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(54) A COLLAPSIBLE CHAIR, BEDCHAIR, BED OR OTHER ARTICLE

(57) The present invention relates to a collapsible chair, bedchair, bed (10) or other article having at least one leg (18) which is pivotally connected to a main support part (12, 42) of the article (10). As a result, the leg (18) is moveable from a stowable position in which it is substantially adjacent to and parallel to the main support part (12, 42), to an extended position in which it extends in an intended downward direction from the main support part (12, 42). The pivotal connection is effected by way of a bracket (20) which is connected to the main support part (12, 42) at a first bracket pivot (44). The bracket (20) is connect ed to the said at least one leg (18) at a second bracket pivot (50) which is spaced apart from the said first bracket pivot (44).

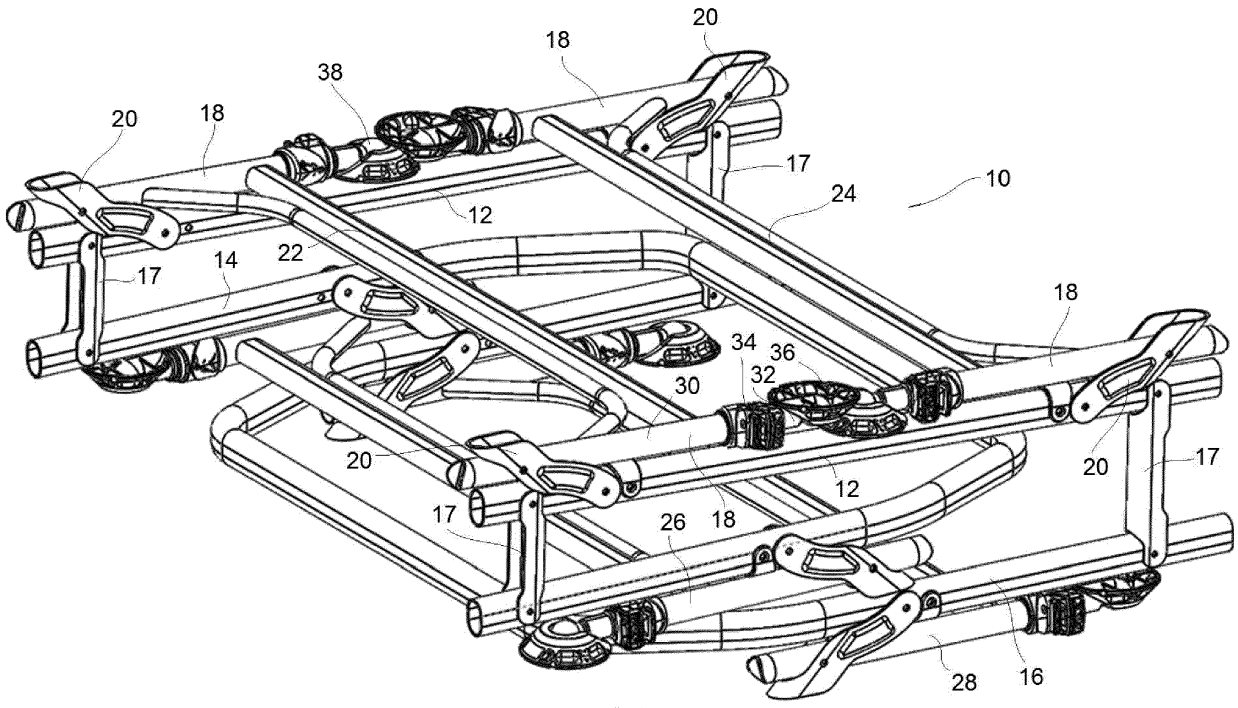

Fig. 1

EP 3 400 837 A1

Description

[0001] The present invention relates to a collapsible chair, bedchair, bed or other article having at least one leg which is pivotally connected to a main support part of the article so as to be movable from a stowable position in which it is substantially adjacent to and parallel to the main support part, to an extended position in which it extends in an intended downward direction from the main support part.

[0002] One such article is disclosed in EP2374375 A1. A disadvantage of such an article is that the connection between the said at least one leg and the main support part of the article does not readily enable the said at least one leg to be laid flat against the main support part. This in turn limits the extent to which the collapsed article can be made compact.

[0003] The present invention seeks to provide a remedy.

[0004] Accordingly the present invention is directed to an article having the construction set out in the opening paragraph of the present specification, in which the pivotal connection is effected by way of a bracket which is connected to the main support part at a first bracket pivot and which bracket is connected to the said at least one leg at a second bracket pivot which is spaced apart from the said first bracket pivot.

[0005] This enables the said at least one leg to be laid parallel to and against the main support part of the article when the article is in a folded or collapsed condition.

[0006] The bracket may be provided with an abutment portion which inhibits the leg from being rotated about the said second bracket pivot beyond a predetermined relative angular position between the leg the bracket.

[0007] This provides a stable construction when the article is made ready for use.

[0008] The distance between the said second bracket pivot and an intended upper end of the said at least one leg is such that when the abutment portion engages the leg and the upper end of the leg engages the main support part, so that the leg is in its extended position, the leg has been rotated through an angle greater than 90° relative to its stowable position.

[0009] This also improves the stability of the construction when the article is made ready for use.

[0010] The bracket may further be provided with at least one lateral abutment portion to inhibit rotation of the said at least one leg relative to the bracket in a direction which is transverse of the plane of movement of the leg about the said second bracket pivot.

[0011] The bracket may be provided with two such lateral abutment portions which are located on opposite sides of the said at least one leg when the article is in a condition ready for use.

[0012] This increases the stability of the article further when it is made ready for use.

[0013] The bracket may have at least a portion which is U-shaped to provide the various abutment portions.

[0014] Such a construction is relatively simple and inexpensive to manufacture.

[0015] There may be a pair of such legs connected to the main upper part of the article by respective such brackets, the legs of the pair being themselves rigidly connected to one another by means of at least one crossbar or strut.

[0016] The present invention extends to a chair having two such pairs of legs.

[0017] The present invention also extends to a bedchair having a first such main support part provided with two such pairs of legs, and a second such main support part pivotally connected to the said first such main support part and being provided with a further such pair of legs.

[0018] The present invention also extends to a bed having a first main support part provided with two such pairs of legs, a second such main support part pivotally connected to one end of the said first such main support part and being provided with a further such pair of legs, and a third such main support part pivotally connected to the said first such main support part at an end thereof opposite to the end to which the said first main such support part is pivotally connected, and being provided with a yet further such pair of legs.

[0019] An example of an article embodying the present invention will now be described in greater detail with reference to the accompanying drawings, in which:

Figure 1 shows a perspective view of a collapsible bed embodying the present invention in a collapsed condition;

Figure 2 shows a perspective view of parts of the bed shown in Figure 1; and

Figures 3 to 5 show respective perspective views of the parts shown in Figure 2 in successive stages of movement between those parts from a stowable or collapsed condition to an extended condition ready for use.

[0020] The collapsible bed 10 shown in Figure 1 is illustrated in its collapsed condition ready for stowage. It comprises a framework having a main central support part constituted by two tubular elongate parts 12 each having a generally oval cross-section, and first and second main end support parts 14 and 16 pivotally connected to the central main support part 12 each by a pair of brackets 17. Each of the main end support parts 14 and 16 comprises a generally U-shaped tubular elongate part which is also of generally oval cross-section. Thus the ends of each of the main end support parts 14 and 16 are connected to respective ends of the two tubular elongate parts 12 by way of respective brackets 17. Each bracket 17 is generally U-shaped in cross-section so that when the bed is unfolded into its extended condition ready for use, respective ends of the tubular parts pivotally connected to one another by way of the bracket are received within the bracket itself, inhibiting any further

pivotal movement in the unfolding sense between those tubular parts.

[0021] Those brackets 17 which connect the main end support part 16 to the main central support part 12 are longer than the brackets 17 which connect the main end support part 14 to the main central support part 12, to facilitate a compact collapse of the bed.

[0022] Four legs 18 are pivotally connected to the elongate parts 12 by respective brackets 20. Thus two legs 18 constituting a first pair of legs are so connected to respective ends of the elongate part 12 to which the main end support part 14 is connected and these two legs are fixedly and rigidly connected to one another by means of a crossbar or strut 22, and two legs 18 constituting a second pair of legs are so connected to respective ends of the elongate parts 12 to which the main support 16 is connected and these two legs are fixedly and rigidly connected to one another by means of a crossbar or strut 24.

[0023] Each leg 18 is telescopically adjustable in length, so that each leg 18 comprises an upper outer tubular part 30 and an inner lower part 32 which can be slid into and out of the upper part 30, and held in any selected relative position in relation thereto by means of a locking mechanism 34.

[0024] Each leg 18 is also provided at its lower end with a generally disc-shaped foot 36 having a diameter very much greater than any cross-sectional diameter of any part of the leg 18. Each foot 36 is attached to the lower end of its associated leg 18 by way of a ball and socket joint 38.

[0025] Each main end support part 14 and 16 of the bed 10 are provided with respective such pairs of legs 26 and 28.

[0026] Details of the construction of each bracket 20 will now be described with reference to Figures 2 to 5. Thus, each bracket 20 comprises two trunnion portions 40 located on opposite sides of the elongate tubular part 42 to which the trunnions are attached by way of a pivot 44. The tubular part 42 has been labelled with the reference number 42 in Figures 2 to 5, but may be constituted by a portion of an elongate part 12 or one of the main end support parts 14 or 16.

[0027] The trunnions 40 extend from the pivot 44 and merge with a length 46 of the bracket 20 which is generally U-shaped in section with an arcuate recess 48 formed in the trough of the U between the trunnion portions 40. At a location on the bracket 20 which is closer to the U-shaped length 46 than the pivot 44 is a further pivot 50 by which the bracket 20 is pivoted to an intended upper end region of its associated leg 18.

[0028] The uppermost end 52 of the leg 18 is cylindrically concave to receive a portion of the tubular part 42 when the bed is prepared ready for use.

[0029] Each trunnion portion 40 is provided with a strengthening corrugation 54.

[0030] When the bed 10 is unfolded or extended ready for use the main end support part 16 is rotated about its brackets 17 away from the rest of the bed and those brackets 17 themselves are rotated in the same sense relative to the two tubular elongate parts 12 constituting the main support part of the bed 10 so that the tubular end portions of the main end support part 16 are brought into alignment with the two tubular elongate parts 12. The main end support part 14 is unfolded in the same way to bring its tubular end portions into alignment with the tubular elongate parts 12. As a result, the central main support part 12 and the first and second main end support parts 14 and 16 are generally co-planar.

[0031] The leg parts 18 are now themselves unfolded away from their respective tubular parts 42 in the manner shown in Figures 2 to 5. More especially, the bracket 20 is rotated about its pivot 44 away from the tubular portion 42 in a first sense at the same time as the leg 18 is pivoted relative to the bracket 20 in the opposite sense. This enables the leg 18 to be rotated right around the pivot 50 until an upper end region of the leg 18 is received in the length 46 of the bracket 20 which is generally U-shaped. It therefore rests against that length so that the length 46 acts both as an abutment to inhibit further rotation of the leg 18 about the pivot 50 relative to the bracket 20 in the said opposite sense and also, by virtue of the arms of the U, inhibits lateral rotation about the pivot. It will be appreciated that the pivot 50 itself will inhibit such lateral rotation, but the arms of the U-sectioned length 46 strengthen the construction against such rotation. The bracket 20 with the leg 18 may now be rotated about the pivot 44 in the said opposite sense until the upper end 52 of the leg 18 abuts the tubular portion 42. In this way, each leg 18 is rotated overall in the said opposite sense relative to the tubular portion 42 by an angle which is greater than 90°. With all the legs thus extended and with the bed oriented so that the legs extend in a downward direction, the swivelable feet 36 may be rested on the ground and each leg 18 adjusted in length telescopically if and as necessary to accommodate any unevenness of the ground on which the bed is supported.

[0032] Because of the abutment of each end 52 of each leg 18 against its associated tubular portion 42, and because each leg 18 has been rotated in the said opposite sense away from its associated tubular portion 42 by more than 90°, any weight supported on the bed will exert a torque on the leg 18 to rotate it relative to the tubular portion 42 in the said opposite sense, but such a torque will be resisted by the abutment of the end 52 of the leg 18 against the tubular portion 42 so that the legs will not collapse under the bed under such a weight.

[0033] After use, the bed may be folded or collapsed back into the condition it has shown in Figure 1 by the reverse procedure.

[0034] Numerous variations or modifications to the illustrated bed 10 may be made without taking the construction outside the scope of the present invention. To give one example only, the oval section of the tubular portions 12, 14 and 16 (labelled as 42 in Figures 2 to 5) may instead be a circular section, a square section, or a rectangular cross-section.

Claims

1. A collapsible chair, bedchair, bed (10) or other article having at least one leg (18) which is pivotally connected to a main support part (12, 42) of the article (10) so as to be movable from a stowable position in which it is substantially adjacent to and parallel to the main support part (12, 42), to an extended position in which it extends in an intended downward direction from the main support part (12, 42), **characterised in that** the pivotal connection is effected by way of a bracket (20) which is connected to the main support part (12, 42) at a first bracket pivot (44) and which bracket (20) is connected to the said at least one leg (18) at a second bracket pivot (50) which is spaced apart from the said first bracket pivot (44).

2. An article according to claim 1, **characterised in that** the bracket (20) is provided with an abutment portion which inhibits the leg (18) from being rotated about the said second bracket pivot (50) beyond a predetermined relative angular position between the leg and the bracket.

3. An article according to claim 2, **characterised in that** the distance between the said second bracket pivot (50) and an intended upper end (52) of the said at least one leg (18) is such that when the abutment portion engages the leg (18) and the upper end (52) of the leg (18) engages the main support part (12, 42), so that the leg (18) is in its extended position, the leg has been rotated through an angle greater than 90° relative to its stowable position.

4. An article according to claim 2 or claim 3, **characterised in that** the bracket (20) is provided with at least one lateral abutment portion to inhibit rotation of the said at least one leg (18) relative to the bracket (20) in a direction which is transverse of the plane of movement of the leg about the said second bracket pivot (50).

5. An article according to claim 4, **characterised in that** the bracket (20) is provided with two such lateral abutment portions which are located on opposite sides of the said at least one leg (18) when the article (10) is in a condition ready for use.

6. An article according to any one of claims 2 to 5, **characterised in that** the bracket (20) has at least a portion which is U-shaped (46) to provide the various abutment portions.

7. An article according to any preceding claim, **characterised in that** there are a pair of such legs (18) connected to the main upper part (30) of the article by respective such brackets (20), the legs (18) of the pair being themselves rigidly connected to one another by means of at least one crossbar or strut (22, 24).

8. An article according to claim 7, **characterised in that** the article (10) is a chair having two such pairs of legs (26, 28).

9. An article according to claim 7, **characterised in that** the article (10) is a bedchair having a first such main support part provided with two such pairs of legs, and a second such main support part pivotally connected to the said first such main support part and being provided with a further such pair of legs.

10. An article according to claim 7, **characterised in that** the article (10) is a bed having a first main support part (12) provided with two such pairs of legs (18), a second such main support part (14) pivotally connected to one end of the said first such main support part (12) and being provided with a further such pair of legs (18), and a third such main support part (16) pivotally connected to the said first such main support part (12) at an end thereof opposite to the end to which the said first main such support part (12) is pivotally connected, and being provided with a yet further such pair of legs (18).

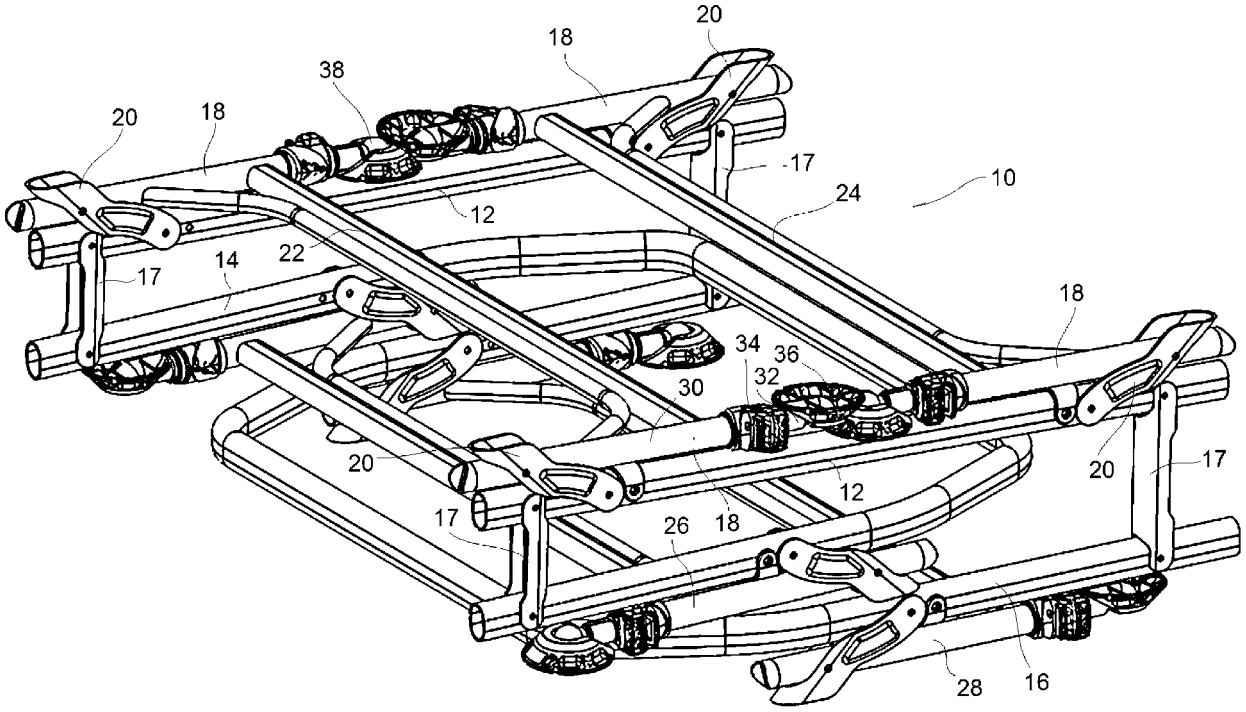
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Fig. 1

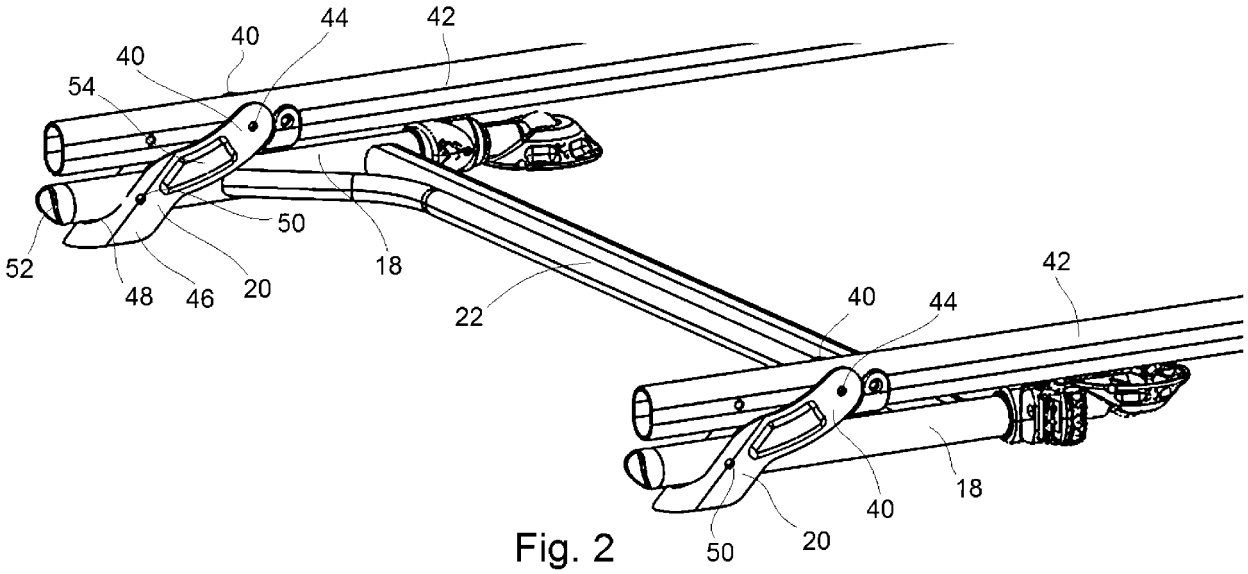

Fig. 2

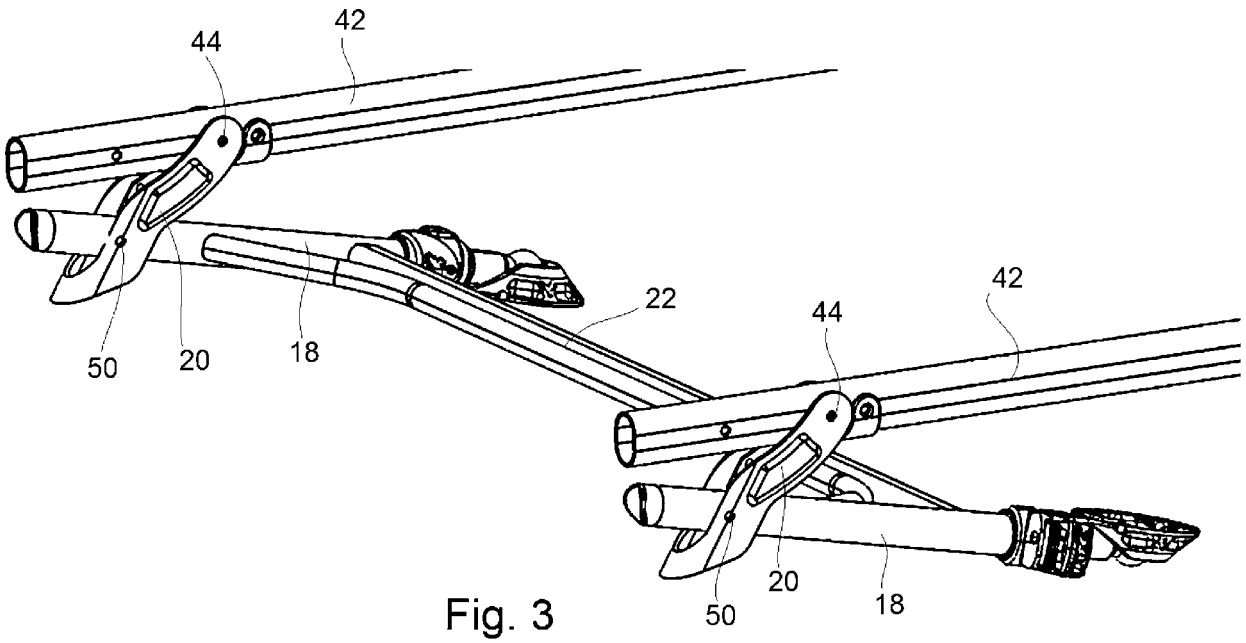

Fig. 3

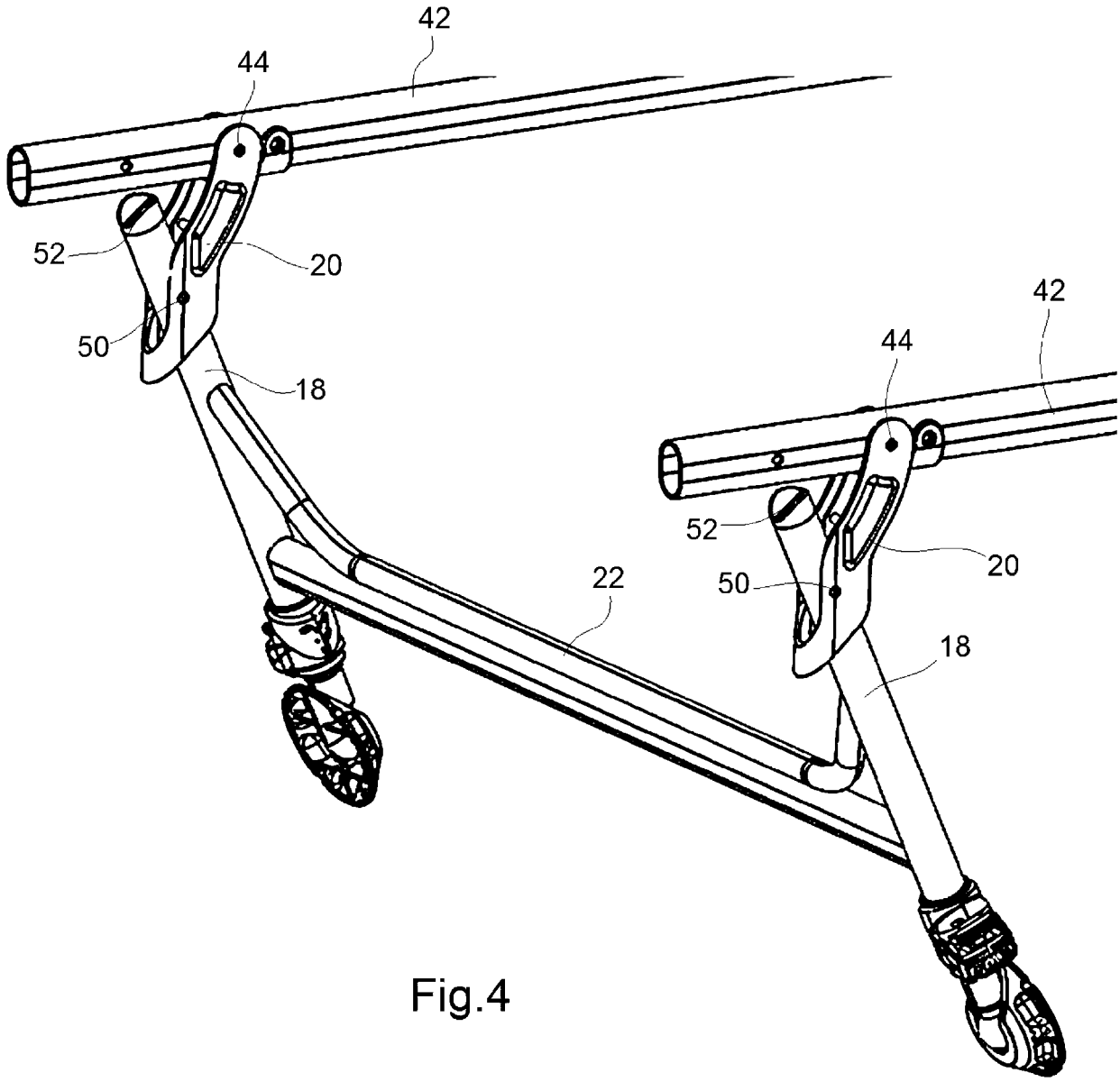

Fig.4

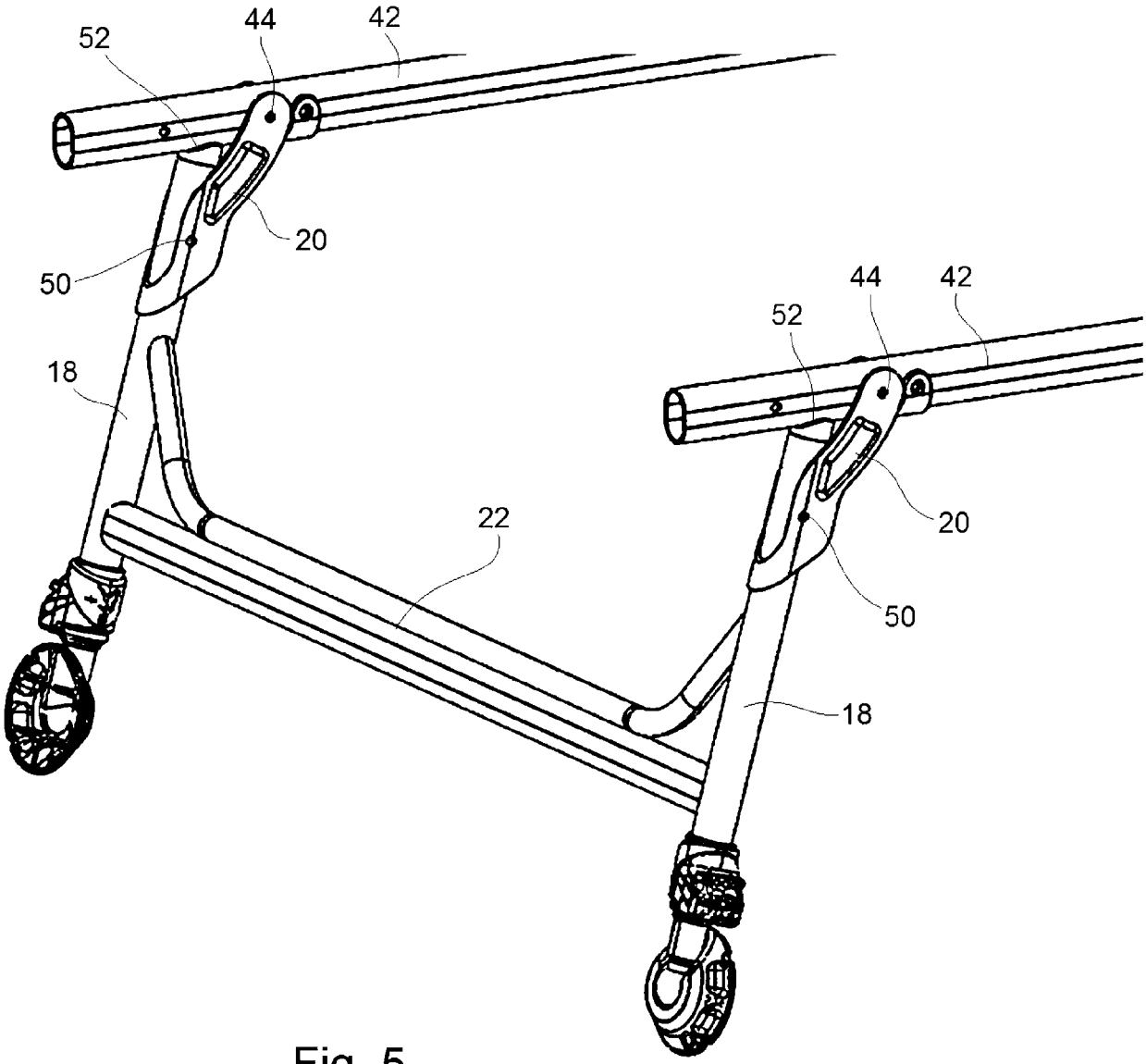

Fig. 5

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EUROPEAN SEARCH REPORT

Application Number
EP 18 02 0118

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	US 2002/174516 A1 (HILL STEVEN GENE [US]) 28 November 2002 (2002-11-28) * figures 1-4 * -----	1-10	INV. A47C4/20
X	GB 2 294 388 A (CHUB LEISURE LIMITED [GB]) 1 May 1996 (1996-05-01) * figures 1-4 * -----	1,2,4-8	
A	FR 2 817 132 A1 (EREDU S COOP [ES]) 31 May 2002 (2002-05-31) * figures 1-6 * -----	1-10	
			TECHNICAL FIELDS SEARCHED (IPC) A47C

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	10 September 2018	Melo Sousa, Filipe

CATEGORY OF CITED DOCUMENTS

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

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