Sofa that can assume different arrangements

A structure comprising a back (5) and arms (3) is connected to the seat (1) by vertical parallel-motion mechanisms (7,9,14) so as to assume two different positions, one forward and one pushed back with respect to the seat (1). The back (5) is articulated to assume several differently inclined arrangements by articulation (16).
Description

[0001] The subject of the invention is a sofa that, with a simple structure and simple maneuvering, varies the arrangement between the seat and the back with arms, thereby providing considerable advantages over currently known solutions.

[0002] The sofa - comprising a seat, a back and arms - essentially has a back/arm structure that is connected to the seat so as to assume two different positions, one forward and one pushed back with respect to the seat.

[0003] In practice, said structure is connected to the seat by vertical parallel-motion mechanisms so as to assume the two different positions, one forward and one pushed back with respect to the seat.

[0004] The back is articulated to said structure so as to assume several differently inclined arrangements, independently of said positions assumed by the structure.

[0005] The parallel-motion mechanisms are advantageously formed by curved lever arms, to make them less visible. At least the parallel-motion mechanisms associated with the arms are guided in slots formed by a combination of protuberances on the seat underneath said arms.

[0006] The back may consist of at least two sections that can be adjusted independently.

[0007] The components of the parallel-motion mechanisms at the two arms are rigidly connected by the articulation shafts, to one of which is attached, in an intermediate position, a lever curved in the opposite direction to the levers at the arms.

[0008] The invention will be more clearly understood on perusal of the description and attached drawing, which shows a practical non-limiting embodiment of said invention. In the drawing:

Figures 1 and 2 show, in perspective view, the sofa in two different arrangements;

Figure 3 shows a view on III-III of Figure 1, in partial section;

Figure 4 shows, in perspective view, an isolated detail; and

Figures 5 and 6 show a cross section on V-V in the two arrangements shown in Figures 1 and 2.

[0009] According to the illustration in the attached drawing, 1 is the general reference given to a seat with a support frame 1A and an elastic thickness 1B, that can be produced in one of the ways technically known for this purpose. The seat 1 is fixed with respect to the upper part comprising the arms and back, which is movable. This upper part is in the form of a horizontal U-shaped structure comprising the two arms 3 and an intermediate part to which are articulated to back sections 5.

[0010] More particularly, two lever arms 7 and 9, hinged to the frame 1A at 10 and 12 respectively, and curved in two opposite directions for esthetic purposes, are articulated to each end of the frame 1A of the seat 1. These two lever arms 7 and 9 form part of a parallel-motion mechanism formed at each arm 3 and comprising extensions 7A and 9A together with a horizontal lower part 14 articulated to said extensions, and upper articulations 16 and 18 for articulation to the U-shaped structure 20 of the arms. This arm structure 20 comprises a stiffening bar 22 and also, at the articulations 16, another bar 24 able to rotate around its own axis. This bar 24 bears the frame 26 of the two back sections 5. The bar 22 has, in an intermediate position between the two lever arms 7, a lever arm 27 for engaging the oscillating bar 24 in an intermediate position between the two back sections 5. The curve of the lever arms 7 and 9 and of the intermediate lever arm 27 have been designed to be concealed as far as possible in the two arrangements that the components of the sofa 1, 3, 5 can assume, as seen in particular in Figures 5 and 6. In the base 1, under the arms 3, there are slot-type guide means 32 (see in particular Figures 3, 5 and 6) to ensure that these lever arms 7 and 9 are safely guided, independently of the stiffness that may be obtained by their articulations. The intermediate lever 27 does not require such guidance, and extends in the slot formed between the two seat cushions.

[0011] Each of the back sections 5 may be adjusted in inclination, from an arrangement in which it is completely horizontal and coplanar with the arms 3 to arrangements in which it is inclined to a greater or lesser degree, as required. This is achieved by adjustment mechanisms of the type known per se and generically indicated with the number 34. Such mechanisms generally work by raising the back section in successive increments, which can be cancelled out by bringing it all the way into the vertical position, after which the back section can be folded down into the position in which it is coplanar with the arms.

[0012] The arms may stay slightly raised from the surface of the seat, both in the forward position of Figures 1 and 5 and in the other position of maximum separation from the front part of the seat, as shown in Figures 2 and 6. The guide slots 32 may have an appropriate coating, as may the lever arms 7 and 9 that slide in said slots 32.

[0013] The metal components of the various frames will be made in such a manner as to ensure maximum stiffness and also to provide the stops needed by the parallel-motion mechanism systems so as to cause the arms and the back sections to take up one or other of the two positions, forward or pushed back.

Claims

1. A sofa that can assume different arrangements, comprising a seat, a back and arms, characterized
in that a structure (3; 5, 5) comprising a back (5, 5) and arms (3) is connected to the seat (1) so as to assume different positions, one forward and one pushed back with respect to the seat.

2. Sofa according to claim 1, characterized in that said structure (3; 5, 5) is connected to the seat (1) by vertical parallel-motion mechanisms (7; 9; 14) so as to assume two different positions, one forward and one pushed back with respect to the seat.

3. Sofa according to claim 1 or 2, characterized in that the back (5, 5) is articulated to said structure so as to assume several differently inclined arrangements, independently of said positions assumed by the structure.

4. Sofa according to at least one of the preceding claims, characterized in that the parallel-motion mechanisms (7; 9; 14) are formed by curved lever arms (7, 9), to make them less visible.

5. Sofa according to at least one of the preceding claims, characterized in that at least the lever arms (7, 9) of the parallel-motion mechanisms (7; 9; 14) associated with the arms (3) are guided in slots (32) formed by a combination of protuberances on the seat (1) underneath said arms.

6. Sofa according to at least one of the preceding claims, characterized in that the back consists of at least two sections (5, 5) that can be adjusted independently.

7. Sofa according to at least one of the preceding claims, characterized in that the components of the parallel-motion mechanisms (7; 9; 14) at the arms (3) are rigidly connected by a bar (24), to which is attached, in an intermediate position, a curved lever (27) for supporting the articulation.

8. Sofa that can assume different arrangements, all as described above and illustrated by way of example in the attached drawing.
## DOCUMENTS CONSIDERED TO BE RELEVANT

<table>
<thead>
<tr>
<th>Category</th>
<th>Citation of document with indication, where appropriate, of relevant passages</th>
<th>Relevant to claim</th>
<th>CLASSIFICATION OF THE APPLICATION (Int.Cl.)</th>
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<tbody>
<tr>
<td>X</td>
<td>EP 1 118 295 A (FRANK SITZMOEBEL GMBH) 25 July 2001 (2001-07-25) * column 12, lines 29-31; figures 1-56 * -----</td>
<td>1,3,6,8</td>
<td>A47C17/14 A47C17/16</td>
</tr>
<tr>
<td>A</td>
<td>US 2 570 401 A (STEIN RICHARD G) 9 October 1951 (1951-10-09) * column 2, lines 47-52 - column 3, lines 1-3; figures 1-5 * -----</td>
<td>1,2,4,7</td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>FR 747 908 A (DERÉS) 26 June 1933 (1933-06-26) * page 1, lines 32-63 - page 2, lines 25-33; figures 1-8 * -----</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>DE 928 366 C (NO SAG SPRING COMPANY) 31 May 1955 (1955-05-31) * the whole document * -----</td>
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The present search report has been drawn up for all claims.

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<th>Phase of search</th>
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<th>Examiner</th>
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<tr>
<td>The Hague</td>
<td>16 July 2004</td>
<td>Vollering, J</td>
</tr>
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<thead>
<tr>
<th>Patent document cited in search report</th>
<th>Publication date</th>
<th>Patent family member(s)</th>
<th>Publication date</th>
</tr>
</thead>
<tbody>
<tr>
<td>US 2570401 A</td>
<td>09-10-1951</td>
<td>NONE</td>
<td></td>
</tr>
<tr>
<td>FR 747908 A</td>
<td>26-06-1933</td>
<td>NONE</td>
<td></td>
</tr>
<tr>
<td>DE 928366 C</td>
<td>31-05-1955</td>
<td>NONE</td>
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</table>

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