(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) **EP 2 353 450 A2**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
10.08.2011 Bulletin 2011/32

(51) Int Cl.:
A47C 1/032 *(2006.01)*

(21) Application number: **11075008.0**

(22) Date of filing: **19.01.2011**

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA ME

(30) Priority: **03.02.2010 NL 1037679**

(71) Applicant: **Koninklijke Ahrend N.V.**
1101 EA Amsterdam (NL)

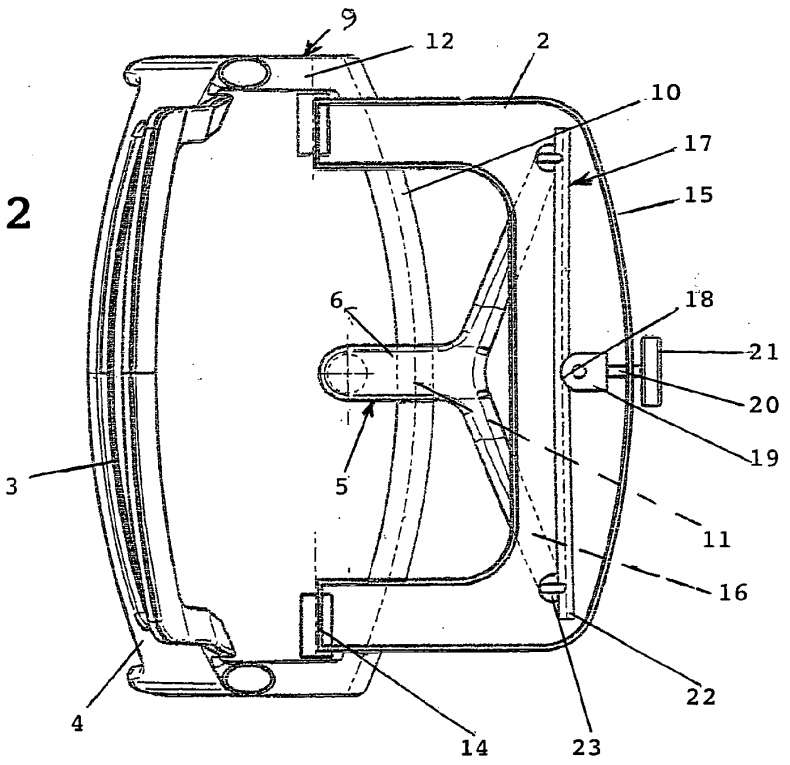
(72) Inventor: **Van Kuik, Adrianus Marinus**
1541 NW Koog a/d Zaan (NL)

(74) Representative: **Lips, Hendrik Jan George**
HAAGSCH OCTROOIBUREAU
Breitnerlaan 146
2596 HG Den Haag (NL)

(54) **Chair, in parlicular an office chair**

(57) Chair, in particular an office chair, with adjustable seat (1) and back unit (3), in which the seat (1) is supported by a seatframe (2) and the back unit (3) by a backframe (4) , which frames (2,4) can be supported onto the ground by means of at least one support post (7). The seatframe (2) and the backframe (4) are coupled with each other such that the seat (1) and the back unit (3) are always making an optimum edge in respect of each other. A spring member, in the shape of at least one resilient bar (17), is present by which the seatframe (2) and the backframe (4) are pressed into a certain preferred position. Further means (19-22; 24-28) are present by which the pre-load can be adjusted which by the resilient bar (17) is exerted on the assembly of the frames (2,4) of the seat (1) and the back unit (3).

FIG. 2



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Description

[0001] The invention relates to a chair, in particular an office chair, with adjustable seat and back unit, in which the seat is supported by a seatframe and the back unit by a backframe, which frames can be supported on the ground by means of at least one support post.

[0002] In case of known chairs of this type in much cases the seat and the back unit are adjustable and possibly fixedly separately from each other via the frames of these.

[0003] Caused by this the most desirable position of the back unit in respect to the position of the seat is not always obtained. When the occupant moves to another position the mutual position between the back unit and the seat, generally speaking, will not suffice the requirements any longer. In many cases the seat is slided over a greater distance than wanted in respect to the lower end of the back unit.

[0004] Now the object of the invention is to remove these objections and to that end the seatframe and the backframe are coupled with each other such that the seat and the back unit are always making an optimum edge in respect to each other, in which a spring member, in the shape of at least one resilient bar, is present by which the seatframe and the backframe are pressed into a certain preferred position.

[0005] In stead of one single bar use can also be made of a set of bars. By this another more preferred range of the spring force can be obtained when the bars are loaded when the chair is used.

[0006] Further in particular means will be present by which the pre-load can be adjusted which by the at least one resilient bar is exerted on the assembly of the frames of the seat and the back unit.

[0007] In this way the chair will automatically adjust it self to the weight of the occupant which usually is positioned on the chair. This person then can take in that position which is most wanted by him at a given moment. When the chair is used by another person with another weight this person can adjust the spring force at his own feeling.

[0008] So a person will load the front side of the seat during working at a writing desk more than when he is leaning backwards. In conformity with this the back unit will move to another position synchronous with the load of the seat. The body of the person will be supported in the most favourable way.

[0009] According to an embodiment of the invention a Y-shaped support beam is supported by the support post, extending mainly in horizontal direction, the free end of the leg of it being connected to the support post, in which leg the middle portion of a substantially U-shaped bow is rotatable, running mainly parallel to the support beam, the legs of said bow being provided with support parts for connecting the back unit to it, said legs, between their ends and the rotation axis of said bow, being provided with horizontal rotation axes running in line with each other for supporting the seatframe extending towards the front side of the seat across the middle portion of said U-shaped bow and there rests on the arms of the Y-shaped support beam, in such a way that the seat frame can execute a sliding movement in respect to said arms.

[0010] In case of this construction the resilient member, in the shape of at least one resilient bar, will extend along the front side of the seat frame, its middle portion lying against the seat frame and its ends lying against support members being connected to the arms of the Y-shaped support beam.

[0011] In this way it is obtained that the positions of the seat and the back unit are always optimate adapted to each other.

[0012] Further a "thin" construction is obtained because the total height of the substantial horizontal extending parts, connecting the seat and the back unit, can be kept low.

[0013] By using a resilient bar, either a set of bars, as resilient member also this part will, relative, occupy less room.

[0014] As aleady said it is desirable that the position of the seat and back unit is optimum for persons having a different weight. To obtain this, according to the invention, means are provided for adjusting the pre-load being exerted by the resilient bar, either the set of bars, at the support members.

[0015] According to a first embodiment of the invention these means can be in the shape of a screw being screwed in the front side of the seatframe and extending mainly in horizontal direction and substantially parallel to the leg of the Y-shaped support beam, said screw being provided with a grip, the inwardly directed end of it engaging the middle of the resilient bar via a pressure member.

[0016] According to a second embodiment the means for adjusting the pre-load of the resilient bar can be in the shape of two support elements engaging the bar and being slidable along a guiding member connected to the seatframe and running mainly parallel to said resilient bar, said support elements being near each other in one end-position and on either side of the middle of the bar, and being movable away from each other and being drawn towards each other by means of a spring.

[0017] The support elements can be moved away from each other by means of a cable, one end of which can be moved by means of a fixable slide member, the other end being divided for simultaneous moving said support elements away from each other along the guiding member.

[0018] The invention is further described on basis of two embodiments, shown in the drawing, in which:

Fig. 1 shows a top view of a chair according to the invention, in which the back unit is tilted backwards, a great part of the seat being omitted for the sake of clarity;

Fig. 2 shows a view corresponding to fig. 1 but with

the back unit in a more vertical tilted position;
Fig. 3 shows a perspective view of a part of the chair according to the figures 1 and 2; and
Fig. 4 and 5 each show a part of a chair according to fig. 2 but in which other means for adjusting the pre-load of the resilient bar are used and the figures show two different positions of these.

[0019] The chair shown in the drawing comprises a seat 1, supported by a seatframe 2 and a back unit 3, supported by a backframe 4.

[0020] For the support of the frames 2 and 4 an Y-shaped support beam 5 is present, the leg 6 of which is connected to a support post 7, which can be positioned onto the ground.

[0021] In the usual way the support post 7 is provided with five sidewards extending side legs 8, such that the chair will be stable supported onto the ground. Further a not shown gas pressure cylinder can be provided in said support post for adjusting the height of the support beam 5 and by this of the other parts connected to it, such as the seat and such-like.

[0022] As in particular appears from figure 1 the backframe is formed by an U-shaped bow 9, the middle portion 10 of which is rotatable mounted at point 11 in the leg 6 of the support beam 5 and extends substantially parallel to the support beam 5.

[0023] The extending legs 12 of the bow 9 are provided with support parts 13, extending substantially vertical upwards and serving for connecting the back unit 3 to them.

[0024] Between the ends of the extending legs 12 and the rotational axis 11 of the bow 9 horizontal rotational points 14 are present running in line with each other for supporting the seatframe 2 extending across the middle portion 10 of the U-shaped bow 9 towards the front side 15 of the seatframe 2 and there resting on the arms 16 of the Y-shaped support beam 5, in such a way that the seatframe 2 can execute a sliding movement in respect of the arms 16.

[0025] Near the front side 15 of the seatframe 2 a resilient bar 17 is present, the central part 18 of which engages a pressure element 19, mounted on a screw 20, rotatable in the seatframe 2. The outwardly extending end of the screw 20 is provided with a grip 21 for moving the pressure element 19.

[0026] The ends 22 of the resilient bar 17 are received in, not further indicated, recesses in parts 23, extending upwardly from the arms 16 of the Y-shaped support beam 5. The parts 23 extend through openings in the seatframe 2.

[0027] In figure 2 the resilient bar 17 is in its nearly right shape and so only small forces will be exerted on the resilient bar 17 and the parts 23. When the screw 20 is rotated the pressure element 19 will be moved inwardly as shown in figure 1, such that forces will be exerted on the seatframe 2 and on the parts 23 of the support beam.

[0028] In figure 2 the backframe 4 and by this the back unit 3 is substantially in its vertical position. When now the occupant of the chair is leaning backward the position of figure 1 can be obtained, in which a new balance of the assembly is obtained in view of the fact that the back unit 3 now is in an oblique position.

[0029] In case of the embodiment according to the figures 4 and 5 corresponding parts are indicated by the same reference numbers as in the figures 1 up to 3.

[0030] Now use is made of two support elements 24, being slidable mounted on a guiding member 25, which, in a not indicated way, is connected to the seatframe 2.

[0031] The support elements 24 are positioned on either side of the middle of the resilient bar 17, and can be moved away from each other from the position shown in figure 5, by means of the cable 27, one end of which is connected to a slide member 28.

[0032] The slide member 28 is executed such that it can be fixed in various positions, either that the friction force is sufficient for fixing the slide member in each desired position. Obviously this will make the operation of the slide member less easier.

[0033] The other end 29 of the cable 27 is divided so that it can be connected to both support members 24 in such a way that when moving the cable the support memberw 24 will be drawn away from each other such that e.g. the position of figure 4 is obtained.

[0034] The cable 27 and, obviously, the part 29 of it, will be guided over suitable guiding members, such as rolls either the plate 30, shown in figure 4.

[0035] As shown in figure 4 and 5 the slide member 28 can be positioned near the side edge of the chair, by this it can be easely reached by the occupant of the chair.

[0036] In case of the embodiment according to the figures 1 - 3 the grip of the screw 20 will be less good within reach because it might be positioned below the seat 1.

[0037] Obviously onlly two embodiments of the chair according to the invention are shown in the drawing and are described above and that many modifications can be applied without leaving the inventive concept, as this is indicated in the claims.

Claims

1. Chair, in particular an office chair, with adjustable seat (1) and back unit (3), in which the seat (1) is supported by a seatframe (2) and the back unit (3) by a backframe (4), which frames (2,4) can be supported onto the ground by means of at least one support post (7),**characterized in that** the seatframe (2) and the backframe (4) are coupled with each other such that the seat (1) and the back unit (3) are always making an optimum edge in respect to each other, in which a spring member, in the shape of at least one resilient bar (17), is present by which the seatframe (2) and the backframe (4) are pressed into a certain preferred position.

2. Chair according to claim 1, **characterized in that**

means (19-21;24-29) are present by which the pre-load can be adjusted which by the at least one resilient bar (17) is exerted on the assembly of the frames (2,4) of the seat (1) and the back unit (3).

3. Chair according to claim 1 or 2, **characterized in that** an Y-shaped support beam (5) is supported by the support post (7), extending mainly in horizontal direction, the free end of the leg (6) of it being connected to the support post (7), in which leg (6) the middle portion (10) of a substantially U-shaped bow (9) is rotatable, running mainly parallel to the support beam (5), the legs (12) of said bow being provided with support parts (13) for connecting the back unit (3) to it, said legs (12), between their ends and the rotation axis (11) of said bow, being provided with horizontal rotation axes (14) running in line with each other for supporting the seatframe (2) extending towards the front side (15) of the seat across the middle portion (10) of said U-shaped bow (9) and there rests on the arms (16) of the Y-shaped support beam (5), in such a way that the seat frame (2) can execute a sliding movement in respect to said arms (16).

4. Chair according to claim 3, **characterized in that** the resilient member, in the shape of at least one resilient bar (17), extend itself along the front side (15) of the seatframe (2), its middle portion lying against the seatframe (2) and its ends lying against support members (23) being connected to the arms (16) of the Y-shaped support beam (5).

5. Chair according to claim 4, **characterized in that** means (19-21;24-29) are provided for adjusting the pre-load exerted by the resilient bar onto the support members (19,23,24).

6. Chair according to claim 5, **characterized in that** the means are in the shape of a screw (20) being screwed in the front side (15) of the seatframe (2) and extending mainly in horizontal direction and substantially parallel to the leg (6) of the Y-shaped support beam (5), said screw being provided with a grip (21) and the inwardly directed end of it engaging the middle (18) of the resilient bar (17) via a pressure member (19).

7. Chair according to claim 5, **characterized in that** the means for adjusting the pre-load of the resilient bar (17) are in the shape of two support elements (24) engaging the bar (17) and being slidable along a guiding member (25) connected to the seatframe (2) and running mainly parallel to said resilient bar (17), said support elements (24) being near each other in one end-position and on either side of the middle of the bar (17), and being movable away from each other and being drawn towards each other by means of a spring (26).

8. Chair according to claim 7, **characterized in that** the support elements (24) can be movable from each other by means of a cable (27), one end of which can be moved by means of a fixable slide member (28), the other end (29) being divided for simultaneous moving said support elements (24) away from each other along the guiding member (25).

FIG. 1

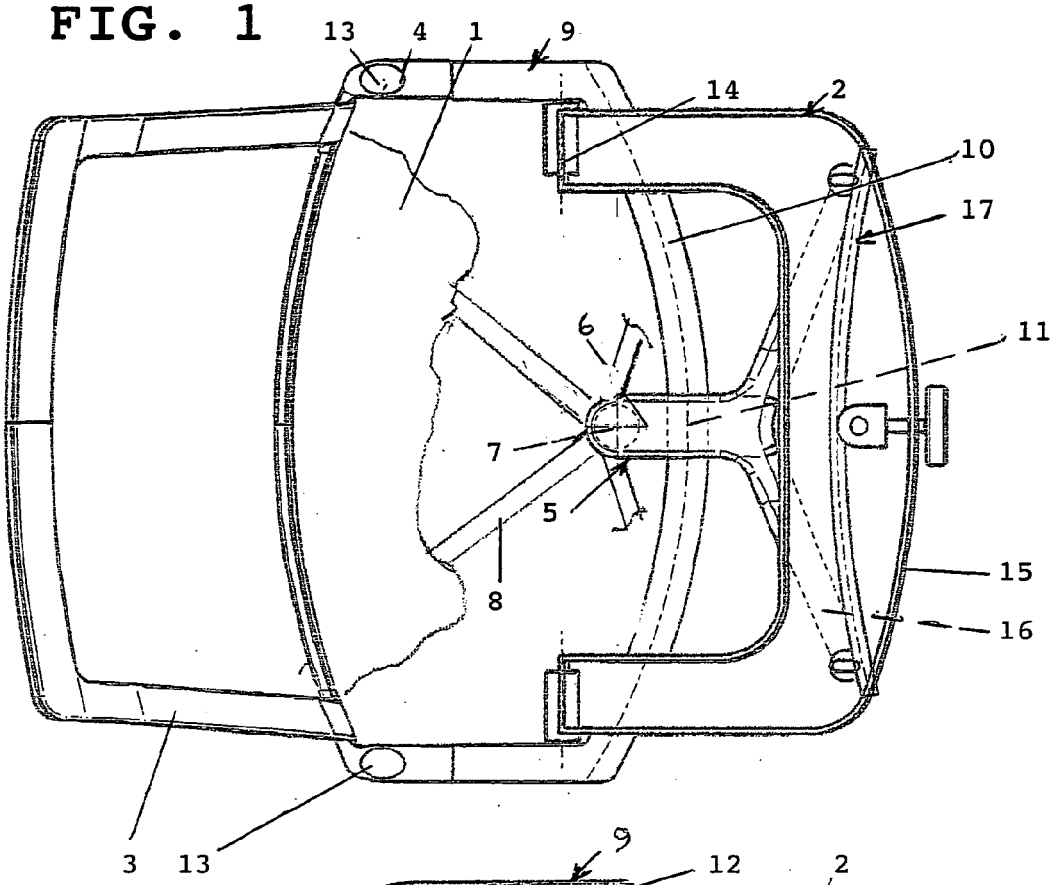
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FIG. 2

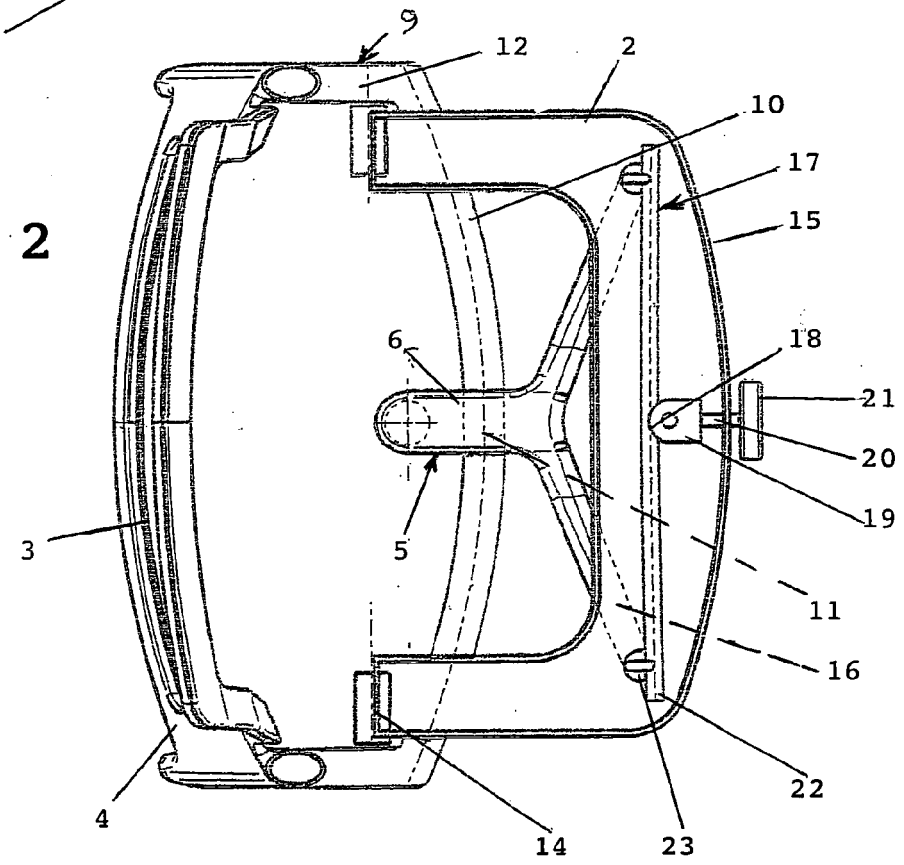
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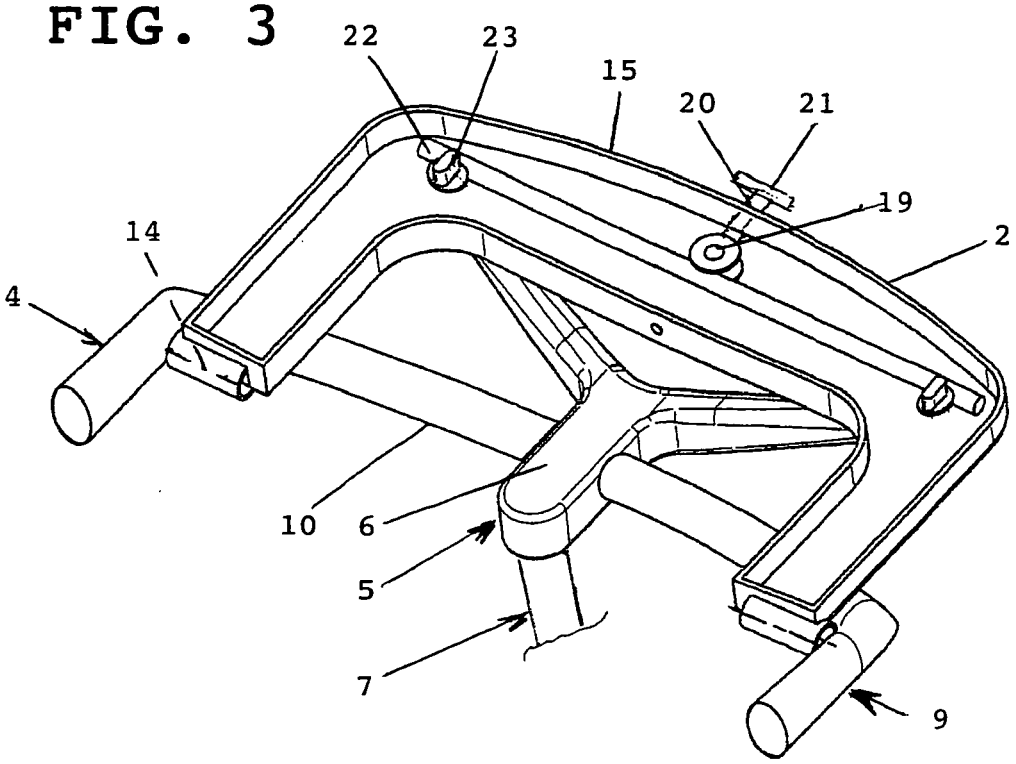
FIG. 3



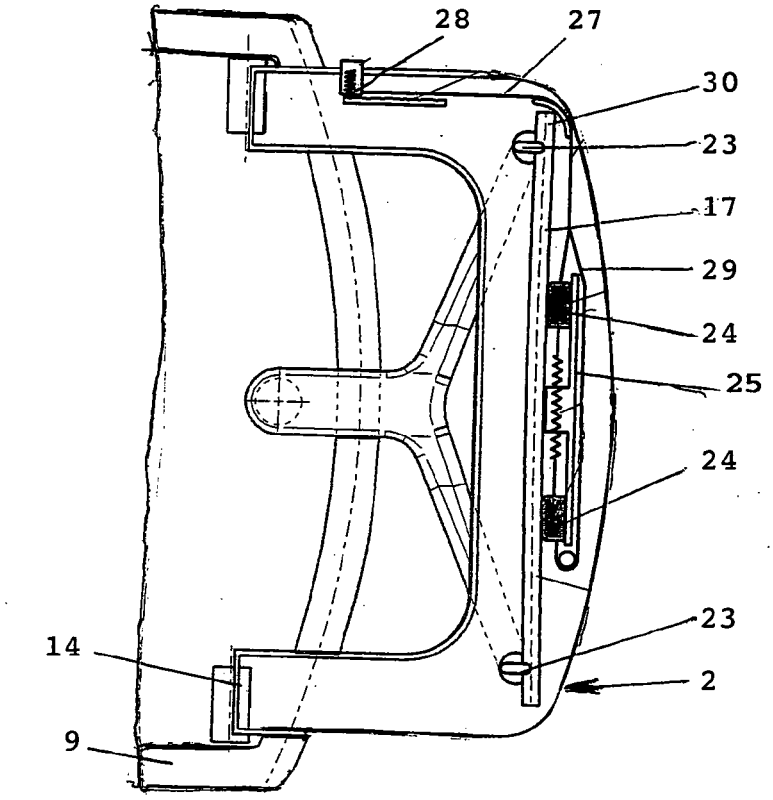


FIG. 4

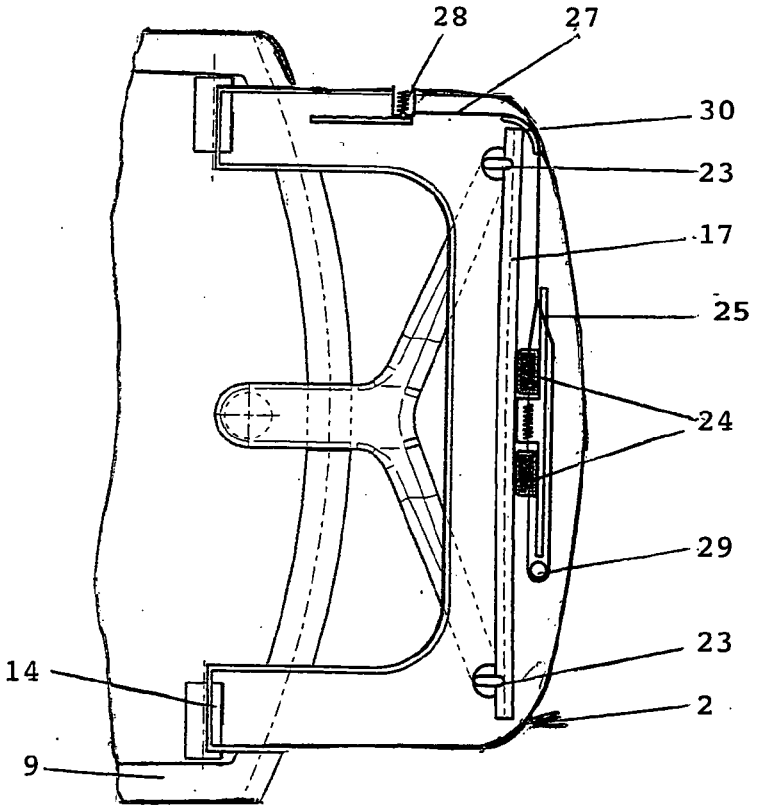


FIG. 5