by at least two elastic elements, such as helicaloid springs the axes of which intersect or converge towards each other at an acute angle. In some forms rubber strips or strands of adequate size and strength or other like means may be employed as the elastic elements.

Advantageously the length of the standards, and consequently the height of the points of suspension of the springs relatively to the base plate, is adjustable. When the device is in use the springs are more or less elongated, but it will be appreciated that contact of the loaded support with the base plate should be avoided. For this purpose the tension of the springs may also be adjustable. Preferably, moreover, resilient abutments or rims of sponge rubber or the like are provided on the underside of the support. The recess in the base plate may be of such a shape and size as to accommodate the support or other parts for convenience in packing, as well as to avoid contact by the patient's shoulders with the base plate. The devices as illustrated, it will be noted, are collapsible substantially as flat units.

My invention is not limited to the particular embodiments herein illustrated or described by way of example, its scope being pointed out in the following claims.

I claim:

1. A readily manually portable device for use by a person in a prone position to support such person's head only, said device characterized by spaced standards forming a frame, a support for a pillow to receive the person's head, said support being positionable between the standards and being suspended from said standards, and at least two elongated elastic members such as helicaloid springs for suspending the support, the longitudinal axes of said elastic members being disposed to converge upwardly towards each other at an acute angle, so that notwithstanding movements of the frame said support, when loaded with a person's head, always substantially maintains the same plane in space.

2. A readily manually portable device for use by a person in a prone position to support such person's head only, said device characterized by spaced standards forming a frame, a support for a pillow to receive the person's head, said support being positionable between the standards and being suspended from said standards, at least two elongated elastic members such as helicaloid springs for suspending the support, the longitudinal axes of said elastic members being disposed to converge upwardly towards each other at an acute angle, so that notwithstanding movements of the frame said support, when loaded with a person's head, always substantially maintains the same plane in space, and a positioning base comprised in said device, said spaced standards being affixable to said base.

3. Apparatus according to claim 2 wherein the base has a recessed front edge portion to accommodate other parts of the apparatus for convenience in packing, and to avoid contact by the person's shoulders in the use of the device.

4. Apparatus according to claim 2 wherein the base is provided with bushes or sockets for receiving the lower ends of the standards.

5. Apparatus in accordance with claim 2 wherein the standards are constructed and arranged for adjustably positioning their upper portions at different heights relative to the base, the apparatus including means for retaining the standards in their different adjusted positions.

6. Apparatus in accordance with claim 2 including pivoted connections between the lower portions of the standards and the base whereby the standards are foldable substantially into the plane of the latter.

7. Apparatus in accordance with claim 2 including positioning means on the base for detachably receiving the lower ends of the standards and operatively positioning the latter.

GERHARD P. UTERMÖHLEN.
CERTIFICATE OF CORRECTION.


GERHARD P. UTERMÖHLEN.

It is hereby certified that the name of the assignee in the above numbered patent was erroneously written and printed as "NEDERLANDSCHE MAATSCHAPPIJ 'SOGEDIS' N.V." whereas said name should have been written and printed as Nederlandsche Maatschappij "Sogedis" N.V., of The Hague, Netherlands, a Dutch company, as shown by the record of assignments in this office; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 31st day of October, A. D. 1939.

Henry Van Arsdale,
(Seal) Acting Commissioner of Patents.