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(54) **Chair with reclinable back-rest provided with shampoo unit**

(57) A chair with reclinable back-rest provided with shampoo unit, comprising:

- a sitting portion (4) connected to a base (8) for its support on the floor,
- a back-rest (10) hinged to the sitting portion (4),
- a shampoo unit with a basin (60) applied to a support (58) connected to the back-rest (10),

characterised by comprising:

- a structure (44) hinged to said support base (8) and to said support (58),
- a complex of connection members, partly rigid and partly of hinge type, interposed between said sitting portion (4), said back-rest (10) and said hinged structure (44), and acting in the sense of coordinating the rearward inclination of the back-rest (10) with the inclination in the opposite direction of said support (58) relative to the back-rest (10), such as to ensure that for each value of rearward inclination of said back-rest (10), said basin (60) is substantially horizontal,
- elastic means interposed between said sitting portion (4), said back-rest (10), and said hinged structure (44) and acting such as to maintain said back-rest (10) in a substantially erect condition and said basin (60) in a substantially horizontal condition, in the substantial absence of external stresses on the back-rest, and to then return said back-rest (10) to said condition on cessation of the external stress which had caused its rearward inclination.

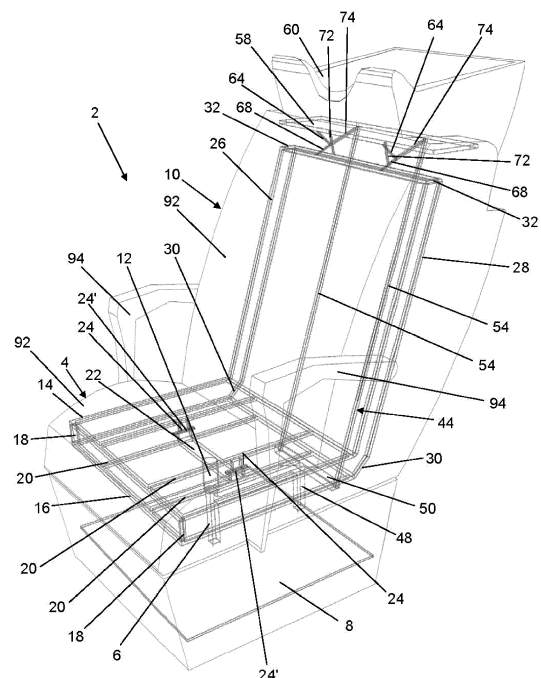


FIG. 1

Description

[0001] The present invention relates to a chair with reclinable back-rest provided with shampoo unit.

[0002] Chairs are known used by hairdressers for cutting or styling hair, and having their back-rest provided with a shampoo unit, consisting substantially of an extendable sprinkler and a basin, on the suitably shaped front edge of which the person seated on the chair rests the neck during hair washing.

[0003] As the height of the shampoo unit from the floor must remain essentially constant to enable the hairdresser to work comfortably always at the same optimum height for him, the chair must be able to be adapted to persons of different height or physique, i.e. the height of the person's head must be able to be suitably adjusted. This is generally done by varying the rearward inclination of the chair back-rest.

[0004] For this purpose, chairs are known having their back-rest rearwardly reclinable under the manual control of the hairdresser; however these are not always satisfactory in that the adjustment operation is rather complicated and laborious.

[0005] Chairs are also known in which the back-rest adjustment is achieved electrically; however these have also not proved satisfactory both because of their installation complexity, necessarily requiring an electricity supply, and because of their production complexity and their consequently high cost.

[0006] In neither case is it ensured that the head-rest basin remains substantially horizontal and which, being rigid with the chair back-rest, inclines with this and cause escape of liquid therefrom; moreover, the presence of the shampoo unit is rather uncomfortable for tall clients for whom the shampoo unit instead of adhering to the neck is forced to rest on the client's shoulders.

[0007] Solutions are also known in which the support structure fixture of the shampoo unit is not connected to the chair; in this manner the shampoo unit can be maintained horizontal independently of the characteristics of the person seated on the chair and independently of the inclination of its back-rest, hence making it possible to eliminate virtual all the drawbacks of the aforesaid known solutions. At the same time, this latter solution has not proved satisfactory, in that the adjustment of the shampoo unit and its positioning relative to the person seated on the chair represent operations additional to the chair back-rest inclination adjustment, and require particular effort, attention and precision by the hairdresser.

[0008] An object of the invention is to present a chair with a reclinable back-rest provided with a shampoo unit, in which the back-rest and the shampoo unit can be inclined automatically, without any intervention either by the hairdresser or by the person seated on the chair.

[0009] Another object of the invention is to provide a chair in which, independently of the back-rest inclination, the shampoo unit always remains substantially horizon-

tal, i.e. at an inclination such as to prevent spillage of water which may be contained therein.

[0010] Another object of the invention is to provide a chair which automatically adapts satisfactorily to the height and physique of the person seated thereon.

[0011] Another object of the invention is to provide a chair which does not require electrical energy for its adjustments.

[0012] Another object of the invention is to provide a chair which can be produced easily, quickly and at low cost, while also ensuring high operational reliability.

[0013] These and further objects which will be apparent from the ensuing description are attained, according to the invention, by a chair with reclinable back-rest provided with a shampoo unit in accordance with claim 1.

[0014] A preferred embodiment of the present invention is further clarified hereinafter with reference to the accompanying drawings, in which:

Figure 1 is a schematic perspective view of the structure of a chair according to the invention with reclinable back-rest provided with a shampoo unit,
 Figure 2 is a lateral view thereof in the non-stressed configuration,
 Figure 3 is a front view thereof,
 Figure 4 shows it in the same view as Figure 2, but in the stressed configuration,
 Figure 5 shows it in lateral view, carrying a person seated,
 Figure 6 shows it in the same view as Figure 5, carrying a taller person seated,
 Figures 7a-10a are lateral views showing a series of enlarged details of the chair of Figure 2,
 Figures 7b-10b are lateral views showing a series of enlarged details of the chair of Figure 4.

[0015] As can be seen from the figures, the chair 2 according to the invention comprises a sitting portion 4, supported by a column 6 lowerly rigid with a base 8 for resting on the floor, and a back-rest 10 hinged to the rear of the sitting portion.

[0016] Preferably, the column 6 houses internally a gas spring 12, which enables the sitting portion 4 to be adjusted in height relative to the base 8 by traditional systems.

[0017] The sitting portion 4 comprises an upper frame 14 and a lower frame 16, substantially identical and connected together at their front crossmembers by bars 18.

[0018] In greater detail, each of the two frames 14, 16 comprises a rectangular frame-piece and two further bars 20 parallel to the lateral edges of the frame-piece itself and equally spaced therefrom. Moreover, the bars 20 of the lower frame 16 are connected together by a cross-member 22, to the centre of which the upper end of the column 6 is fixed.

[0019] Moreover, plates 24, 24' are associated, facing each other, with the bars 20 of the upper frame 14 and of the lower frame 16, and are disposed such as to be parallel to the respective frames 14, 16, which support them.

[0020] The back-rest 10 also comprises two substantially identical rectangular frames 26, 28, each comprising two longitudinal sides connected together upperly by a cross-member.

[0021] The front frame 26 has the lower end of its two longitudinal sides connected directly to the upper frame 14 of the sitting portion 4, while the rear frame 28 has the lower end of its two longitudinal sides connected to the lower frame 16 of the sitting portion by two bars 30. Moreover, the two frames 26, 28 are connected together at the upper end of their longitudinal sides by other bars 32.

[0022] A plurality of hinges are also provided which, by connecting together the ends of the components of the sitting portion 4 and of the back-rest 10, enable these to be rotated about the rotation pin of the hinges.

[0023] In particular, the following are provided:

- first hinges 34, which connect each bar 18 to the lower frame 16 of the sitting portion 4,
- second hinges 36, which connect the upper frame 14 of the sitting portion 4 to the front frame 26 of the back-rest 10,
- third hinges 38, which connect each bar 30 to the rear frame 28 of the back-rest 10,
- fourth hinges 40, which connect each bar 32 to the front frame 26 of the back-rest 10.

[0024] First springs 42 are also provided interposed between the second hinges 36 and the corresponding central zone of each bar 30.

[0025] The chair 2 also comprises a structure 44 for supporting the shampoo unit and for adjusting its inclination to the back-rest 10.

[0026] In greater detail, the column 6 is rigidly connected, by a longitudinal member 46 supported by an upright 48, to a cross-member 50, to the ends of which, by means of fifth hinges 52, two parallel rods 54 are hinged pertaining to the structure 44 and having a length greater than the length of the longitudinal sides of the rear frame 28 of the back-rest 10.

[0027] The upper end of these rods 54 is hinged, by sixth hinges 56, to the rear edge of a support frame 58 of the basin of a shampoo unit. The basin 60 is connected to and is rigid with the support 58, which is preferably formed by a rectangular aluminium plate.

[0028] In addition, two first rods 62 are hinged to the ends of the front side of the support 58 by seventh hinges 62, and are hinged in their turn via eighth hinges 66 to second rods 68, themselves hinged via ninth hinges 70, in proximity to the front end of the bars 32.

[0029] Second springs 72 are also provided, interposed between the support 58 of the shampoo unit basin

60 and the rear end of the bars 32 and preloaded by extension, and third springs 74, interposed between each of the two eighth hinges 66 which hinge the rods 64, 68 and the sixth hinges 56 which hinge the support 58 of the basin 60 to the two rods 54 of the rear structure 44. In particular, the two pairs of rods 64, 68, the corresponding rods 54 and the corresponding third springs 74 lie in two parallel vertical planes.

[0030] Advantageously, all the hinges are provided with sheaths which prevent any rubbing between the parts in mutual contact.

[0031] All the remaining connections between the ends of the chair structural components, i.e. of the sitting portion 4, of the back-rest 10, and of the rear structure 44, are formed by rigid joints. In particular, the following are provided:

- first rigid joints 76, which connect the upper end of each bar 18 to the upper frame 14 of the sitting portion 4,
- second rigid joints 78, which connect the lower end of each bar 30 to the lower frame 16 of the sitting portion 4,
- third rigid joints 80, which connect the rear end of each bar 32 to the rear frame 28 of the back-rest 10.

[0032] The upper frame 14 of the sitting portion 4 and the front frame 26 of the back-rest 10 are suitably provided with padding 92 making the support for the pelvis and respectively for the back of the person 82 seated on the chair particularly comfortable. Moreover, to render the chair more attractive, the covering padding can also involve the front portion and the side portions defined between the frames 14 and 16 of the sitting portion 4, and the upper portion and the side portions defined between the frames 26 and 28 of the back-rest 10.

[0033] Advantageously, a further portion can be associated with the front of the sitting portion 4 to provide a support for the legs or feet of the person seated on the chair. Advantageously, the chair can also comprise armrests 94 interposed between the sitting portion 4 and the back-rest 10.

[0034] The chair 2 according to the invention operates in the following manner.

[0035] When in the substantially unstressed condition, the back-rest 10 is in the substantially erect position, i.e. is slightly inclined rearwards (see Figures 2, 5 and 8a), while the basin 60 is disposed substantially horizontal, i.e. at an inclination such as to prevent spillage of any water contained in the basin. This substantially unstressed condition occurs when either no person is seated on the chair 2, or when the person seated has a physique such as not to cause any substantial rearward inclination of the back-rest 10 relative to its substantially erect position.

[0036] In particular, the springs 36, 72 and 74 are in the unstressed condition or in any event their stressing is such as to maintain the various components of the

chair structure in the configuration shown in Figure 2 and/or Figure 5. The stability of this configuration is ensured by the counteraction offered by the rigid support between the suitably shaped ends of the various components connected together by the different hinges, as is clear by observing Figures 7a-10a.

[0037] More particularly, in said substantially unstressed configuration:

- the bars 18 define a substantially right angle with the lower frame 16 of the sitting portion 4 (see Figure 7a),
- the upper frame 14 and the lower frame 16 of the sitting portion 4 are substantially mutually parallel and the plates 24, 24' are in mutual contact,
- the front frame 26 and rear frame 28 of the back-rest 10 are substantially parallel to each other,
- the bars 30 form a certain obtuse angle with the rear frame 28 of the back-rest 10, while the upper frame 14 of the sitting portion 4 forms an angle equal to, or slightly greater than, 90° with the front frame 26 of the back-rest 10 (see Figure 8a),
- the rods 64 and 68 form between them an acute angle such that the support 58 of the shampoo unit basin 60 is spaced from the bars 32 of the back-rest 10 (see Figure 9a) to an extent sufficient to maintain said basin substantially horizontal, and in any event in a state of inclination such as to prevent spillage of any liquid contained therein,
- the lower end of the rods 54 of the shampoo unit structure 44 rests on the cross-member 50 (see Figure 10a).

[0038] When the person 82 sitting on the chair 2 has a physique such as to require adjustment of the back-rest 10, the force impressed thereby on the back-rest causes the front frame 26 to incline rearwards causing, by virtue of the lateral bars 32, a corresponding rearward inclination of the rear frame 28 of the back-rest 10 (see Figure 6). Essentially, when in the stressed condition (see Figure 6), the back-rest 10 is more inclined rearwards than when in the substantially unstressed state (see Figure 5).

[0039] Hence, the greater rearward inclination of the back-rest 10 causes stressing of the springs 72, which are pre-loaded by extension and, as a result of the traction exerted by the springs 74 on the eighth hinges 66 which hinge the pairs of rods 64, 70, they act on the support 58, causing it to approach the bars 32. In particular, the traction exerted by the springs 74 on the hinges 66 causes a reduction in the acute angle formed by the rods 64, 68 of the two pairs, to an extent such as to cause them to lie substantially parallel to each other (see Figure 9b), this causing the elastic reaction of the springs 72 to cause the support 58 of the basin 60 to approach the bars 32.

[0040] Hence, in this manner, the support 58 of the basin 60 rotates relative to the structure 44 about the sixth hinges 56 to an extent such as to adequately com-

pensate for the rearward inclination that the basin 60 of the shampoo unit would otherwise undergo due to the rearward inclination of the back-rest 10, to which it is connected. In this manner, even in the stressed state, the basin 60 is maintained in a substantially horizontal condition (see Figures 4, 6, 9b), and in any event in a condition of inclination such as to prevent spillage of water which may be contained in the basin.

[0041] Indeed, this compensation is slightly greater than that required to maintain the basin 60 substantially horizontal and is linked to the need to ensure that the front edge of the basin 60 rests on the neck of the person seated on the chair, even in the case of considerable physique thereof, and hence of high rearward inclination of the chair back-rest.

[0042] During this stage the rods 54 of the rear structure 44 incline rearward by rotating clockwise about the fifth hinges 52, with their lower end separating from the cross-member 50 (see Figure 10b). The combination of rigid and hinged connections between the various chair components, and the greater rearward inclination of the back-rest 10 and of the rear structure 44 result in:

- forward inclination of the upper frame 14 of the sitting portion 4, which rotates with the bars 18 about the hinges 34 (see Figure 7a), and the consequent separation of the plates 24 from the plates 24', and
- substantial alignment of the longitudinal arms of the rear frame of the back-rest 10 with the bars 30 and consequent lengthening of the springs 42 (see Figure 8a).

[0043] Essentially, the greater rearward inclination of the back-rest 10 caused by the person 80 seated on the chair, in addition to causing the basin 60 to undergo inclination in the opposite direction to a slightly more accentuated extend relative to the back-rest itself, also loads the springs 42, 72 and 74 to an extent which is greater the greater the rearward inclination of the back-rest and hence greater the weight and physique of the actual person, this resulting on the one hand in maintaining the position of the person's head substantially at a constant height, comfortable for the hairdresser, and on the other hand of adjusting the front edge of the basin 60 on the basis of the height of the person, such that this edge is always substantially in contact with the neck thereof, and moreover of elastically returning the chair to the rest configuration when the person rises from the chair and hence ceases to stress it.

[0044] The stability of the unstressed configuration of the chair is maintained by the resting of the plates 24, 24' against each other and by the particular shape of the ends of those components of the structure which are hinged together.

[0045] From the foregoing it is apparent that the improved chair according to the invention is much more advantageous than traditional chairs in that:

- the sitting portion and shampoo unit are automatically adjusted relative to the back-rest by the actual seated person,
- it is of particularly simple and inexpensive construction in that it requires no motorization or external energy feed,
- its use is safe and reliable and requires no adjustment by the hairdresser,
- moreover it is very comfortable to use by persons of different physique, with the basin of the shampoo unit being automatically adjusted to their morphological characteristics.

Claims

1. A chair with reclinable back-rest provided with shampoo unit, comprising:

- a sitting portion (4) connected to a base (8) for its support on the floor,
- a back-rest (10) hinged to the sitting portion (4),
- a shampoo unit with a basin (60) applied to a support (58) connected to the back-rest (10),

characterised by comprising:

- a structure (44) hinged to said support base (8) and to said support (58),
- a complex of connection members, partly rigid and partly of hinge type, interposed between said sitting portion (4), said back-rest (10) and said hinged structure (44), and acting in the sense of coordinating the rearward inclination of the back-rest (10) with the inclination in the opposite direction of said support (58) relative to the back-rest (10), such as to ensure that for each value of rearward inclination of said back-rest (10), said basin (60) is substantially horizontal,
- elastic means interposed between said sitting portion (4), said back-rest (10), and said hinged structure (44) and acting such as to maintain said back-rest (10) in a substantially erect condition and said basin (60) in a substantially horizontal condition, in the substantial absence of external stresses on the back-rest, and to then return said back-rest (10) to said condition on cessation of the external stress which had caused its rearward inclination.

2. A chair as claimed in claim 1, **characterised in that** said complex of connection members is configured such that the angle of inclination of the support (58) of the basin (60) to the back-rest (10), when this is displaced from the erect condition, is greater than the angle of inclination of the back-rest (10) to the sitting portion (4), while still preventing liquid spillage

from the basin.

3. A chair as claimed in one or more of the preceding claims, **characterised in that** those components hinged together by said complex of connection members are configured such that, in the substantial absence of external stresses, they provide a rigid counteraction to their mutual movements.
4. A chair as claimed in one or more of the preceding claims, **characterised in that** the sitting portion (4) comprises two substantially rectangular superposed frames (14, 16) hinged together at their front cross-member and associated with means (24, 24') which counteract the mutual approach of said frames beyond a predetermined limit corresponding to the condition of substantial absence of external stresses.
5. A chair as claimed in claim 4, **characterised in that** the hinged connection between the two frames (14, 16) of the sitting portion (4) consists of bars (18) rigid with the upper frame (14) and hinged to the lower frame (16).
6. A chair as claimed in claim 4, **characterised in that** elastic means (42) are interposed between said frames (14, 16) acting in the sense of maintaining said frames in their condition of greatest mutual approach.
7. A chair as claimed in one or more of the preceding claims, **characterised in that** the back-rest (10) comprises two substantially rectangular facing frames (26, 28), hinged together in proximity to their upper cross-member and associated with elastic means (42, 74), acting in the sense of maintaining said chair in the unstressed condition.
8. A chair as claimed in claim 7, **characterised in that** the hinged connection between the front frame (26) and the rear frame (28) of the back-rest (10) comprises bars (32) rigid with the rear frame (28) and hinged to the front frame (26).
9. A chair as claimed in one or more of the preceding claims, **characterised by** comprising elastic means (42) acting both in the sense of maintaining the two frames (14, 16) of the sitting portion (4) in their position of greatest mutual approach, and in the sense of maintaining the back-rest (10) substantially erect.
10. A chair as claimed in one or more of the preceding claims, **characterised in that** the support (50) of the basin (60) is hinged at its rear to rearwardly inclinable longitudinal rods (54) of the structure (44) and at its front to a pair of rods (64, 68) for connection to the upper cross-member of the back-rest 10.

11. A chair as claimed in one or more of the preceding claims, **characterised by** comprising first rods (64) hinged to the front edge of the support (58) and second rods (68) hinged to the front end of the bars (32), each first rod (64) being also hinged to a second rod (68) at a hinge (66), which is connected via a spring (74) to the hinge (56) by which the support (58) of the basin (60) is hinged to the structure (44). 5
12. A chair as claimed in one or more of the preceding claims, **characterised by** comprising springs (72) pre-loaded by extension and connecting the support (58) of the basin (60) to the rear frame (28) of the back-rest (10). 10

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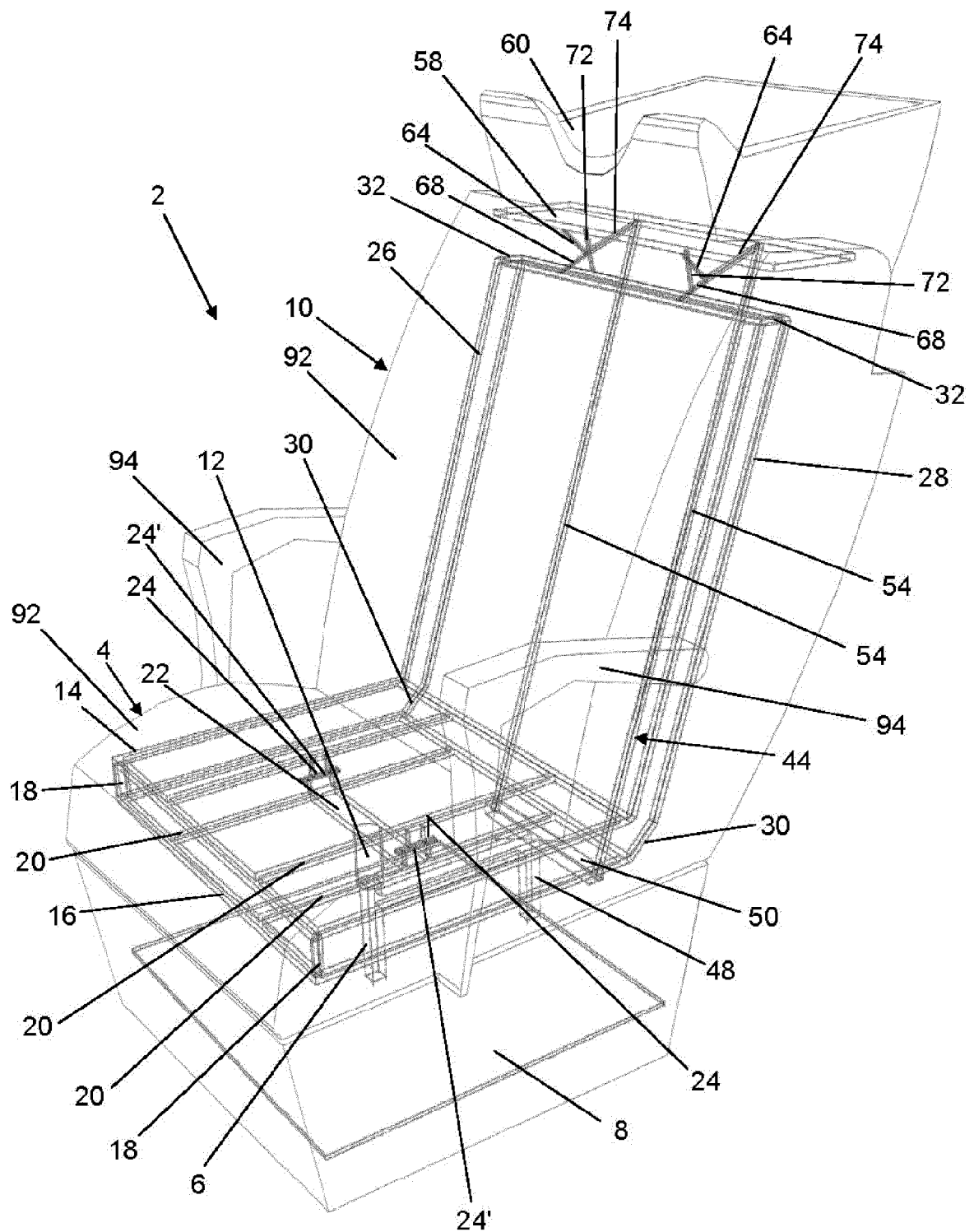


FIG. 1

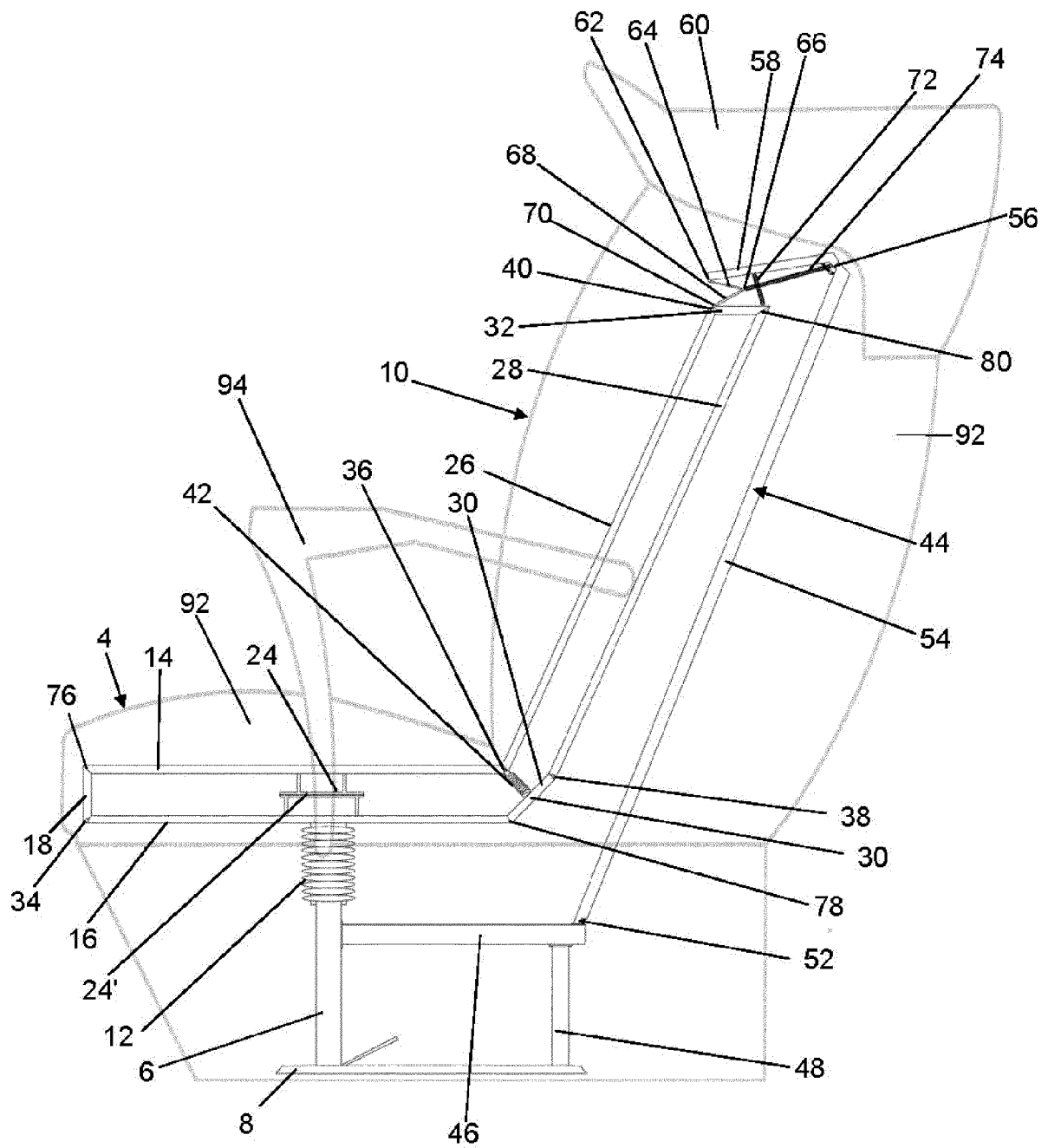


FIG. 2

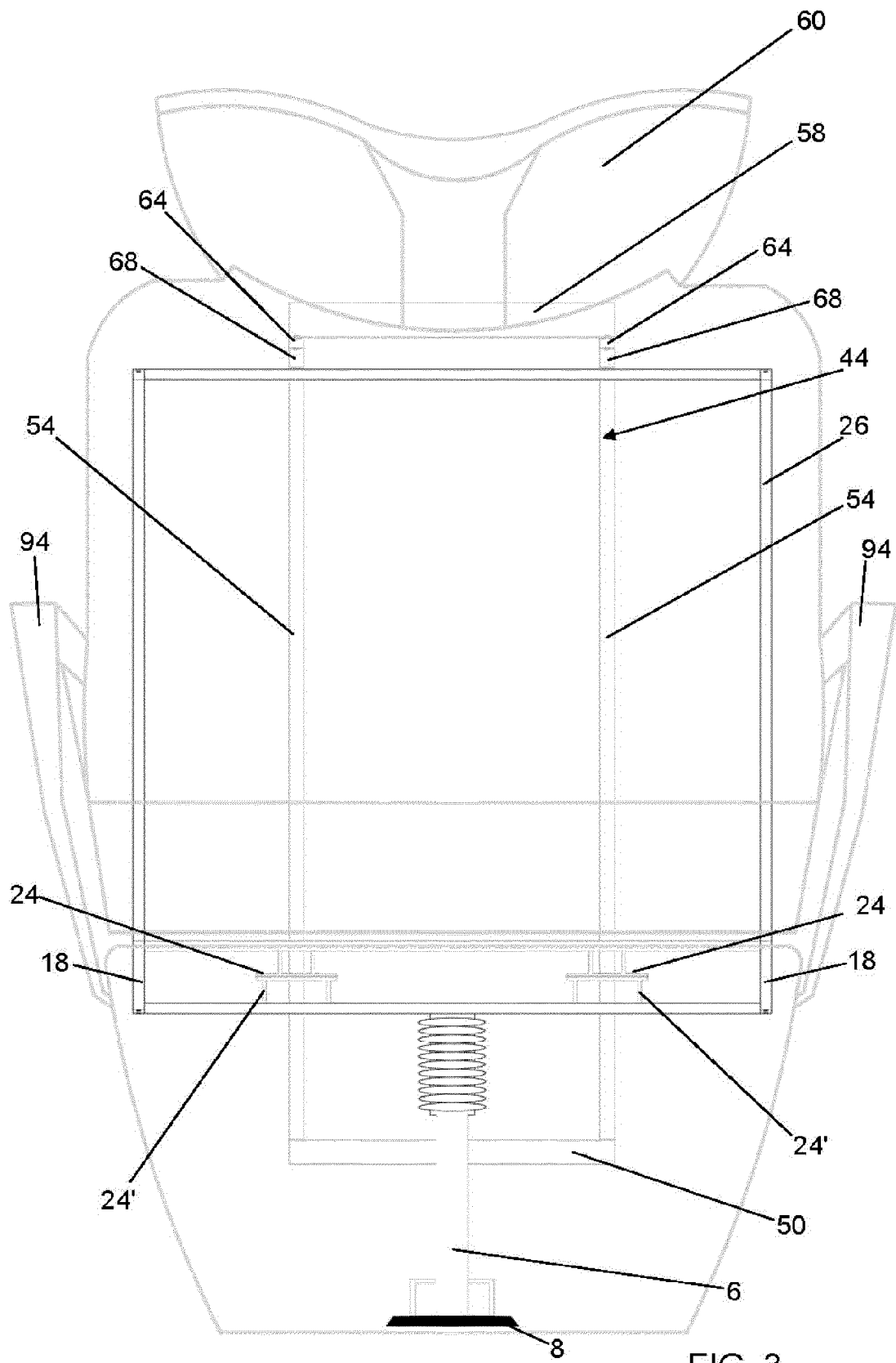


FIG. 3

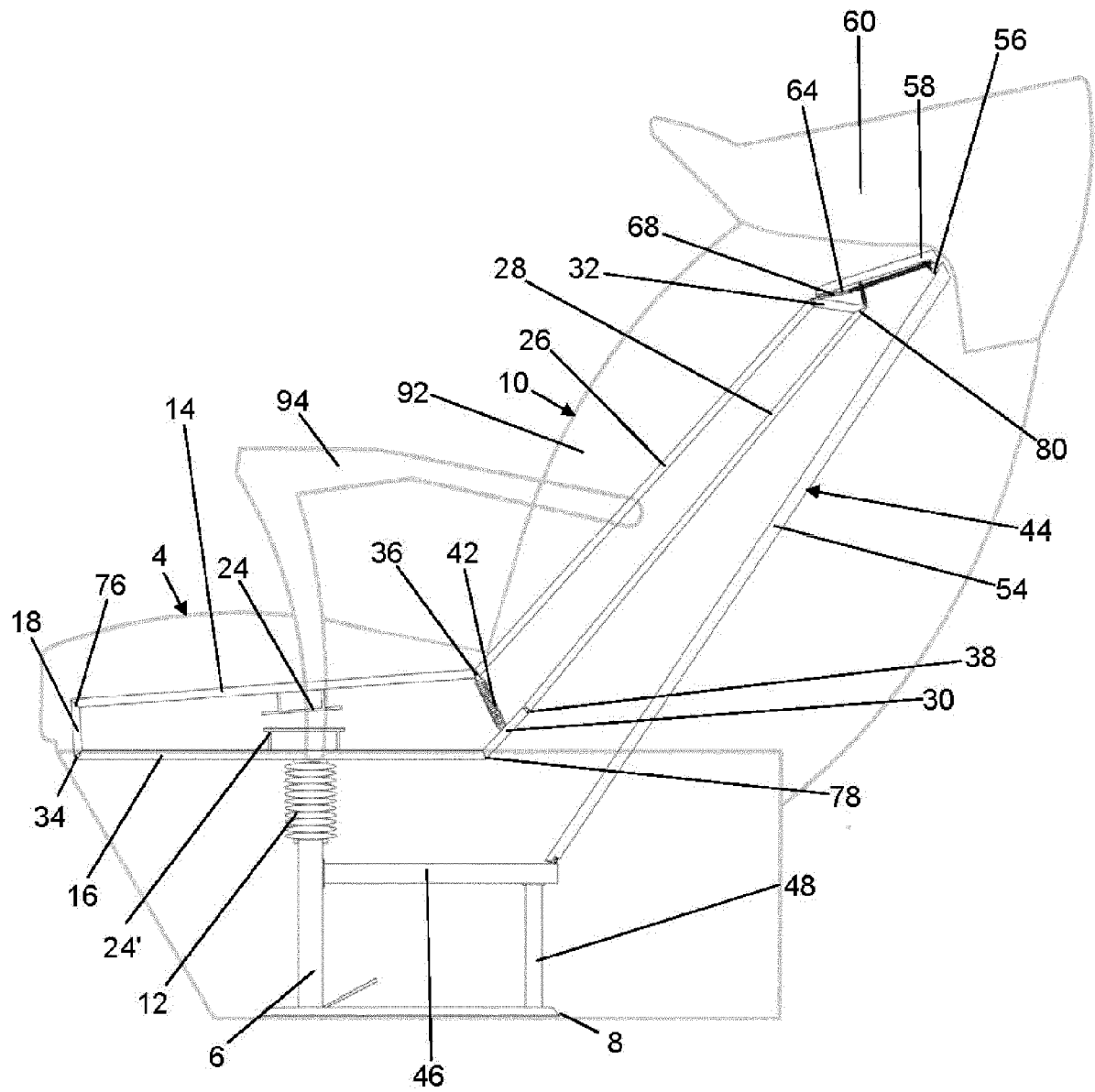
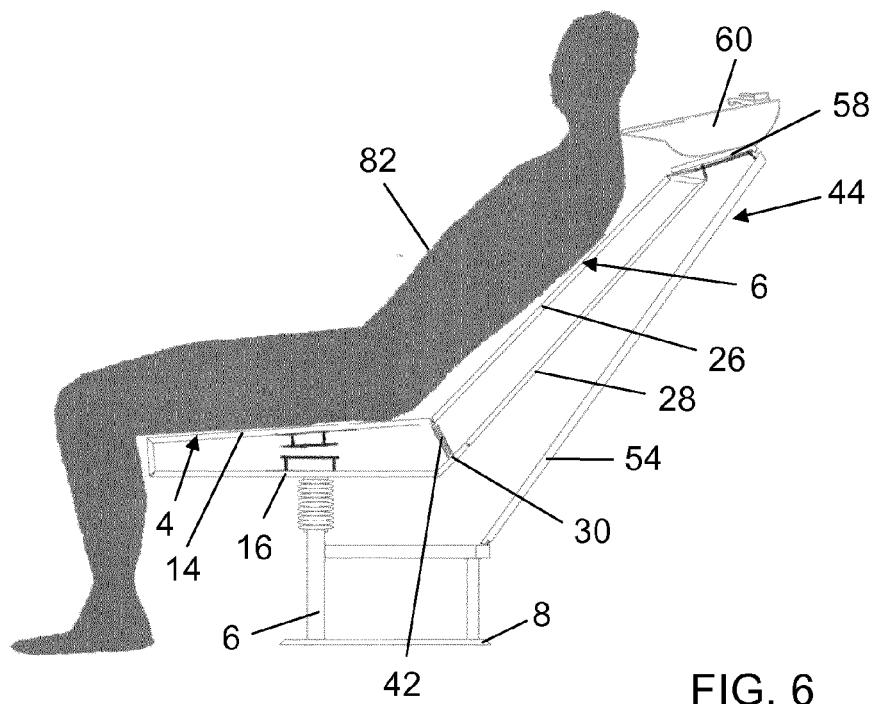
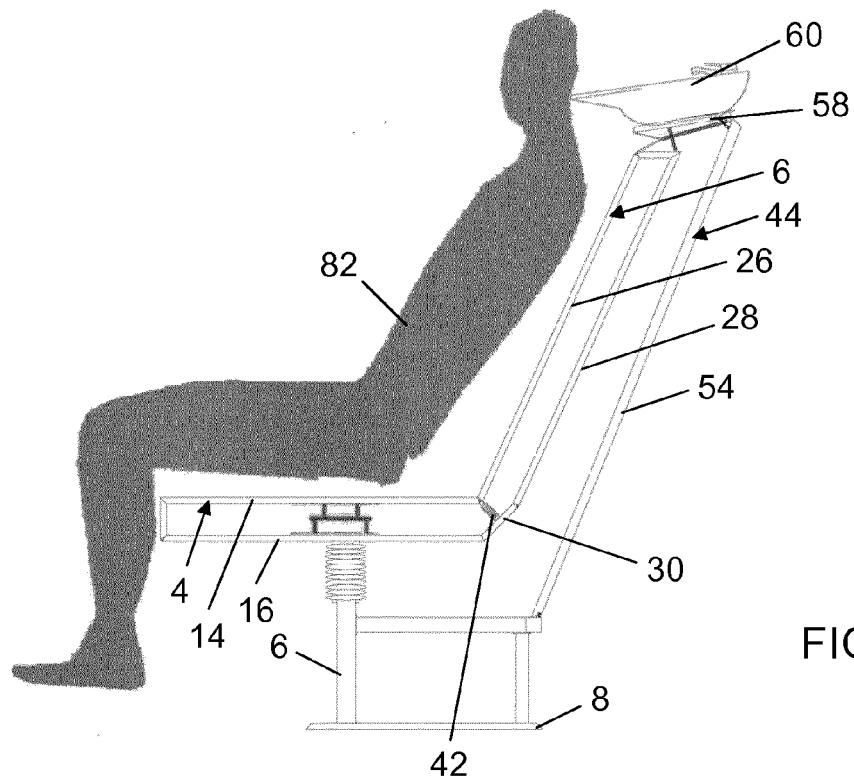


FIG. 4



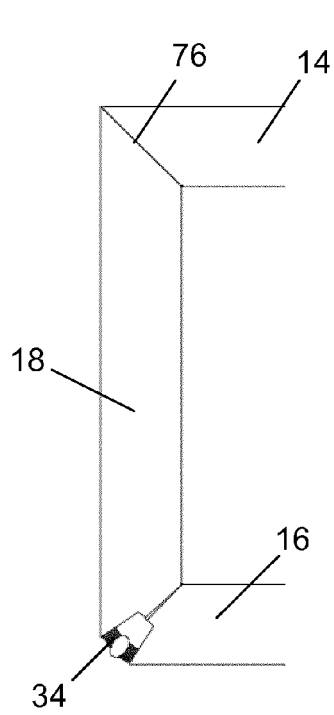


FIG. 7a

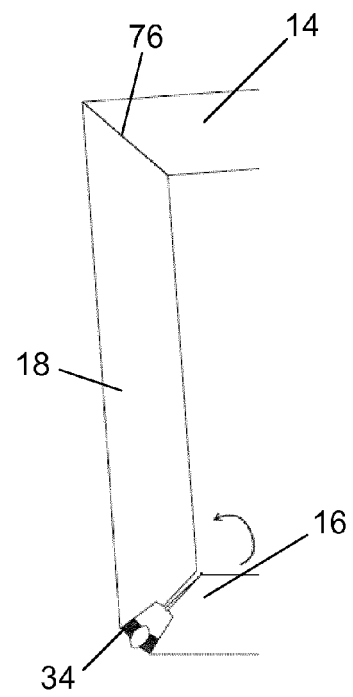


FIG. 7b

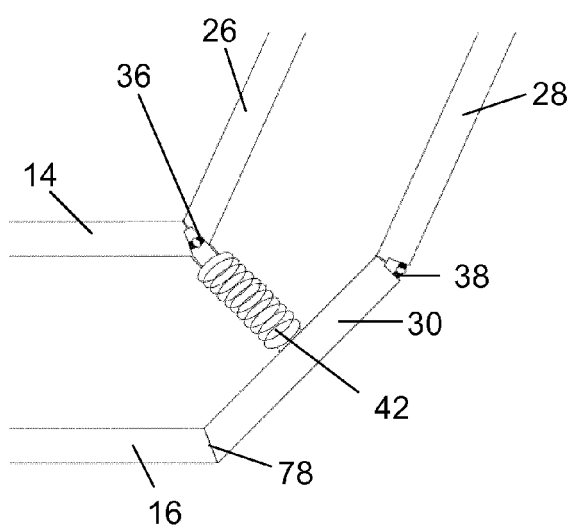


FIG. 8a

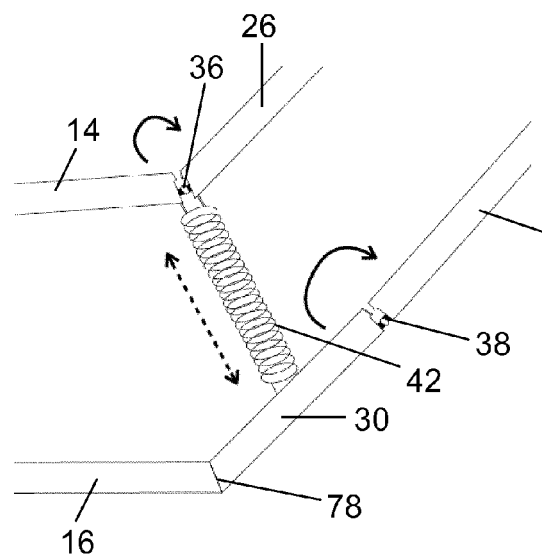


FIG. 8b

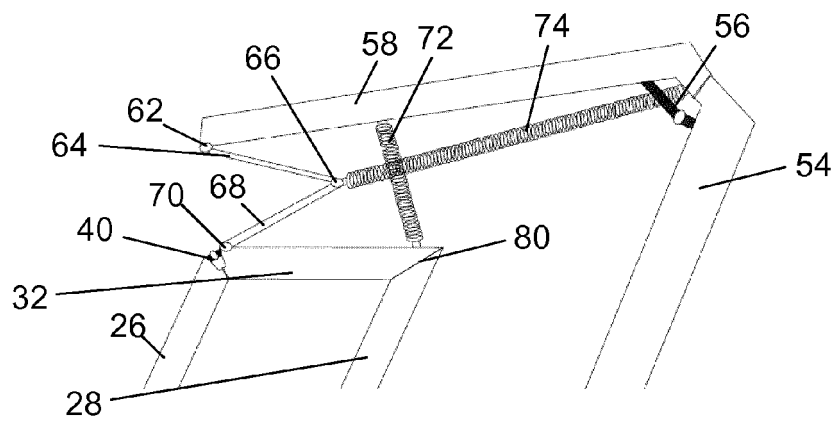


FIG. 9a

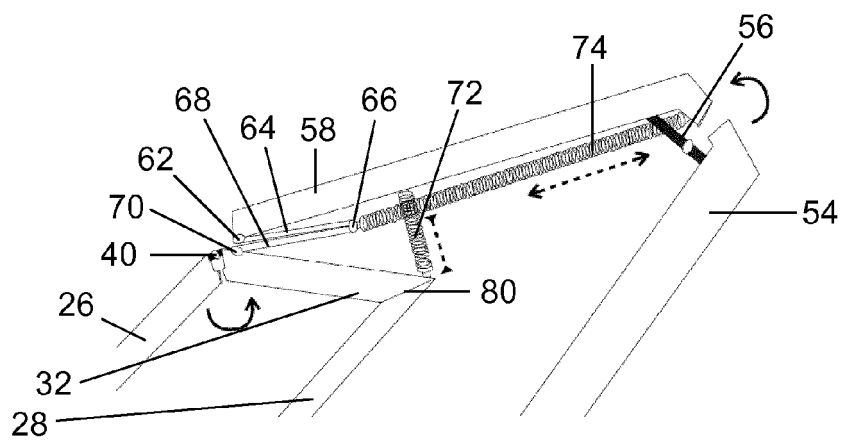


FIG. 9b

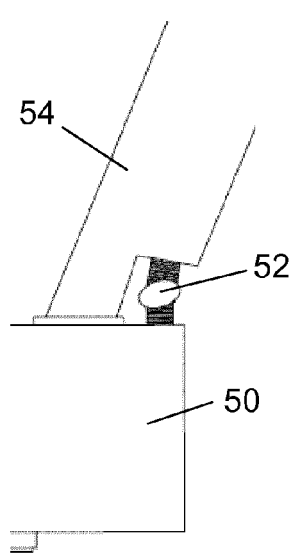


FIG. 10a

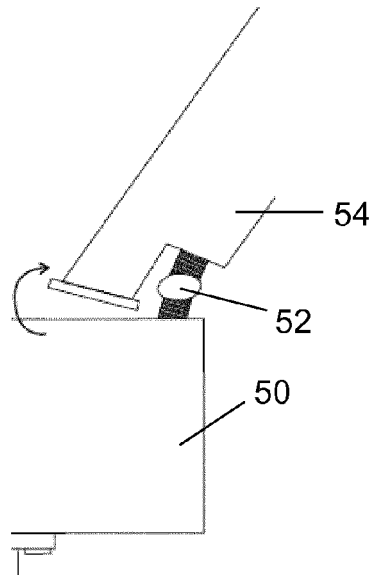


FIG. 10b



EUROPEAN SEARCH REPORT

Application Number
EP 14 18 3333

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			A47C
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 13 October 2014	Examiner Kus, Slawomir
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

EPO FORM 1503 03.82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 14 18 3333

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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
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