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(54) **Quick-assembly modular chair**

(57) The invention is a new seat or stool with two U-shaped uprights (3.3) positioned side by side defining to supporting legs (3), each one of said legs (3) being provided with two opposite holes (3.1, 3.2), of which one is circular and the other slotted, the latter for the insertion of the deformed end (2.1) of a crosspiece (2), said end comprising a circular widened portion (2.2) for inserting a screw (4), and wherein each leg (3) of each upright (3.3) is made integral with the end (2.1) of at least one crosspiece (2) by inserting said through screw (4) in said through hole (3.1) obtained in the leg (3) itself, and in said widened portion with circular cross section (2.2) of the end (2.1) of the crosspiece (2), at least partially inserted in said slotted hole (3.2) in the leg (3).

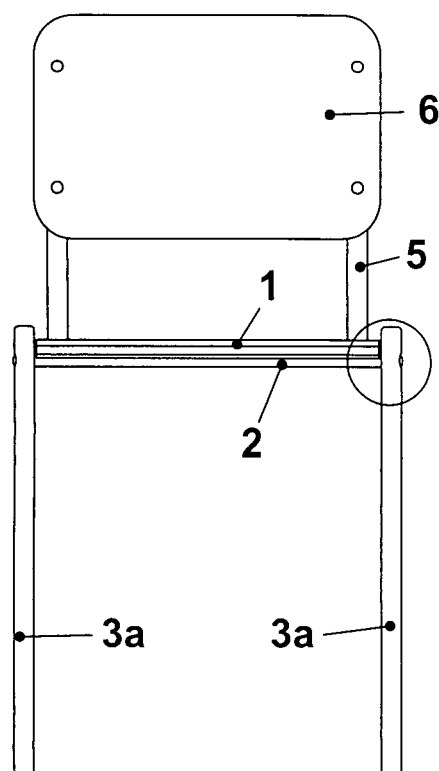


Fig. 1

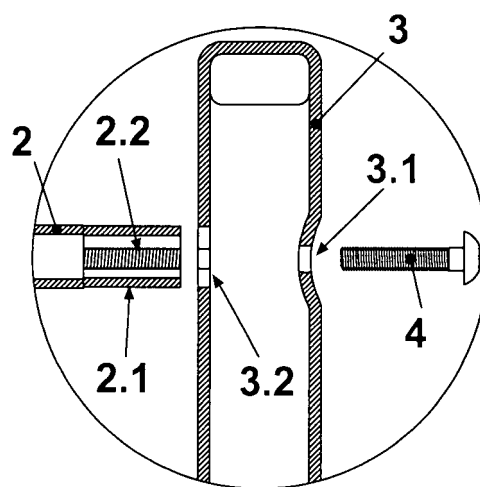


Fig. 3

Description

[0001] The present invention concerns furniture accessories, like chairs, stools or other accessories, and in particular it concerns a new modular chair that can be assembled quickly.

[0002] Furniture accessories like chairs or stools are known, which comprise one or more support elements in contact with the floor, like vertical or inclined legs, wide bases or other elements, which are integral with at least one substantially horizontal panel that serves as a seat, and if necessary also a substantially vertical panel that serves as a backrest.

[0003] For example, stools are known, which have a single support element in contact with the floor, with a wide base, and a seating panel.

[0004] Chairs or stools are known, which have three or four substantially vertical legs, with a seat and a backrest comprising at least one rigid and/or variously shaped panel, if necessary finished with covering materials, padding or other materials.

[0005] The chairs that are most widely used are usually provided with four legs, positioned at the vertexes of a square or rectangle, joined in pairs by means of one or two crosspieces, parallel or crossing, and wherein said crosspieces support the seating panel.

[0006] One or two further substantially vertical or slightly inclined uprights are solidly attached to the rear crosspiece and/or to the rear legs and/or to the seating panel, and at least one further panel serving as a backrest is fixed to said uprights.

[0007] The components of the known chairs or stools, that is legs, crosspieces, seating and backrest panels and further backrest uprights are usually joined to one another in a non-removable manner, for example, in the case of chairs with metal frame said legs are fixed to the crosspieces and the uprights of the backrest by means of metal welds, while the seat and backrest panels are fixed by means of screws.

[0008] Therefore, the frame of the chairs or stools of this type is rigid, its shape cannot be changed and their overall dimensions cannot be reduced in any way.

[0009] This represents a drawback, in particular when said chairs and/or stools must be put away, stored or transported.

[0010] Stacking chairs are also known, whose legs are slightly diverging downward, so that they can be placed one on top of the other and stacked.

[0011] However, their overall dimensions cannot be further reduced for transport and/or storage purposes, so that when the manufacturer or a user has to transport even a limited number of chairs, he/she needs vehicles with a wide compartment for containing the piles of chairs.

[0012] Furthermore, if the chairs are not going to be used any longer, the user cannot store them in a reduced space, since said piles are however extremely cumbersome.

[0013] Furthermore, the chairs must be sufficiently rigid

to support all the stress transmitted by the user even on one leg only.

[0014] To remedy all the above drawbacks a new type of quick-assembly modular chair has been designed and constructed.

[0015] The main object of the present invention is to construct a chair whose main components can be completely disassembled/reassembled, in order to reduce its overall dimensions to the minimum for the transport and storage phases.

[0016] Another important object of the present invention is to construct a chair whose main components, for example the legs, crosspieces and seating panel/s, can be rapidly disassembled, so that it can be stacked and reduced to a substantially flat shape, for example a square or a rectangle, and can be easily stacked and stored even in small spaces, as well as contained in the known cartons having the shape of a parallelepiped.

[0017] Another important object of the present invention is to construct a chair whose frame is rigid, stable, and can have various shapes according to the aesthetic needs of the customer.

[0018] Another important object of the present invention is to construct a chair that is simple and quick to assemble using common tools like screwdrivers and/or setscrew wrenches, with no need for welding operations or for the intervention of specialised personnel, thus using a minimum amount of labour.

[0019] Another important object of the present invention is to construct a chair that can be easily assembled even by a single, unskilled person, since few screws are used for assembling few components, that is, the legs, the seat and any backrest and/or armrest with or without the corresponding uprights.

[0020] These and other direct and complementary objects have been achieved through the construction of the new quick-assembly modular chair.

[0021] The new disassemblable/re-assemblable chair comprises in its main parts at least one pair of uprights, each comprising at least one tubular section bar in the shape of an upturned U forming two substantially vertical supporting legs, and wherein said uprights are solidly attached to each other, without welds, with one or more stiffening crosspieces.

[0022] In particular, the new chair comprises two pairs of legs, preferably joined two by two to form continuous section bars in the shape of an upturned U, substantially arched or portal-shaped, and wherein at least one of said crosspieces is interposed between the corresponding front legs and at least a further crosspiece is interposed between the corresponding rear legs, preferably in the upper part of said U-shaped section bars.

[0023] Said crosspieces also have the function to support at least one panel serving as a seat, wherein said panel is fixed to said crosspieces through fixing elements, for example of known type, like screws or similar elements.

[0024] Said panel having the function of a seat if nec-

essary can be shaped and/or covered with fabrics and/or padded and/or provided with other finishing materials.

[0025] According to the invention said new chair may also comprise at least one backrest, comprising one or more uprights, fixed without welds to said legs and/or said crosspieces and/or said seating panel, and at least one substantially vertical panel in turn fixed to said uprights, for example through screws or other fixing means.

[0026] In greater detail, according to the invention each of said uprights of the backrest comprises, for example, a continuous L-shaped section bar, where the base is constrained to one or both of said crosspieces and/or said legs and/or said seating panel, while the vertical segment is suitable for fixing said panel of the backrest.

[0027] Also said panel of the backrest if necessary can be shaped and/or covered with finishing materials and/or padded.

[0028] One of the innovative aspects of the present invention substantially consists in the shape of said crosspieces and of said legs, which can be rapidly assembled without welds using just a few screws.

[0029] As will be described in greater detail below, each one of said crosspieces and of said legs is substantially a tubular section bar specifically profiled and shaped.

[0030] Each one of said crosspieces, for example, has a substantially circular or rectangular cross section and is deformed at both ends, where its elongated section is obtained by compression and further deformed in order to define at least one widened portion with circular section, in a preferably intermediate position, threaded inside for screwing at least one screw.

[0031] Each one of said deformed ends is suited to be inserted in a suitable slotted hole with corresponding shape obtained in a suitable position in one side of said legs, so that the crosspiece is horizontally interposed between said U-shaped uprights positioned side by side.

[0032] In order to constrain said upright to the legs, these are also provided with at least one circular through hole, on the opposite side with respect to said slotted hole, for inserting at least one through screw that can be screwed in said threaded widened portion with circular cross section of the shaped end of the crosspiece, thus stretching the crosspiece towards the legs itself.

[0033] In this way a stable fastening is obtained, but without welds and therefore removable when necessary.

[0034] In the preferred embodiment of the invention, the new modular chair comprises two of said crosspieces, respectively constrained between the two front legs and the two rear legs. The frame thus comprises two uprights in the shape of an upturned U positioned side by side and two crosspieces, of which one is solidly attached between the front legs of the two U-shaped section bars and the other is solidly attached between the rear legs of the two U-shaped section bars, and wherein said crosspieces also serve for supporting the seating panel and are thus positioned in the upper part of the U-shaped section bars.

[0035] The upper flat part of the U-shaped section bar, if raised from the seat, can also serve as an armrest or a support for armrests or other accessories.

[0036] The characteristics of the new modular chair will be highlighted in greater detail in the following description with reference to the drawings that are attached as non-limiting examples.

[0037] Figures 1 and 2 show a side and a front view of a possible embodiment of the new modular chair completely assembled.

[0038] Figures 3 and 4 show in detail the procedure for fixing the stiffening crosspieces (2) to the legs (3), using a through screw (4) inserted in a suitable widened portion with circular cross section (2.2), threaded inside, of the end (2.1) of the crosspiece (2).

[0039] Figure 5 shows the crosspiece (2) with the ends (2.1) deformed by compression, with elongated section having a widened portion with circular cross section (2.2) in a preferably intermediate position and threaded inside for screwing the screw (4).

[0040] In the preferred embodiment of the invention shown in Figures 1 and 2 the new modular chair comprises one pair of uprights (3.3) in the shape of an upturned U, each comprising a tubular element defining two supporting legs (3) and one or more stiffening crosspieces (2) interposed horizontally between the corresponding front (3a) and rear legs (3b), in the upper part of said U-shaped uprights (3.3).

[0041] Each one of said crosspieces (2), for example, has a substantially circular or rectangular cross section and is deformed at both ends (2.1), where it has elongated section with at least one widened portion with circular cross section (2.2) in a preferably intermediate position, threaded inside for screwing at least one screw (4).

[0042] Each one of said deformed ends (2.1) is suited to be inserted in an apposite slotted hole (3.2) with corresponding shape obtained in said legs (3), and the insertion of said ends (2.1) is limited by at least one expansion (2.3) of the section of the crosspiece (2).

[0043] Each one of said legs (3) is provided, in opposite position with respect to said slotted hole (3.2), with at least one through hole (3.1) for the insertion of at least one screw (4) that can be screwed in said circular threaded widened portion (2.2) of the deformed end (2.1) of the crosspiece (2) (figure 4). Each leg (3) is thus held on the interposed crosspiece (2), which therefore is fixed in horizontal position.

[0044] Screwing the screw (4) in said circular widened portion (2.2) of the end (2.1) of the crosspiece (2) inserted in the corresponding slotted hole (3.2) stretches the crosspiece (2) towards the leg (3).

[0045] Said crosspieces (2) also support at least one panel (1) serving as a seat, wherein said panel (1) is fixed to said crosspieces (2) directly or indirectly through fixing elements, for example of known type, like screws or similar elements.

[0046] According to the invention said new chair may also comprise one or more further L-shaped section bars

(5), wherein the base (5.1) is constrained to one or both of said crosspieces (2) and/or said legs (3) and/or said seating panel (1), while the vertical segment (5.2) is suitable for fixing at least one panel (6) of the backrest.

[0047] Therefore, with reference to the above description and the attached drawings, the following claims are expressed.

Claims

1. Chair or stool or furniture accessory with seat (1), **characterized in that** it comprises:

- at least one pair of uprights (3.3) positioned side by side, each comprising at least one U-shaped tubular element forming two supporting legs (3), and wherein each one of said legs (3) of each upright (3.3) is provided, on one side, with at least one substantially circular through hole (3.1) and, in symmetrically opposite position, with at least one further slotted hole (3.2);
- one or more stiffening crosspieces (2) interposed between corresponding legs (3) of opposing uprights (3.3), each one comprising at least one tubular element deformed by compression at the ends (2.1) to define a substantially elongated section with at least one widened portion with circular cross section (2.2), in intermediate position, for inserting and screwing at least one threaded and/or self-threading screw (4);

each leg (3) of each upright (3.3) being made integral with the end (2.1) of at least one crosspiece (2) through the insertion of said through screw (4) in said through hole (3.1), obtained in the leg (3), and in said widened portion with circular cross section (2.2) of the end (2.1) of the crosspiece (2) itself, at least partially inserted in said slotted hole (3.2) of the leg (3), and wherein screwing said screw (4) stretches the crosspiece (2) towards said leg (3).

2. Chair or stool or furniture accessory with seat (1) according to the previous claim, **characterized in that** each one of said crosspieces (2) comprises at its ends (2.1) at least one expansion (2.3), suited to limit the insertion of said ends (2.1) in said slotted hole (3.2) obtained in said legs (3) of said crosspieces (3.3).

3. Chair or stool or furniture accessory with seat (1) according to the previous claims, **characterized in that** the flat portion (3c) of said uprights (3.3) in the shape of an upturned U also serves as an armrest and/or a support for armrests and/or other accessories.

4. Chair or stool or furniture accessory (1) according to

the previous claims, **characterized in that** it comprises one or more variously shaped section bars (5), comprising at least one substantially horizontal part (5.1) suited to be constrained, through fixing means or other means, to one or more of said crosspieces (2) and/or of said legs (3), and at least one substantially vertical part (5.2) to which it is possible to constrain at least one panel (6) serving as a backrest and/or another element serving as an armrest.

5. Chair or stool or furniture accessory with seat (1) according to the previous claim, **characterized in that** said seating panel (1) rests on one or more of said horizontal parts (5.1) of section bars (5) that are in turn interposed and held between said seating panel (1) and said crosspieces (2).

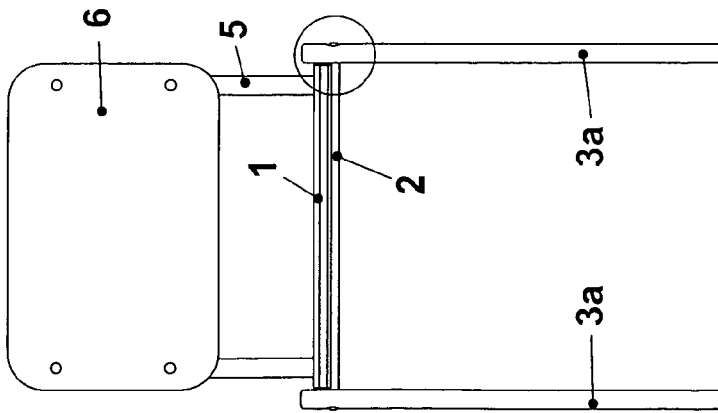


Fig. 1

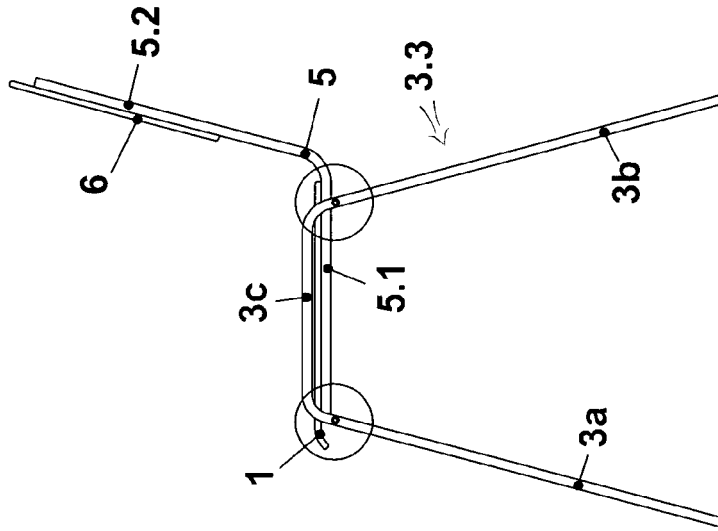


Fig. 2

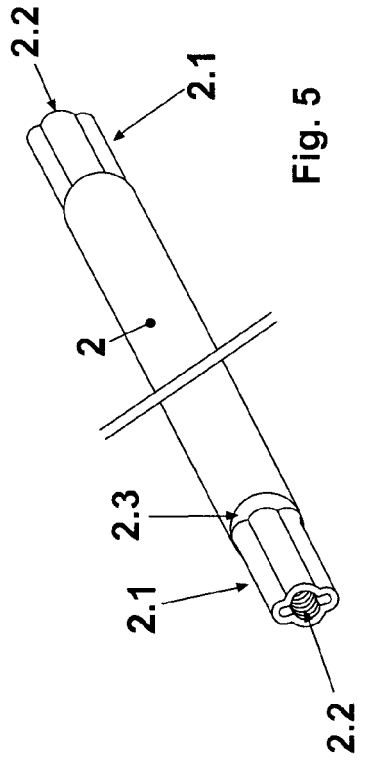


Fig. 5

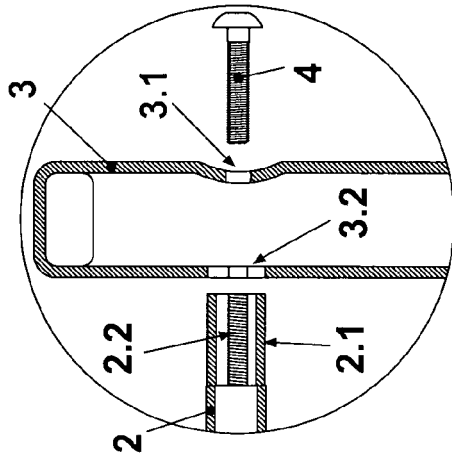


Fig. 3

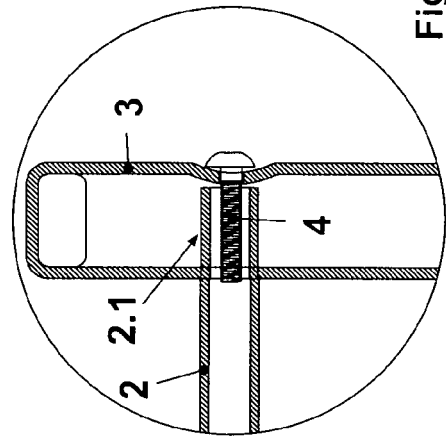


Fig. 4



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The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 30 August 2007	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			

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

EP 07 42 5146

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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