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(54) **Multifunctional furniture with collapsible bed, couch or desk**

(57) There is disclosed a multifunctional article of furniture comprising upwardly extending roller guide rails (2), and articulate pieces (4) provided with rollers for forming a collapsible bed or couch. The roller guide rails (2) are upwardly bent thus defining a curved space (7), and

the article further comprises desk forming means (8) provided in said curved space (7). During collapsing of the seat, couch or bed pieces of the article the curved space (7) is kept free creating room for retractable desk forming means (8) therein. Above the space there is room for bookshelves.

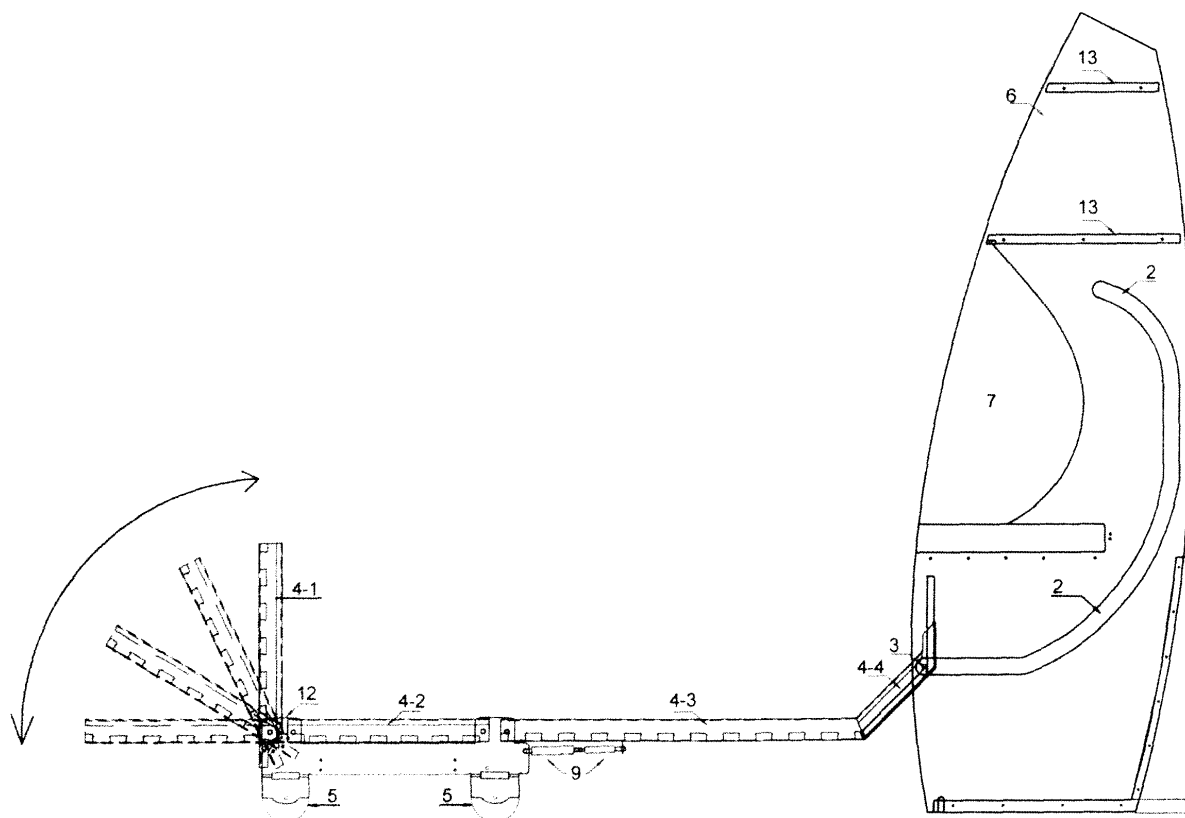


fig 6

Description

[0001] The present invention relates to an article of furniture comprising upwardly extending roller guide rails, and articulate pieces provided with said rollers for forming a collapsible bed or couch.

[0002] Such an article of furniture acting as a cabinet integrating a fragmented retractable bed, is known from EP-0.815.781. The known article comprises straight upwardly extending roller guide rails guiding rollers of articulate pieces for forming the collapsible bed or couch. The cabinet's functionality is however limited.

[0003] It is the object of the present invention is to provide a compact article of furniture having extended multifunctional capabilities.

[0004] Thereto the article of furniture according to the invention is **characterised in that** the roller guide rails are upwardly bent thus defining a curved space, and that the article comprises desk forming means provided in said curved space.

[0005] It is an advantage of the article of manufacture that the roller guide rails are bent upwardly and forwardly as therewith space is created in particular within the boundaries of the curved rails, which define the curved space. The created curved space can further advantageously be used to provide therein possibly retractable desk forming means or a bookshelf. Similarly bookshelf space is also created above the end of the curved roller guide rails. At the same time the article may be used by extending the articulate pieces for forming a couch or 'chaise long' and if further extended for forming a complete bed. In drawn in state the article occupies a minimum of unused space in a room. Multi-functionality of the space optimised article of furniture is enhanced.

[0006] Further detailed possible embodiments, which are defined in the other claims, are elucidated in conjunction with the associated advantages in the description below.

[0007] The article of furniture according to the present invention will now be explained in more detail with reference to the figures below, in which like parts are indicated by the same numerals. In the drawing:

Figure 1 shows a front view of the article of furniture according to the invention;

Figure 2 shows a side view of the article of figure 1 with desk forming means extended;

Figure 3 shows a side view of the article of figure 1 with articulate pieces partly extended to form a seat;

Figures 4-6 show side views of the article of figure 1 with articulate pieces in increasingly extended stages to form a seat, a long chair or finally a bed; Figures 7-9 show side views of the article of figure 1 with convertible desk forming means in differently extended stages; and

Figures 10-11 show respective side views of the article of figure 1 with a storage chamber to store the bedding.

[0008] Figure 1 shows a front view of a multifunctional article of furniture 1. The article 1 comprises two upwardly extending roller guide rails 2, as shown in figures 6-9 for guiding rollers 3 therein, and articulate pieces generally indicated with reference numeral 4. The articulate pieces 4 are provided with the rollers 3. Of the articulate hinged pieces 4-1, 4-2, 4-3, 4-4 the base piece 4-2 has an undercarriage, which is provided with wheels 5, which while riding over the ground (figures 3-6) can be drawn out of side slats 6 mounted on both sides of the article 1. Meanwhile the rollers 3 follow the curves of the bent guide rails 2. Pads or a mattress -not shown- can be provided on the pieces 4. In the gradually more extended stages shown in de figures 3-6 various pieces of furniture can be made by means of the multifunctional article 1 for forming a seat, a long chair, a bench or couch or a bed respectively.

[0009] The roller guide rails 2 are upwardly bent and define a curved space 7 which space due to the curvature of the bending of the rails 2 is kept free while the articulate pieces 4 provided with the mattress are wheeled over the ground and in the rails 2. This space 7 can then be used functionally for inclusion of possibly convertible or retractable desk forming means 8 such as for example schematically shown in figure 2.

[0010] The base articulate piece 4-2 of the pieces 4 which is provided with the wheels 5 is in the embodiment as shown figures 7-9 capable of riding under the desk forming means 8, in particular under the roller guide rails 2 in collapsed state of the bed or couch. This way room between the slats 6 in the article 1 is used very efficiently, which results in smaller dimensions of the article of furniture without jeopardising its multifunctional capabilities.

[0011] It is helpful for easy collapsing of the bed pieces 4 in and out to provide spring means 9 between the articulate piece 4-3 and the base piece 4-2. These spring means may comprise one or more gas springs, preferably in the form of a series arrangement of sets of springs having different spring characteristics. This helps to overcome the problem that, if only one high pressure gas spring would have been used to help to get the upper bed piece 4-3, 4-4 to its upright position to approximately 50 degrees, this piece would be caused to lock into this position. This would create resistance when retracting and unfolding the bed pieces. Applying two separate series arranged gas springs having different lengths, pressures and associated resisting force overcomes this problem. The second gas spring then provides just enough length and force to take over the second phase of the upward movement surpassing the first 50 degrees.

[0012] The desk forming means 8 may be embodied by retractable desk means, and may be provided with as known per se a parallel arrangement 10 for parallel displacement of desk forming girders 11 provided thereon. The arrangement 10 safeguards as shown in figures 7-9 that when the girders 11 are drawn out of the article 1 they displace parallel and if the desk forming means 8 are in the form of a multilevel desk arrangement 10 as

shown specifically displacement in height of one or more girders is also parallel.

[0013] Hinged articulate piece 4-1 is provided with a wheel brake 12 -not explicitly shown- which is connected to that piece 4-1 and formed as an automatic operated brake, such that the brake is active when the hinged piece 4-1 is collapsed downwards or when the bed is formed (fig. 6). This prevents the bed from inadvertently riding and collapsing in. The wheel brake 12 is inactive when the hinged piece 4-1 is collapsed upwards under 90 degrees relative to the piece 4-2, in order to allow the bed to collapse and ride in. If the piece 4-1 is under one angled position of the two remaining positions also shown in figure 6 for forming a couch or chaise long the brake is arranged to be active too. So the wheel brake 12 is active in the lower angled positions and inactive only in the 90 degree position of the hinged piece 4-1.

[0014] Due to the rails being bent upwardly and forwardly as shown room is also created above the curved space 7 in order to mount fixed or retractable bookshelf carriers 13 in the article 1 to make it even more multifunctional.

[0015] The outline of the article 1 in collapsed state of the bed or couch and the desk forming means 8, is confined within the circumferential boundaries of the side slats 6 on both sides of the article 1. These side slats 6 can be given an appealing form, such as the form of a windsurf sail. Dimensions of the article 1 as shown in the figures are 72 cm depth, 150 cm width and 200 cm height.

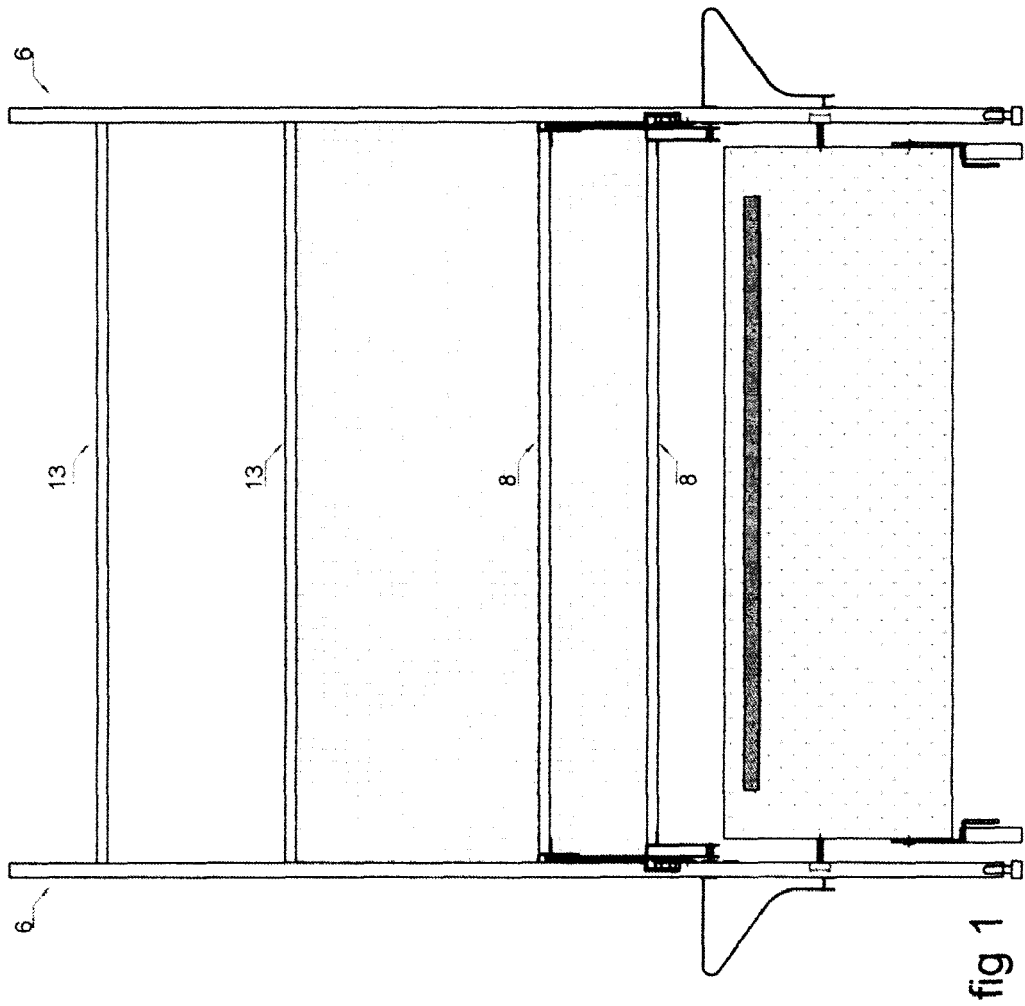
[0016] Figures 10-11 show respective side views of the article 1 which is provided with a storage chamber in between the upwardly inclined bed pieces 4-1 and 4-4 to store bedding 14.

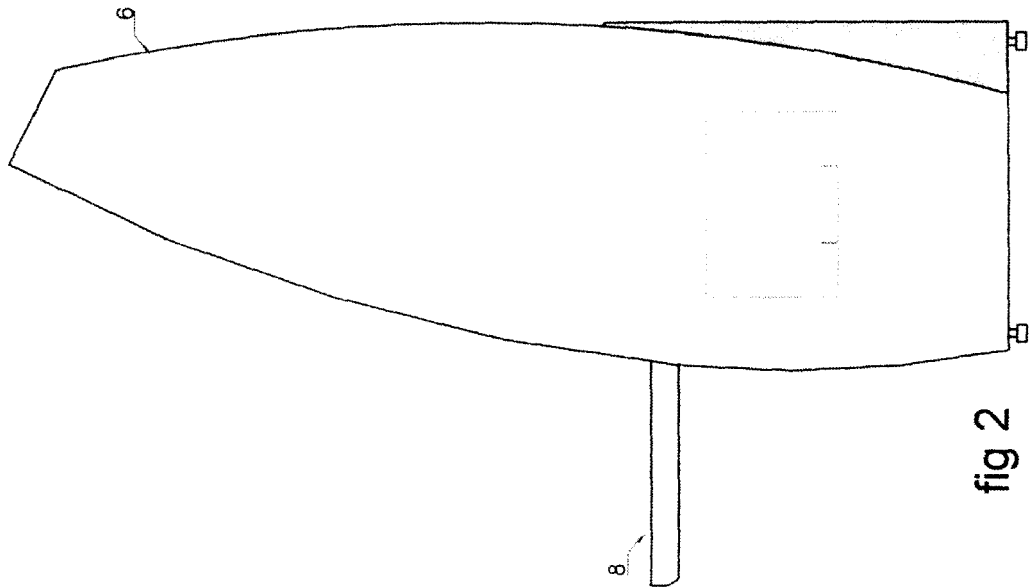
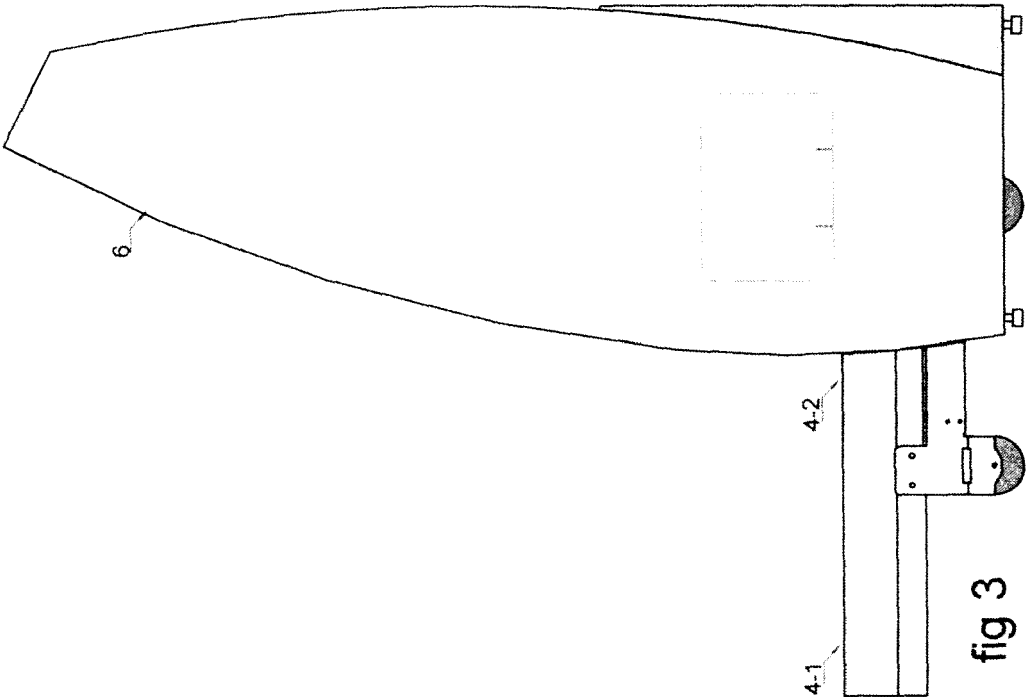
Claims

1. An article of furniture comprising upwardly extending roller guide rails, and articulate pieces provided with said rollers for forming a collapsible bed or couch, **characterised in that** the roller guide rails are also forwardly bent thus defining a curved space, and that the article comprises desk forming means provided in said curved space.
2. The article according to claim 1, **characterised in that** the curvature of the guide rails is such that upon collapsing the bed or couch in or out, the path followed by the articulate pieces remains outside the curved space.
3. The article according to claim 1 or 2, **characterised in that** a base articulate piece of said pieces is provided with wheels capable of riding under the roller guide rails in collapsed state of the bed or couch.
4. The article according to claim 3, **characterised in that** the article comprises spring means between the

articulate pieces and said base piece.

5. The article according to claim 4, **characterised in that** the spring means comprise one or more gas springs.
6. The article according to claim 4 or 5, **characterised in that** the spring means comprise a series arrangement of springs having different spring characteristics.
7. The article according to one of the claims 1-6, **characterised in that** a hinged articulate piece of said pieces is capable of being stored under the desk forming means in collapsed state of the bed or couch.
8. The article according to claim 7, **characterised in that** the hinged articulate piece is provided with a wheel brake.
9. The article according to claim 8, **characterised** that the wheel brake is an automatic operated brake which is active when the hinged piece is collapsed downwards in an angle of less than 90 degrees relative to the horizontal.
10. The article according to claim 9, **characterised in that** the wheel brake is inactive when the hinged piece is collapsed upwards under approximately 90 degrees relative to the horizontal.
11. The article according to one of the claims 1-10, **characterised in that** the desk forming means are retractable desk means.
12. The article according to one of claims 1-11, **characterised in that** the desk forming means are provided with a parallel arrangement for parallel displacement of desk forming girders provided thereon.
13. The article according to one of claims 1-12, **characterised in that** the desk forming means are in the form of a multilevel desk arrangement.
14. The article to one of the claims 1-13, **characterised in that** the article comprises bookshelf carriers provided above the curved space.
15. The article according to one of the claims 1-14, **characterised in that** the outline of the article in collapsed state of the bed or couch, and the desk forming means is confined within the circumferential boundaries of side slats on both sides of the article.





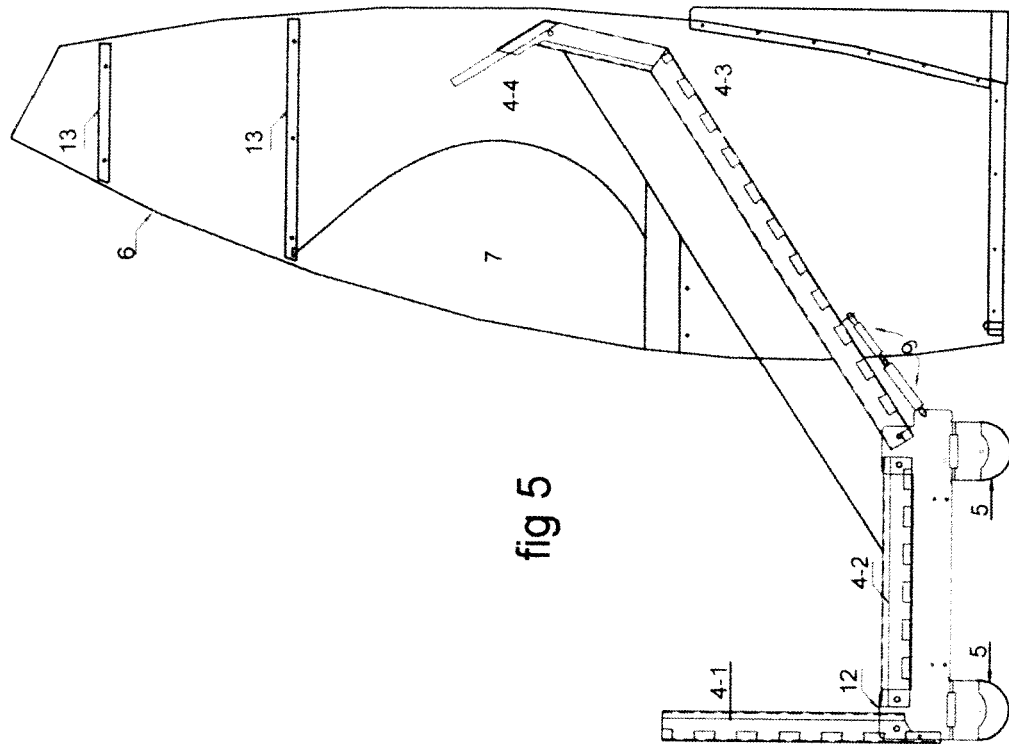


fig 5

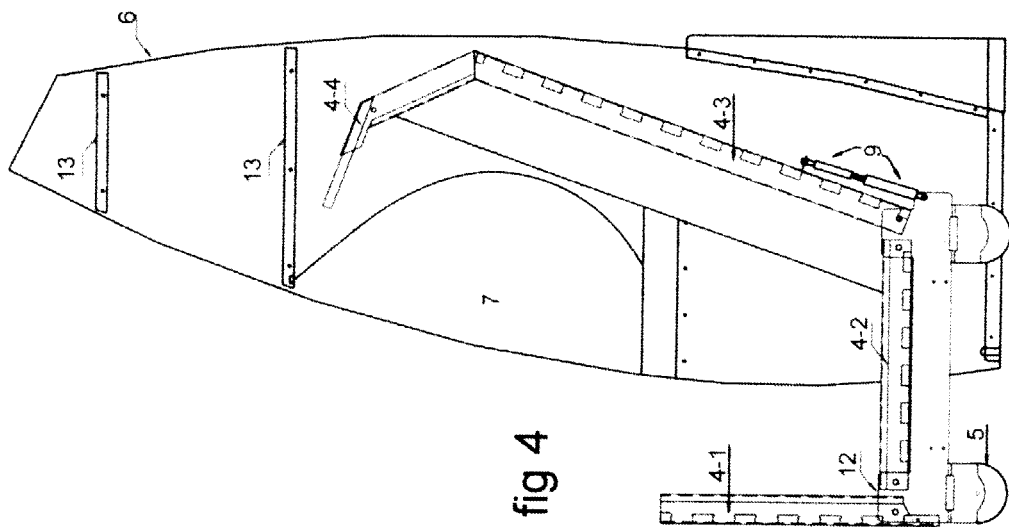
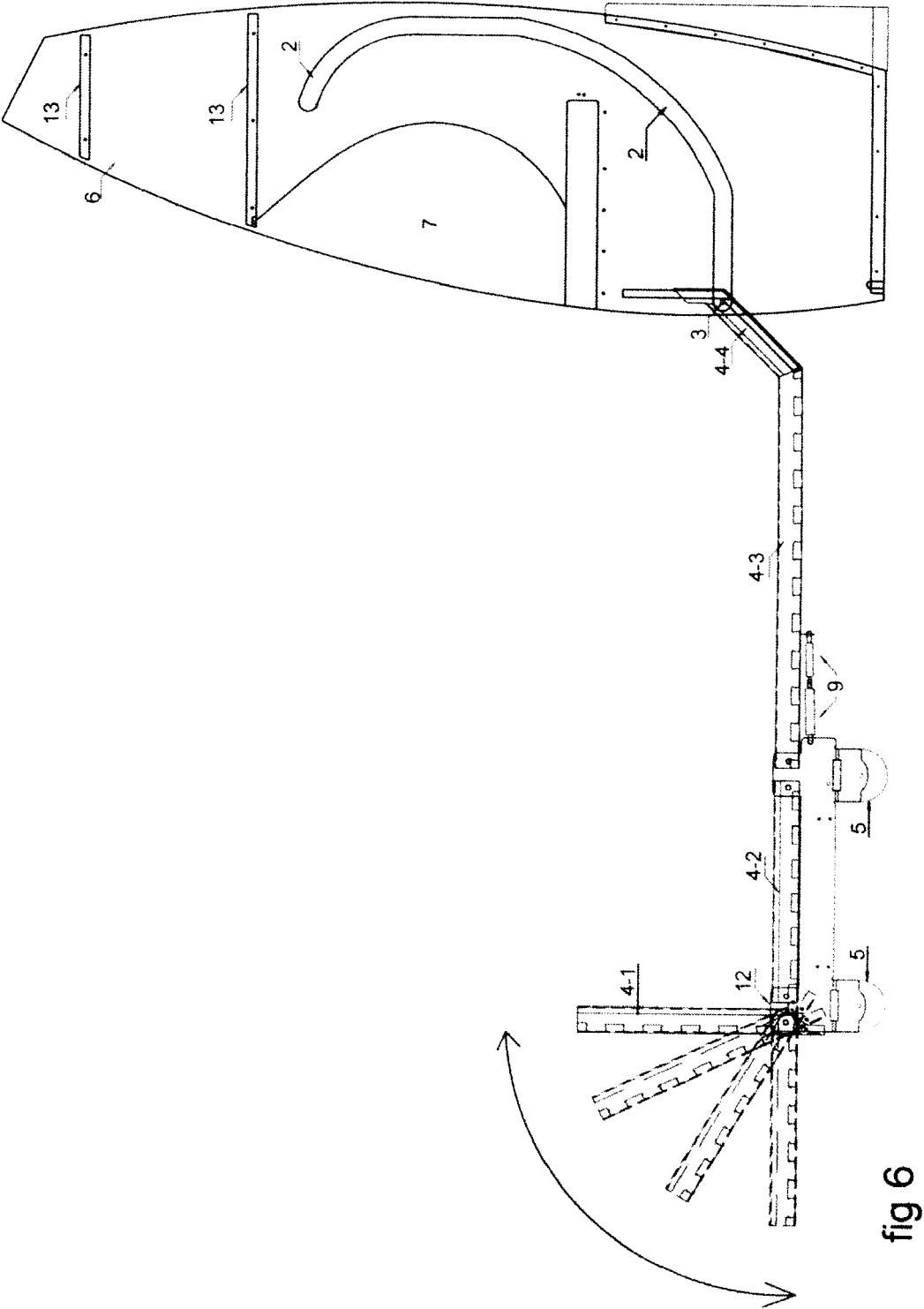


fig 4



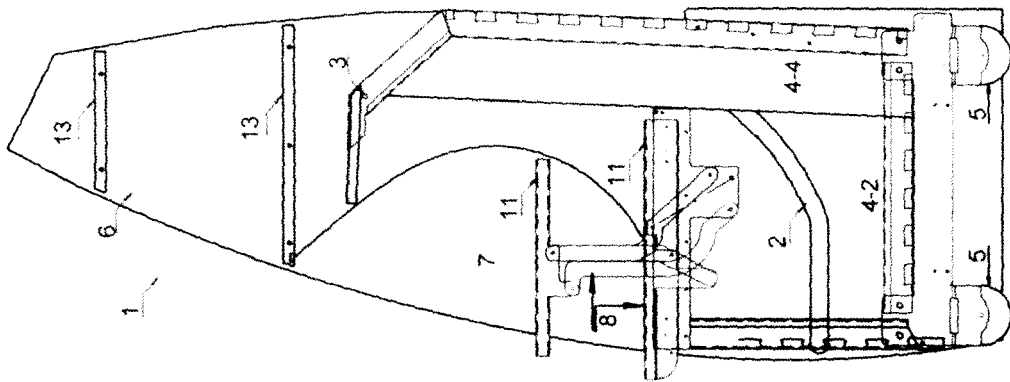


fig 9

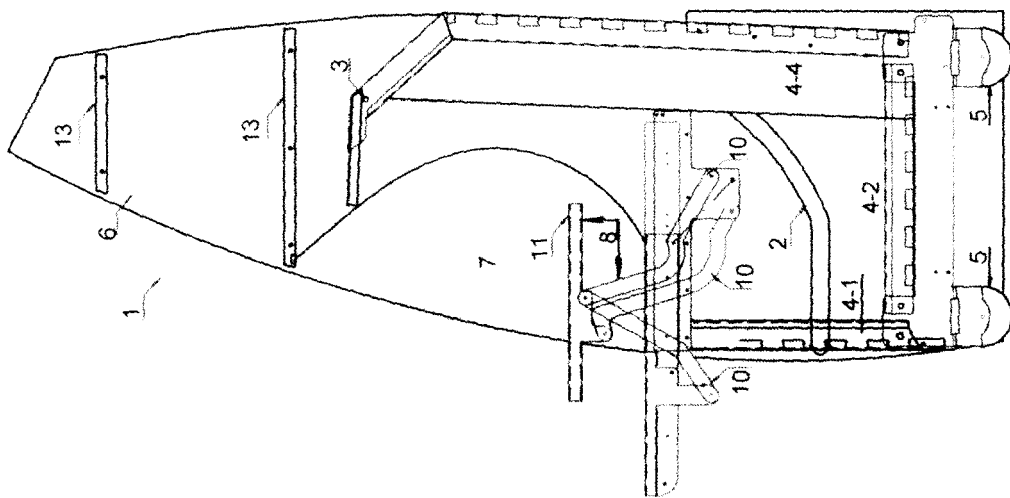


fig 8

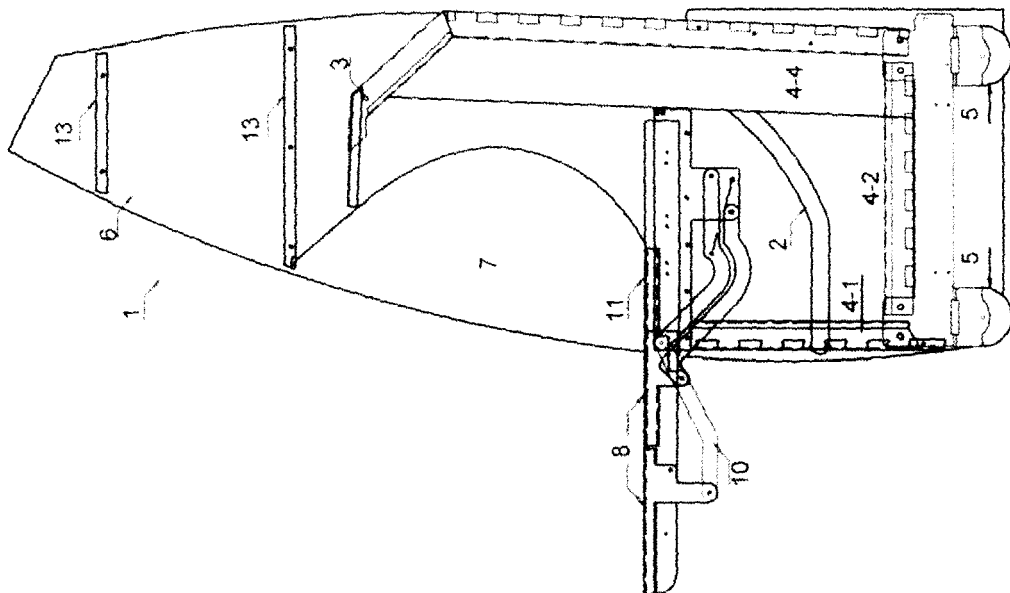


fig 7

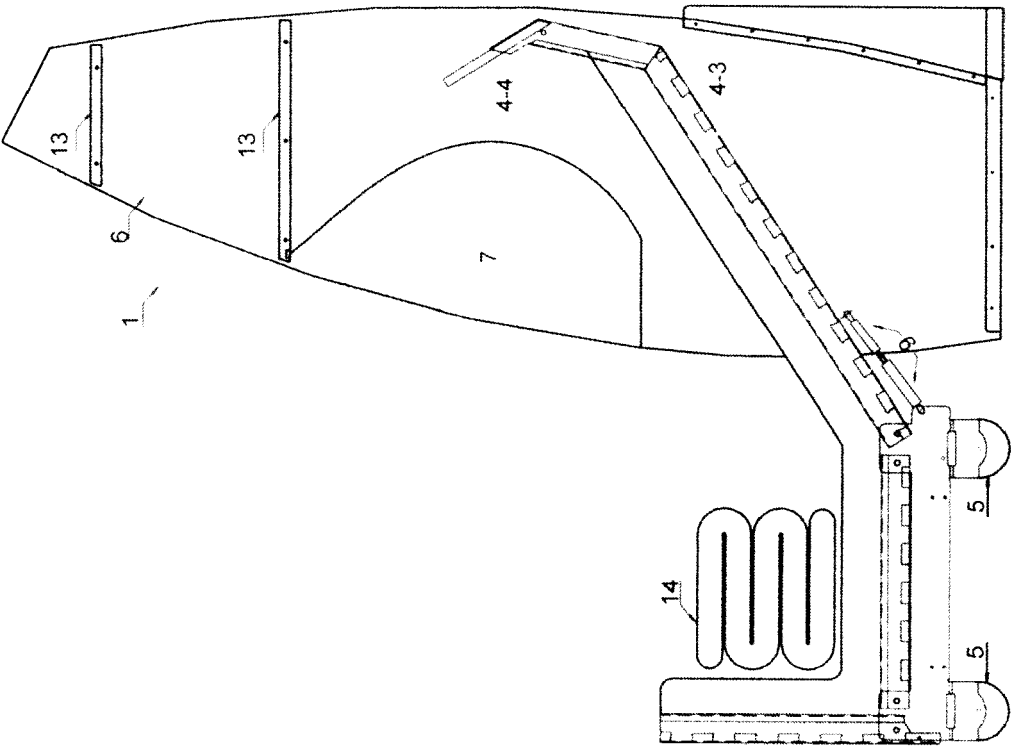


fig 11

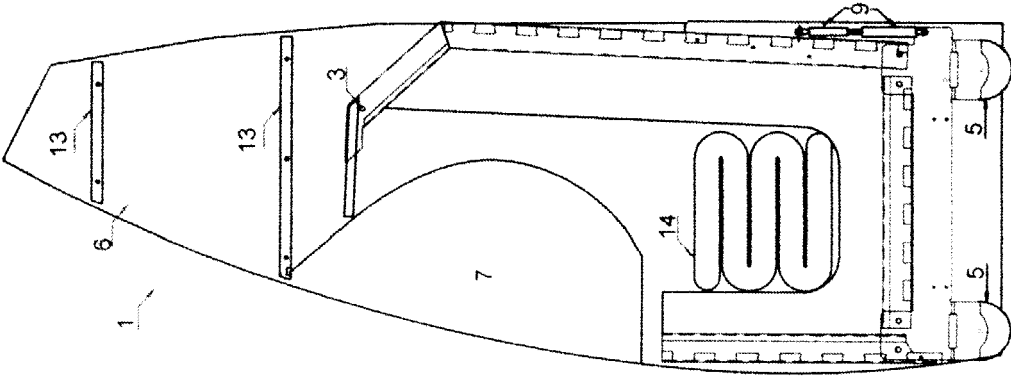


fig 10



EUROPEAN SEARCH REPORT

Application Number
EP 10 16 2147

| DOCUMENTS CONSIDERED TO BE RELEVANT | | | |
|--|---|--|---|
| Category | Citation of document with indication, where appropriate, of relevant passages | Relevant to claim | CLASSIFICATION OF THE APPLICATION (IPC) |
| X | FR 2 628 618 A1 (DESILE) 22 September 1989 (1989-09-22) * page 3, lines 17-39; figures * ----- | 1-3,7, 11-15 | INV. A47C17/58 A47B83/00 |
| A | US 2 628 371 A (NULL) 17 February 1953 (1953-02-17) * figures * | 1 | |
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| | | | TECHNICAL FIELDS SEARCHED (IPC) |
| | | | A47C A47B |
| The present search report has been drawn up for all claims | | | |
| Place of search The Hague | | Date of completion of the search 7 September 2010 | Examiner Kis, Pál |
| 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 | | | |

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EPO FORM 1503 03.82 (P04C01)

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

EP 10 16 2147

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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07-09-2010

| Patent document cited in search report | | Publication date | Patent family member(s) | Publication date |
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| US 391424 | A | | NONE | |
| US 521595 | A | | NONE | |

REFERENCES CITED IN THE DESCRIPTION

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