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(71) Applicant: **Unimax S.r.l.**
20036 Meda MI (IT)

(72) Inventor: **Manganini, Matteo**
22060 Cabiate Co (IT)

(74) Representative: **Concone, Emanuele et al**
Società Italiana Brevetti S.p.A.
Via Carducci 8
20123 Milano (IT)

(54) Sofa-bed which can take a "chaise-longue" configuration

(57) A sofa-bed includes a base (B) containing a foldable bed divided into three sections (S1, S2, S3) mutually connected so as to extend in a direction orthogonal with respect to the width of the sofa-bed; the first (S1) of said three sections is hinged through hinges (H) to the second section (S2) which is in turn connected through two pairs of side levers (E, F) to the third section (S3) which is provided with front legs (G). In the sofa configuration the back is formed by the first section (S1) and the seat is formed by the third section (S3) which is arranged above the second section (S2), stop means being further provided to lock the back in one or more inclined positions so as to take a "chaise-longue" configuration intermediate between the sofa configuration and the bed configuration, i.e. with the inclined back and the seat extended to act as a support for the legs.

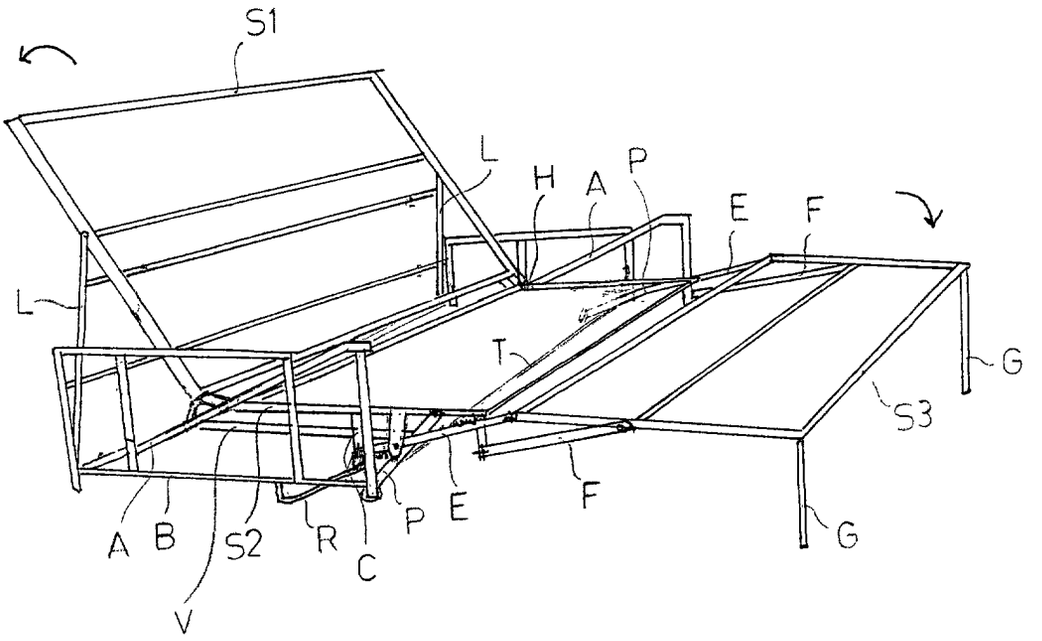


FIG. 2

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Description

[0001] The present invention relates to sofa-beds, and in particular to a sofa-bed which is capable of taking a "chaise-longue" configuration which in practice is intermediate between the sofa and bed configurations. It should be noted that what will be said hereafter though specifically referring to a sofa-bed also applies to an armchair-bed which simply has a smaller width.

[0002] It is known that there are various kinds of sofas or armchairs whose structure can take a stretched configuration by inclining the back through a forward sliding of the seat, to which the bottom of the back is connected. In some cases there is also provided a mechanism for raising the back to make up for the lowering of its top portion caused by the forward sliding. Examples of such sofas can be found in the Italian patent n.1.275.172 and in the unpublished Italian application n.MI99A000743, both in the name of the present applicant.

[0003] But such a sofa in general can not be transformed into a bed, other than in the case of a sofa-bed with a so-called "booklike" structure wherein the seat and the back can basculate and get aligned along a horizontal plane. However in this case the length of the bed is defined by the width of the sofa, whereby such a structure can be applied only in the case of sofas at least 180 cm wide.

[0004] On the contrary, in conventional sofa-beds the width of the sofa substantially coincides with the width of the bed, in that the bedspring consists of three sections mutually hinged which are pulled out from the base of the sofa-bed and extend in a direction orthogonal with respect to the width of the sofa-bed. Therefore it is possible to make armchair-beds and sofa-beds of different widths according to specific room requirements.

[0005] In this type of structure the back is usually integral with the base of the sofa and therefore can not be inclined. Moreover, the three sections making up the bedspring can not take any intermediate position between that of complete disappearance, when they are folded inside the base, and that of complete extension and alignment when they are arranged to form the bed.

[0006] Therefore the object of the present invention is to provide a sofa-bed or an armchair-bed which overcomes the above-mentioned limits of prior art structures. This object is achieved by means of a sofa-bed or an armchair-bed having the characteristics disclosed in the main claim. Other advantageous features are specified in the dependent claims.

[0007] The main advantage of the present sofa-bed is exactly that of being able to take a "chaise-longue" configuration which is intermediate between the completely closed sofa configuration and the completely open bed configuration. In other words, in this configuration the back is inclined and the seat is already extended to act as a support for the legs, so as to provide a greater relax for the user without having to take up the room of the completely extended bed.

[0008] Another advantage of this sofa-bed stems from the fact that its structure is quite simple and therefore cheap and light, and since the opening takes place in a direction orthogonal with respect to the width like in conventional sofa-beds, it is also possible to select the preferred width starting from the width of an armchair-bed.

[0009] Further advantages and characteristics of the sofa-bed according to the present invention will be clear to those skilled in the art from the following detailed description of an embodiment thereof, with reference to the annexed drawings wherein:

Fig.1 is a diagrammatic perspective view of the sofa-bed in the closed configuration, wherein for the sake of simplicity there is illustrated only the essential structure without all other accessory elements (springs, bedspring, mattress, covering, etc.);
Fig.2 is a view similar to the preceding one, wherein the sofa-bed is shown in a "chaise-longue" configuration;
Fig.3 is a view similar to fig.1, wherein the sofa-bed is partially extended; and
Fig.4 is a view similar to fig.1, wherein the sofa-bed is shown in the bed configuration.

[0010] With reference to said figures, there is seen that a sofa-bed according to the present invention substantially includes a base B containing a foldable bed divided into three sections S1, S2, S3 mutually connected. Base B is made up of two sides joined by crossbars, and in each side there is arranged a guide A having an upward inclination from the rear end towards the front end.

[0011] Section S1 forms the sofa back and is connected to base B through side levers L, whose top and bottom ends are respectively pivoted at about the middle of section S1 and at the rear bottom comer of base B. Moreover, section S1 is hinged to the adjacent section S2 through hinges H which slide along guides A by means of pins engaged in tracks formed in the internal side of said guides A.

[0012] In the sofa configuration illustrated in fig.1 the central section S2 is arranged inside base B, on which it rests through a foot C provided with an end roller and housed in a ramp seat R having the same inclination as guides A. On section S2 there is further pivoted at a forward position a pair of legs P, joined by a crossbar T, whose rotation is controlled by a rod V (better seen in figs.3 and 4). Said rod V is pivoted at its front and rear ends respectively to one of said legs P and to a lug integral with section S1 close to hinge H.

[0013] In this configuration the sofa seat is formed by the third section S3 which is arranged above section S2 and connected thereto through two pairs of side levers E, F. More specifically, a first pair of levers E is pivoted between the rear end of section S3 and a bottom lug located at about 1/3 from the forward end of the central section S2; while a second pair of levers F is pivoted

between a position about in the middle of section S3 and a bottom lug located at the forward end of the central section S2. Moreover, section S3 is provided with a pair of front fixed legs G.

[0014] On the basis of the above description and of the relevant figures, the operation of the present sofa-bed is readily understood.

[0015] Starting from the closed configuration of fig.1, there is seen that in order to reach the "chaise-longue" configuration of fig.2 it is sufficient to pull the seat upwards and forward. In practice, section S3 is pulled so as to advance substantially through a translation parallel with respect to section S2 due to the rotation of the connecting levers E, F around their respective pivots. In this forward motion section S2 is also pulled forward and rises to align with section S3, moving up along ramp R through foot C and according to the inclination of guide A followed by hinge H. The movement of hinge H obviously causes also the inclination of section S1 forming the back.

[0016] The precise angle of inclination of the back is determined by one or more stops (not illustrated) which allow the selection of the position preferred by the user. These stops may be made in different ways well known to a person skilled in the art, e.g. through a stop pin which blocks foot C, or by using in hinge H a snap mechanism with one or more positions like those used in the booklike sofa-beds described in the introductory portion of the specification. If the structure is then to be completely extended to the bed configuration it is necessary to overcome the stop and take the back to the horizontal position.

[0017] It is also possible to go directly from the sofa configuration to the bed configuration, by pulling forward and upwards directly section S2 until hinge H reaches the front end of guide A (fig.3). During this movement, section S1 is horizontally aligned with section S2 and rod V rotates downwards legs P. In order to reach the complete extension illustrated in fig.4 it is sufficient to pull and raise section S3 so as to align it with the other two sections to form the bed plane.

[0018] Obviously the return to the sofa configuration just requires to perform the reverse operation with respect to the one described above.

[0019] It is clear that the above-described and illustrated embodiment of the sofa-bed according to the invention is just an example susceptible of various modifications. In particular, the exact number, shape and arrangement of the elements described above may be somewhat changed according to the size or to other manufacturing requirements. For example, rod V could be located on the right or on the left or on both sides (getting rid in this case of crossbar T), and the same applies to foot C and ramp R.

Claims

1. Sofa-bed or armchair-bed including a base (B) containing a foldable bed divided into three sections (S1, S2, S3) mutually connected so as to extend in a direction orthogonal with respect to the width of the sofa-bed, **characterized in that** the first (S1) of said three sections is hinged through hinges (H) to the second section (S2) which is in turn connected through two pairs of side levers (E, F) to the third section (S3) which is provided with front legs (G), in the sofa configuration the back being formed by the first section (S1) and the seat being formed by the third section (S3) which is arranged above the second section (S2), stop means being further provided to lock the back in one or more inclined positions intermediate between the sofa configuration and the bed configuration.

2. Sofa-bed or armchair-bed according to claim 1, **characterized in that** the hinges (H) which connect the first section (S1) to the second section (S2) move along an inclined plane through pins engaged in tracks formed on the internal side of guides (A) located in the sides of the base (B) and having an upward inclination from the rear end towards the front end.

3. Sofa-bed or armchair-bed according to claim 1 or 2, **characterized in that** the first pair of levers (E) which connects the second section (S2) to the third section (S3) is pivoted between the rear end of the third section (S3) and a bottom lug located at about 1/3 from the forward end of the second section (S2), while the second pair of levers (F) is pivoted between a position about in the middle of the third section (S3) and a bottom lug located at the forward end of the second section (S2).

4. Sofa-bed or armchair-bed according to one or more of the preceding claims, **characterized in that** the first section (S1) is connected to the base (B) through side levers (L) whose top and bottom ends are respectively pivoted at about the middle of the first section (S1) and at the rear bottom comer of the base (B).

5. Sofa-bed or armchair-bed according to one or more of the preceding claims, **characterized in that** on the second section (S2) there is pivoted at a forward position a pair of legs (P), joined by a crossbar (T), whose rotation is controlled by a rod (V) which is pivoted at its front and rear ends respectively to one of said legs (P) and to a lug integral with the first section (S1) close to the hinge (H) connecting it to the second section (S2).

6. Sofa-bed or armchair-bed according to one or more

of the preceding claims, **characterized in that** the second section (S2) is provided with a foot (C) having an end roller to slide along a ramp (R) formed in the base (B) and having the same inclination as the side guides (A).

7. Sofa-bed or armchair-bed according to one or more of the preceding claims, **characterized in that** the stop means consist of one or more stop pins arranged on the base (B).

8. Sofa-bed or armchair-bed according to one or more of the preceding claims, **characterized in that** the stop means consist of a snap mechanism with one or more positions arranged in the hinge (H) connecting the first section (S1) to the second section (S2).

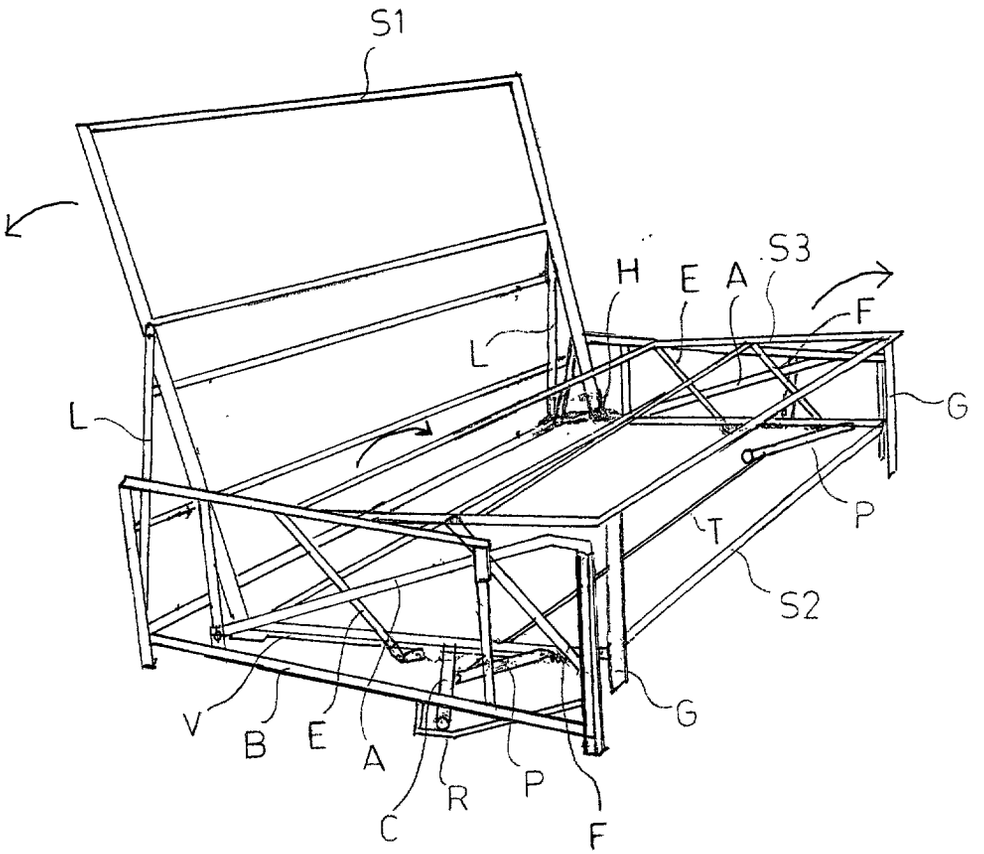


FIG. 1

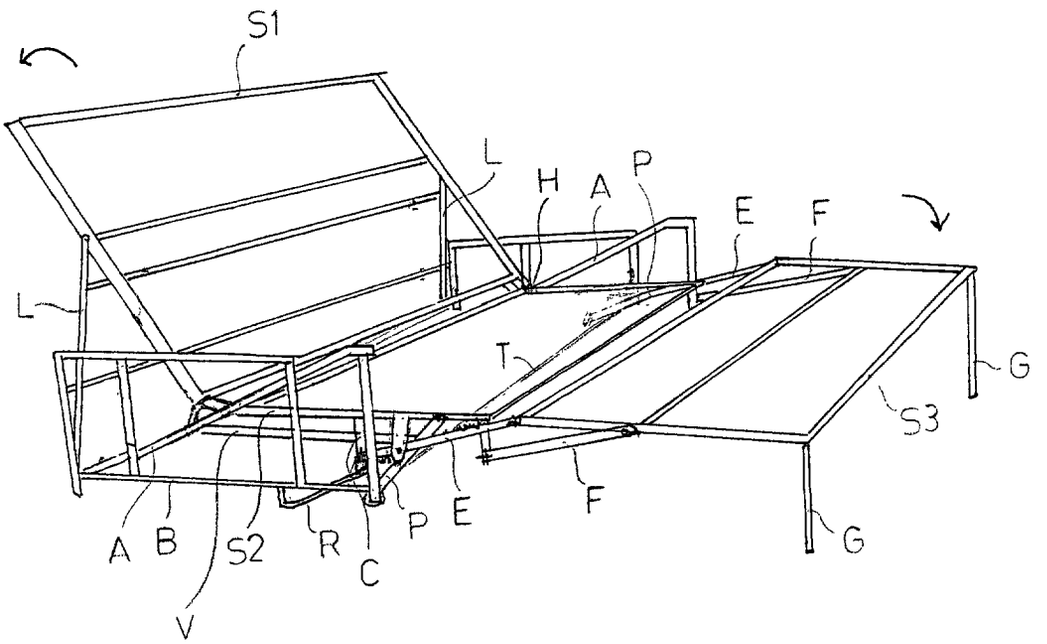


FIG. 2

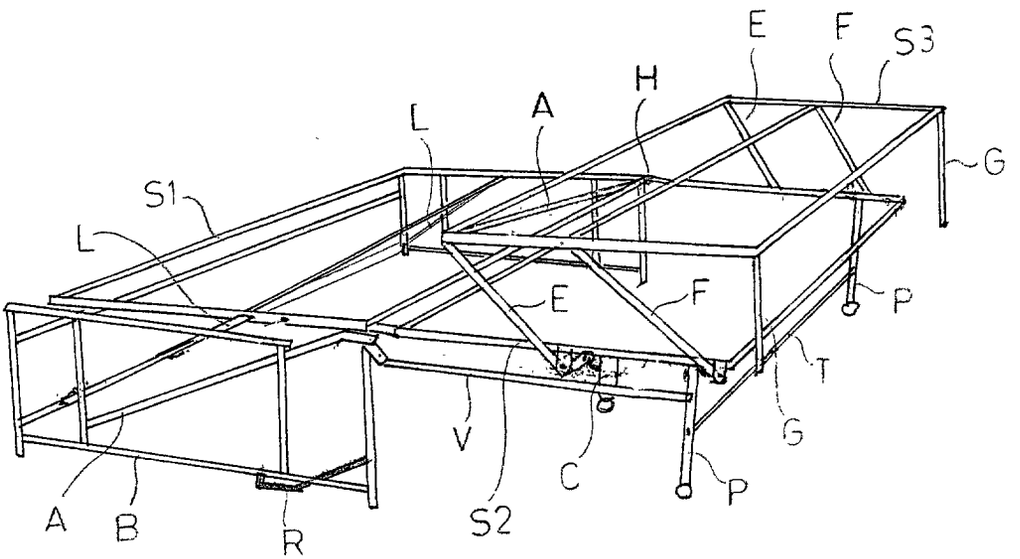


FIG. 3

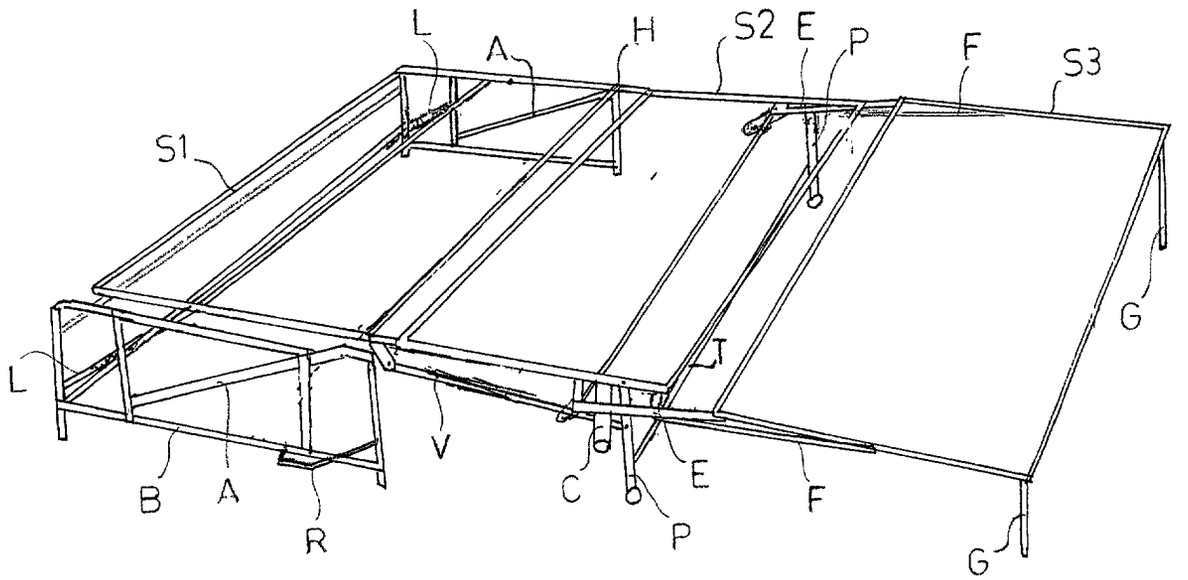


FIG. 4

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EUROPEAN SEARCH REPORT

Application Number
EP 01 83 0079

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
A	FR 616 180 A (ABRAHAM AZRAK) 25 January 1927 (1927-01-25) * page 1; figures *	1	A47C17/16
A	GB 192 831 A (GEORGE HENRY JOSEPH OSBORNE) 15 February 1923 (1923-02-15) * page 2, column 2; figures *	1	
A	DE 199 44 382 C (STELLA MOEBELWERK GMBH & CO KG) 11 January 2001 (2001-01-11) * abstract; figures 1,4,5 *	1	

TECHNICAL FIELDS SEARCHED (Int.Cl.7)

A47C

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	4 July 2001	Amghar, N

CATEGORY OF CITED DOCUMENTS

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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 01 83 0079

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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