

COMMONWEALTH OF AUSTRALIA Patents Act 1952

DECLARATION IN SUPPORT OF AN APPLICATION FOR A PATENT OR PATENT OF ADDITION

(1) Here insert (in full) Name of Company

In support of the Application made by (1) FELSADEN PTY LIMITED

(2) Here insert Title of Invention.

for a patentfor an invention entitled: (2)

CONVERTIBLE SOFA-BED

(3) Here insert full Name and Address of Company Official authorised to make declaration.

I, (3) PAUL WILLIAMS of 'MOBEETLY' ENFIELD ST (EAST) PENRITH N.S.W. 2750

do solemnly and sincerely declare as follows:

1. I am authorized by (1) FELSADEN PTY LIMITED

the applicant

for the patentto make this declaration on its behalf.

2. (4) Paul WILLIAMS, of "Mobeetly", Enfield Street, East, Penrith, New South Wales, 2750

is/are the actual inventor(s) of the invention, and the facts upon which (1)

FELSADEN PTY LIMITED

is entitled to make the application are as follows:—

The said (1) FELSADEN PTY LIMITED

is the assignee of the said (5) PAUL WILLIAMS

DECLARED at PENRITH

this 29th day of June 1987

(6) Signature.

(6) [Handwritten Signature]

To: THE COMMISSIONER OF PATENTS.

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(56) Prior Art Documents
A.J 41844/85 A47C 17/16
A.U 28592/84 A47C 17/16

(57) Claim

1. A convertible sofa comprising a base, a back and a mechanism connecting the back to the base whereby the sofa can be selectively converted to each of a double bunk and a double bed.

PCT

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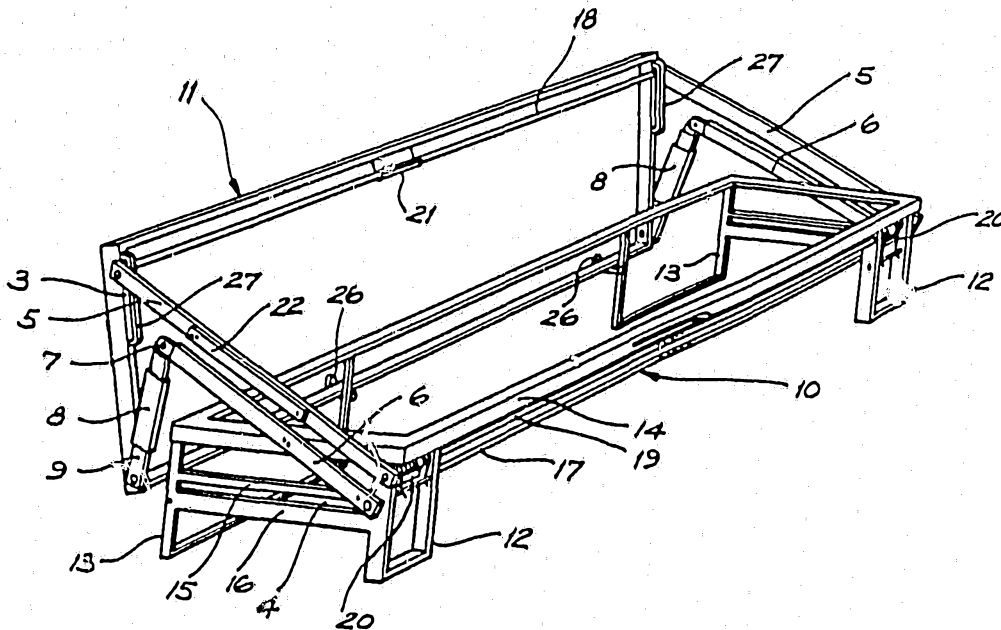
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(54) Title: CONVERTIBLE SOFA-BED



(57) Abstract

A sofa which is selectively convertible into a double bed or a double bunk consists of a base (10) and a back (11) which constitutes the sofa back, part of the double bed and the upper bunk according to the mode of the sofa. The back (11) and base (10) are connected by a mechanism which includes front posts (5) and rear posts (6, 9) which are collapsible and slidable with respect to the base (10). The front posts (5) are slidable with respect to the back (11) to achieve the double bunk mode.

CONVERTIBLE SOFA-BEDFIELD OF INVENTION

This invention relates to convertible furniture and more particularly to a sofa or the like that may be converted to a bed.

BACKGROUND ART

Sofas which convert to a bed are well known - see, for example U.S. Patents 3,310,815; 3,191,194; 3,858,254; 3,736,601 and 2,835,901.

Such prior art sofa beds suffer from a number of disadvantages including the difficulty of effecting conversion. For example, prior art convertible sofas are not normally operable by a single person and even if they are, the task is a cumbersome one. Furthermore, access must usually be provided to either the back or the ends of the sofa to effect the conversion to the bed.

It is an object of the invention to provide an improved convertible sofa having a mechanism which permits simple and rapid conversion to a bed. It is a further object of the invention to provide a sofa which may be converted to a double bunk. Yet another object of the invention is to provide a sofa which may be selectively converted to a double bunk or to a double bed. It is an additional object of the invention to provide a sofa which may be converted to a double bed.

DISCLOSURE OF THE INVENTION

In accordance with one aspect of the invention there is provided a convertible sofa comprising a base, a back and a mechanism connecting the back to the base characterised in that by action of the mechanism the sofa can be selectively
5 converted to either a double bunk or a double bed.

BRIEF DESCRIPTION OF THE DRAWINGS

In order that the invention may be more readily understood and put into practical effect, reference will be made to the accompanying drawings in which:-
10

Fig. 1 is a side elevational view of a convertible sofa according to one embodiment of the invention,

Figs. 2 to 4 show the conversion of the sofa in Fig. 1 to a double bunk; and,

Figs. 5 to 7 show the conversion of the sofa in



Fig. 1 to a double bed,

Fig. 8 is a perspective view of a convertible sofa
(without upholstery) according to a second
embodiment of the invention,

5 Fig. 9 is a view of the sofa shown in Fig. 8
converted to a double bunk,

Fig. 10 is a view of the sofa shown in Fig. 9
converted to a double bed,

Fig. 11 is a side elevational view of a convertible
sofa according to a third embodiment of the
invention,

Fig. 12 is an end view of the sofa shown in Fig. 1
converted to a double bunk, and,

Fig. 13 is an end view of the sofa shown in Fig. 1
converted to a double bed.

The sofa shown in Fig. 1 has a base 1 of any convenient
kind and a back 2 having a front face 2a and a rear face
2b. The base 1 and the back 2 are connected together by a
mechanism at each end of the sofa only one of which is shown
in Fig. 1.

The mechanism includes a front post or member 5
connected between the front of the base 1 and the top of the
back 2. The lower end of the front post 5 is connected to
the base 1 at or adjacent to the front end of a slideway 4
formed in or mounted within the end of the base 1. The upper
end of the front post 5 is connected to the back 2 at or
adjacent to the top of a slideway 3 formed in or mounted

within the end of the back 2.

The mechanism also includes a rear beam or post which consists of a first beam 6 and a second beam 9 connected together by a joint 7. The lower end of the second beam 9 is connected at or adjacent to the lower end of the back 2 and the lower end of the first beam 6 is slidable within the slideway 4 of the base 1. A sleeve 8 on the second beam 9 can be moved over the joint 7 to lock the beams 6 and 9 into linear alignment.

In order to convert the sofa to a double bunk, the back 2 of the sofa is pulled forwardly and upwardly as indicated by arrow A in Fig. 2. It will be appreciated that the action may be carried out by a person standing at the front of the sofa. If need be (i.e. if the design of the post and slideway arrangement so requires it) the post 5 is locked into its correct position by an automatically acting spring loaded device within the base 1.

When the back has been moved sufficiently to bring the beams 6 and 9 into alignment (see Fig. 3), the sleeve 8 is located over the joint 7 to lock the beams 6 and 9 into linear alignment. This locking action occurs simultaneously at each end of the sofa. As soon as the sleeve 8 is in its locking position, the lower end of beam 6 is pushed rearwardly along the slideway 4 until it is automatically locked at the rear end of the slideway 4. The mechanism at each end of the sofa may be connected together by a pulley and cable system to ensure simultaneous movement of both

mechanisms.

The final configuration of the double bunk is shown in Fig. 4 where it will be noted that the top of the base 1 constitutes the upper bed which is supported above the lower bed formed by the base 1 by the front posts 5 and rear posts comprised of members 6 and 9. Both the base 1 and the back 2 are appropriately upholstered to provide a comfortable sofa and a comfortable bed.

The conversion of the sofa to a double bed is shown in Figs. 5 to 7. The lower end of the back 2 is pulled outwardly away from the base 1 in the direction of arrow B and the top of the back 2 is rotated downwardly in the direction of arrow C as shown in Fig. 5.

The base 1 has a recess portion 1a which initially receives the lower portion of the back 2 and which receives the top portion of the back 2 as shown in Fig. 6. As indicated, the post 5 moves outwardly in slideway 3 so that the top portion of the back 2 may be supported by the recess 1a. The rear 2b of the base 2 is then co-planar with the top of the base 1.

Finally, the lower end of beam 6 is moved outwardly in the slideway 4 until beam 9 is locked in the vertical position shown in Fig. 7 to provide a support leg. The beams of the mechanism at the other end of the sofa are moved simultaneously through the action of a cable and pulley system which may be part of or additional to the abovementioned cable and pulley system. Preferably, the

front post 5 and the beams 6 and 9 are automatically locked into the position shown in Fig. 7.

The mechanisms may be spring biased to assist the movement of the back to and from its selected position. Needless to say, the conversion of either the double bunk or the double bed back to the sofa necessitates a reversal of the steps described above.

Although the embodiment of the invention so far described is fully convertible from a sofa to a double bunk or to a double bed, the design may be simply modified so that conversion only to a double bed or to a double bunk is possible. Thus, the invention is to be construed to cover both the single conversion to either a double bunk or to a double bed and the optional conversion to a double bunk or double bed.

A second embodiment of the invention is shown in Figs 8 to 10. This embodiment of the invention is substantially similar to that shown in Figs. 1 to 7 and for the sake of clarity the upholstery has been omitted. As most of the components of the second embodiment are the same or substantially similar to the components of the first embodiment, they carry the same numerals.

The sofa shown in Figs 8 to 10 has a base frame 10 and a movable frame 11 which constitutes the sofa back, the upper bunk or part of the double bed according to the mode of the sofa. The base frame 10 has front and rear legs 12, 13 which depend downwardly from rectangular mattress frame 14. Braces

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15 and 16 which interconnect the legs 12 and 13 are spaced apart to define the slideway 4 which carries a rod 17 which connects the lower ends of the rear post 6.

The lower ends of front post 5 are connected together by a bar 19 that passes through the legs 13. The bar 19 is biased by springs 20 to assist movement of the frame 11. The upper end of the front post 5 is connected to the other post 5 by a bar 18 that moves within slideway 3 formed by the bracket 27.

The movable frame 11 is a rectangular frame that is connected to the base 10 by the front post 5 and the second part 9 of the rear post 6. The sleeve 8 may be positioned above or below the joint 7 and any convenient means may be employed to retain the sleeve in a locked position over the joint 7.

When the sofa is in the mode shown in Fig. 8, the bar 18 is held locked into position by clip 21. Also, when in this mode, the bottom of the frame 11 rests upon brackets 26 extending rearwardly from the base frame 10. When the sofa is in the double bunk mode shown in Fig. 9, stabilizer arms 22 which are pivotally mounted on front post 5 are engaged with pins 23 on the rear posts 6. Also, when in the double bunk mode, the latches 24 engage behind the front posts 5 to hold the latter in a vertical position. The latches 24 are released by lever 25 which is connected to the latches 24 by a cable (not shown).

In the double bunk mode shown in Fig. 10, the front of

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the movable frame 11 is positioned relative to the base frame 10 by means of plates 28.

The modified sofa shown in Figs. 11 to 13 has a base 100 of any convenient kind having a mattress 123 on its top surface and a back 120 having a mattress 124 on its front face. The base 100 and the back 120 are connected together by a mechanism at each end of the sofa only one of which is shown in Fig. 11. The mechanism includes a front member 101 having a first portion 121 connected to the front of the base 100 and a second portion 122 connected to the bottom of the back 120. The member portion 122 is slidable within the member portion 121 so that the front member may be extended as desired. Locking means 103 is provided so as to lock portion 122 relative to portion 121.

A rear post 102 is connected to the rear of the base 100 and to the top of the back 120. Legs 105 are connected to the bottom and top of the back 120.

In order to convert the sofa to a double bunk (Fig. 12), the strut or upright 102 is locked in its vertical position and the bottom of the sofa back 120 is swung outwards and upwards until it is parallel to the base 110. The front member 101 is now vertical and the extension of portion 122 with respect to 121 is locked into position by locking means 103.

The conversion of the sofa to a double bed is shown in Fig. 13. The upright or strut 102 is unlocked and is pivoted forward about its connection 104 to the base 100. The front

member 101 is pivoted in an anti-clockwise direction with the portion 122 extending outwardly from the portion 121 as shown in Fig. 13. The legs 105 are locked into the vertical position when the mattress B is co-planar with the mattress A of the base 100.

In the embodiment shown in Figs. 11 to 13, the front member 101 comprises a gas-filled cylinder and rod assembly and the locking means 103 is a rotatable lock adapted to prevent relative movement of the cylinder and rod when in its locked position.

The sofa requires no fixed upholstery work so that the sofa covering may be washed or replaced as required.

In one form of upholstery, the sofa covering may be removed and used as a quilt for a double bed. The quilt may be unzipped to form two single bed quilts for each of the bunks.

Space for storage of pillows and blankets is available under the sofa - slide out wire drawers may be incorporated in the base.

The mechanism provides for more comfort than prior art sofa-bed actions as there are no bars across the length of the beds. The preferred geometry allows sufficient space between the top and bottom bunks for an average adult to sit without hitting the head against the top bunk.

The basic design geometry allows for considerable detail variation in the finished product so that many models are possible within different price ranges.

Various modifications may be made in details of design and construction without departing from the scope and ambit of the invention.

THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

1. A convertible sofa comprising a base, a back and a mechanism connecting the back to the base whereby the sofa can be selectively converted to each of a double bunk and a double bed.
2. A convertible sofa according to claim 1 wherein the mechanism includes a pair of front posts and a pair of rear posts, said rear posts being collapsible and being pivotally fixed with respect to the back and slidable with respect to the base.
3. A convertible sofa according to claim 2 wherein each rear post consists of first and second members pivotally connected together and moveable locking means for maintaining the rear post in its non-collapsed state.
4. A convertible sofa according to claim 2 or claim 3 wherein the front posts are pivotally fixed with respect to the base and are slidable with respect to the back.
5. A convertible sofa according to claim 1 wherein the mechanism includes a pair of front posts and a pair of rear posts, said front posts being telescopically collapsible and lockable and pivotally fixed with respect to the base and the back.
6. A convertible sofa according to claim 5 wherein each front post comprises a cylinder and rod assembly.

DATED this 5th day of November, 1990.

FELSDEN PTY. LIMITED

Patent Attorneys for the Applicant:

PETER MAXWELL & ASSOCIATES.



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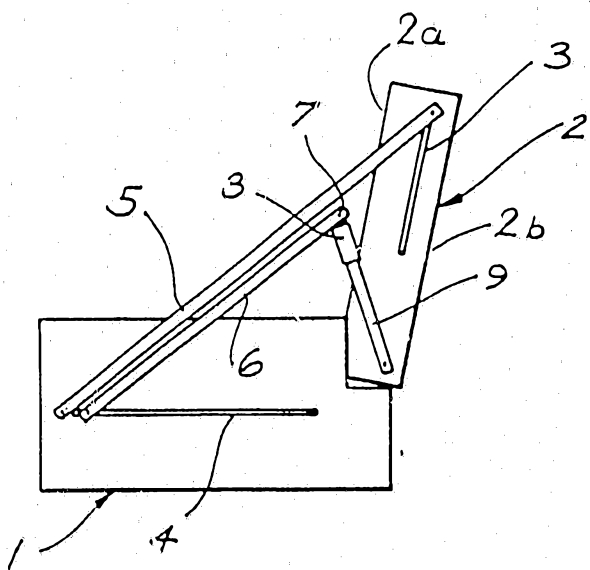


FIG. 1

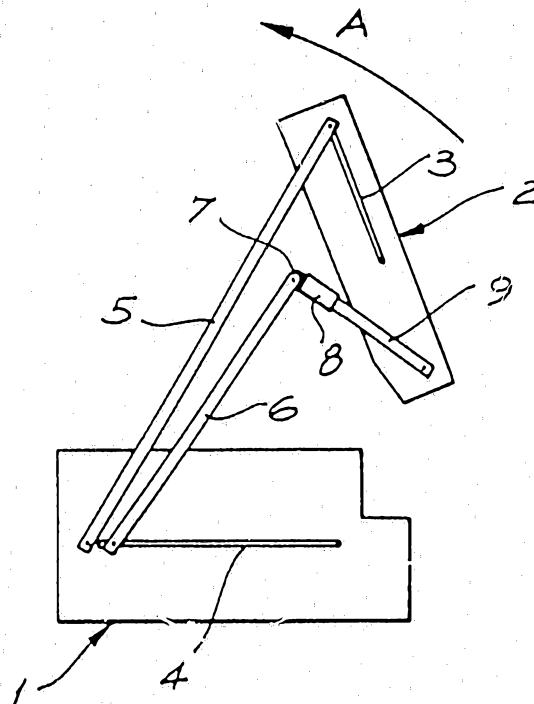


FIG. 2

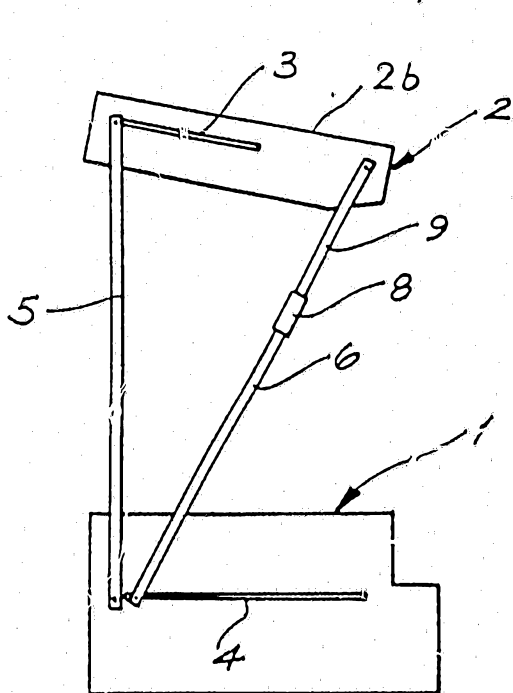


FIG. 3

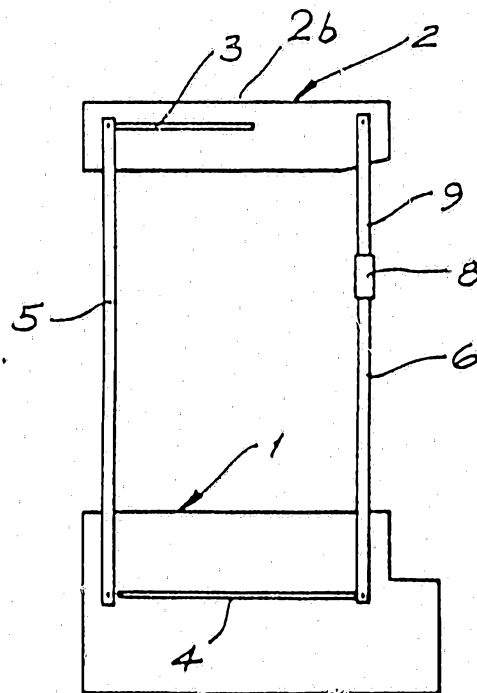


FIG. 4

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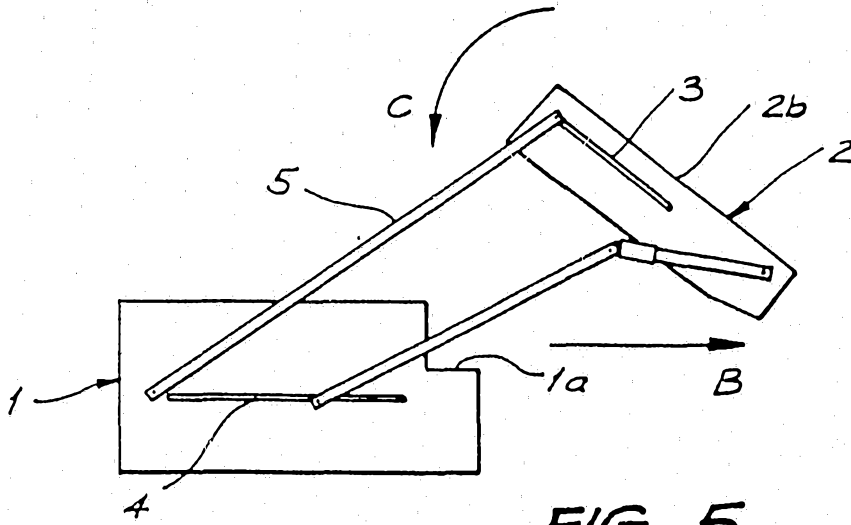


FIG. 5

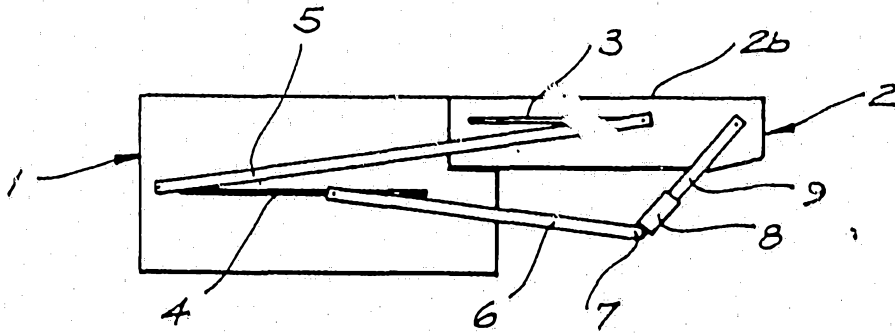


FIG. 6

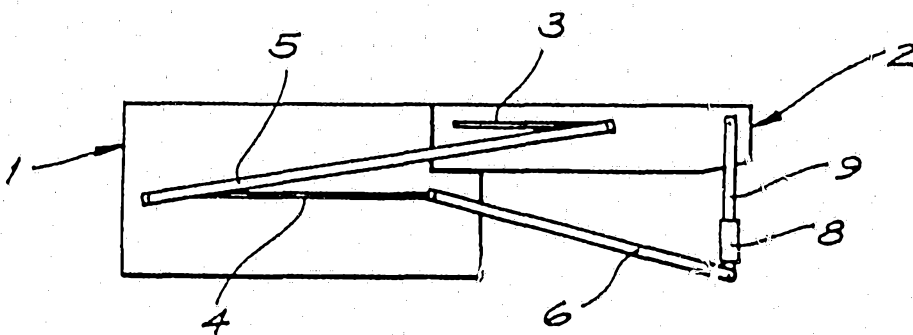


FIG. 7

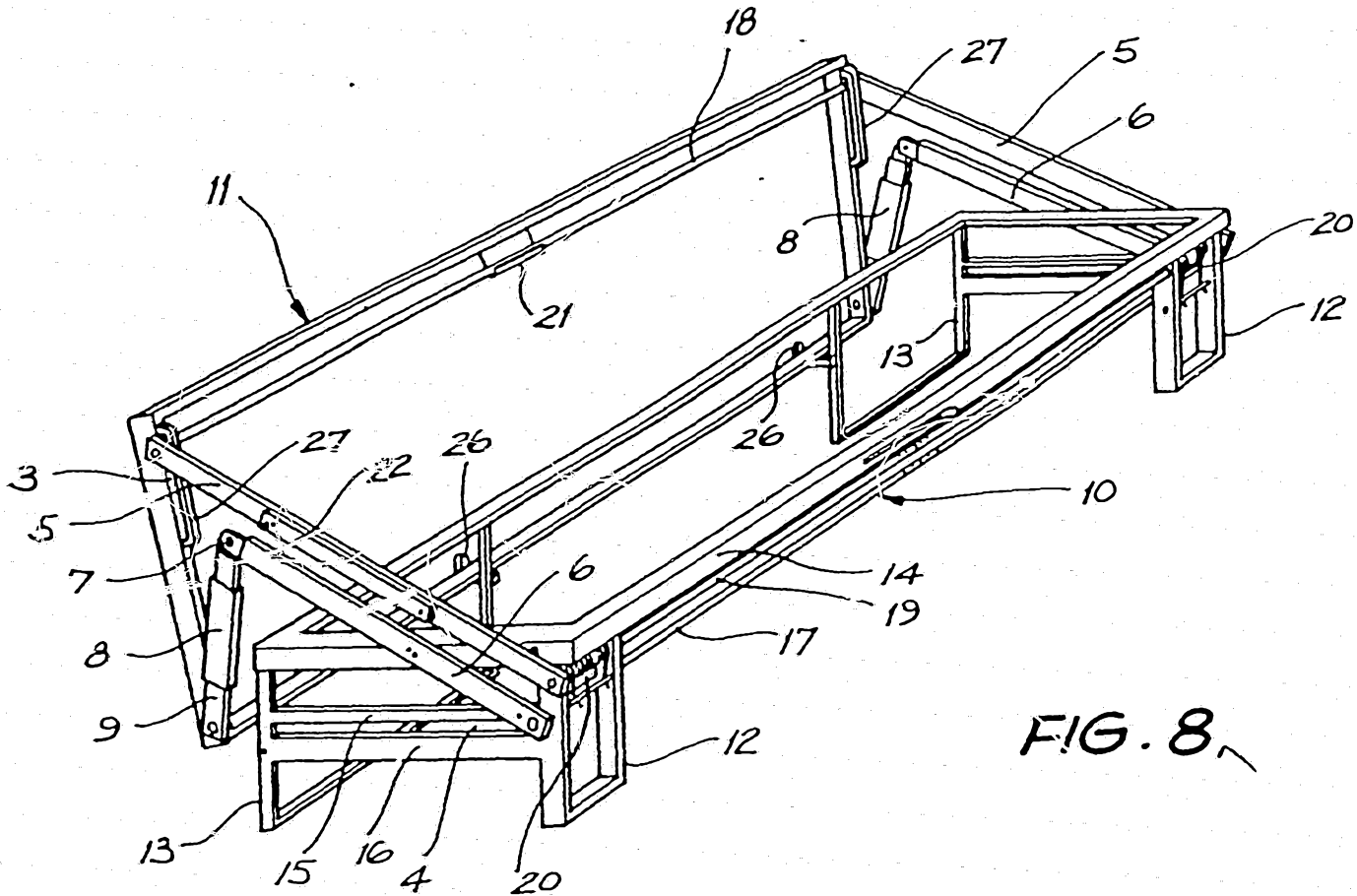


FIG. 8

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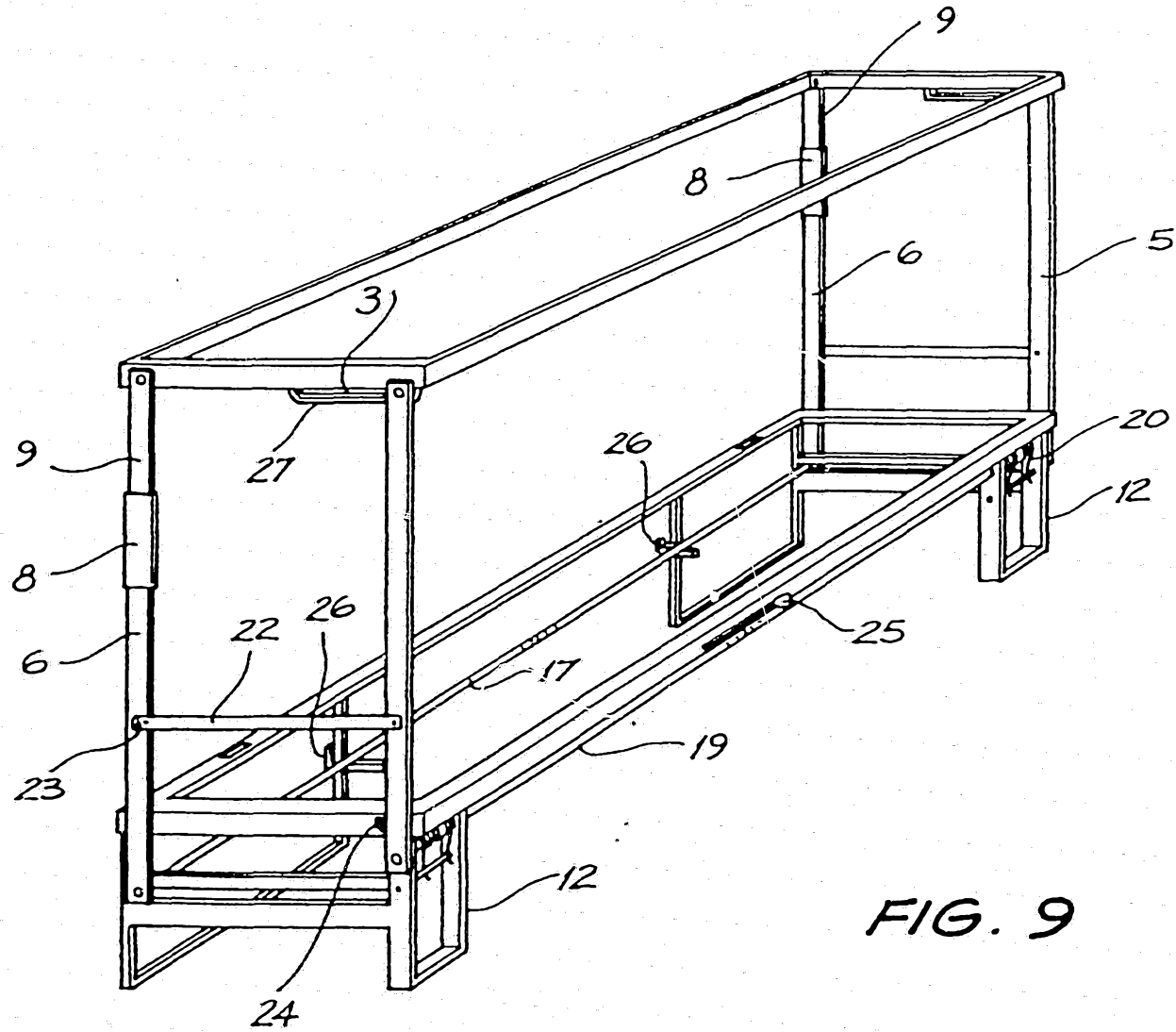


FIG. 9

SUBSTITUTE SHEET

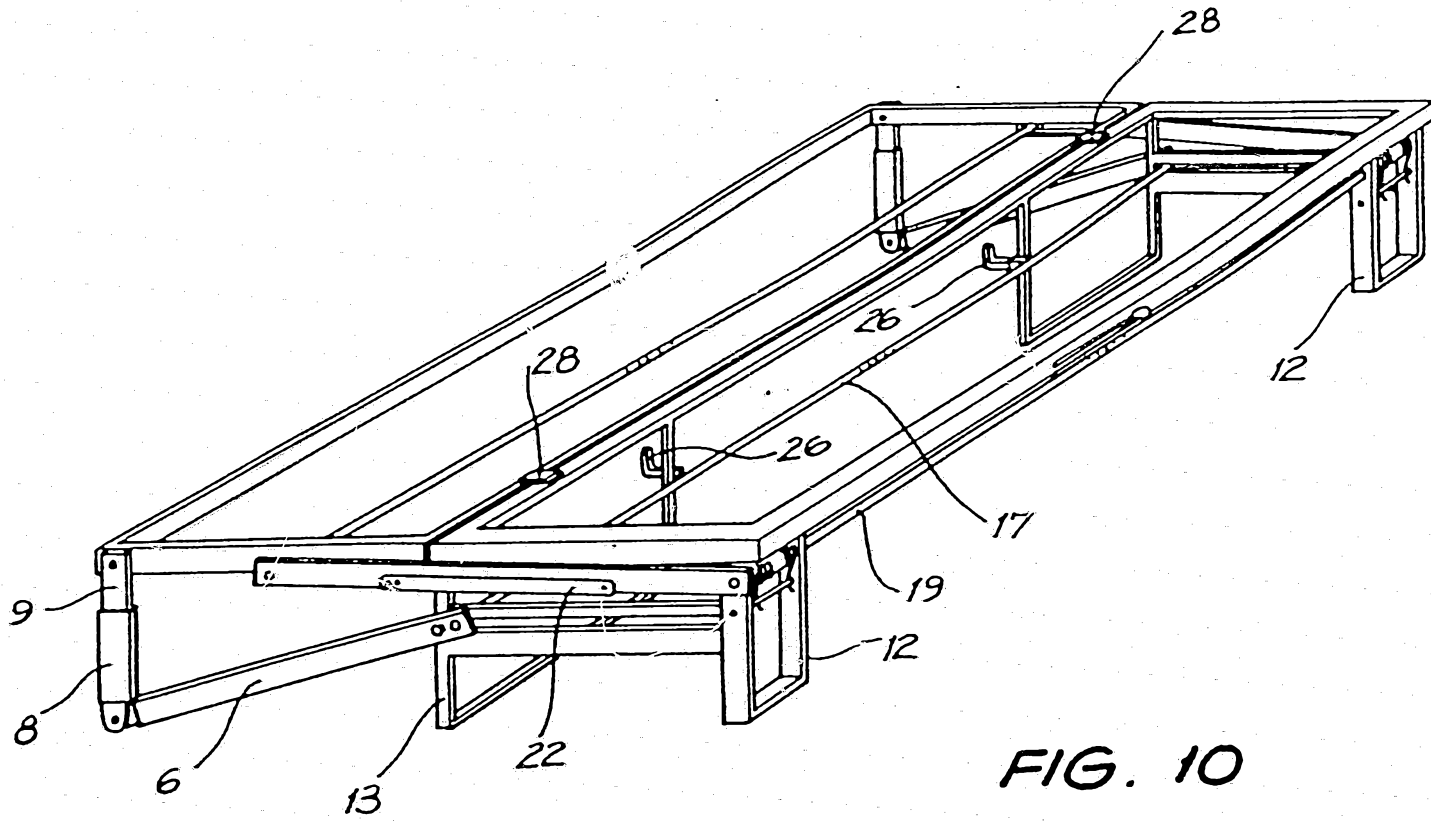


FIG. 10

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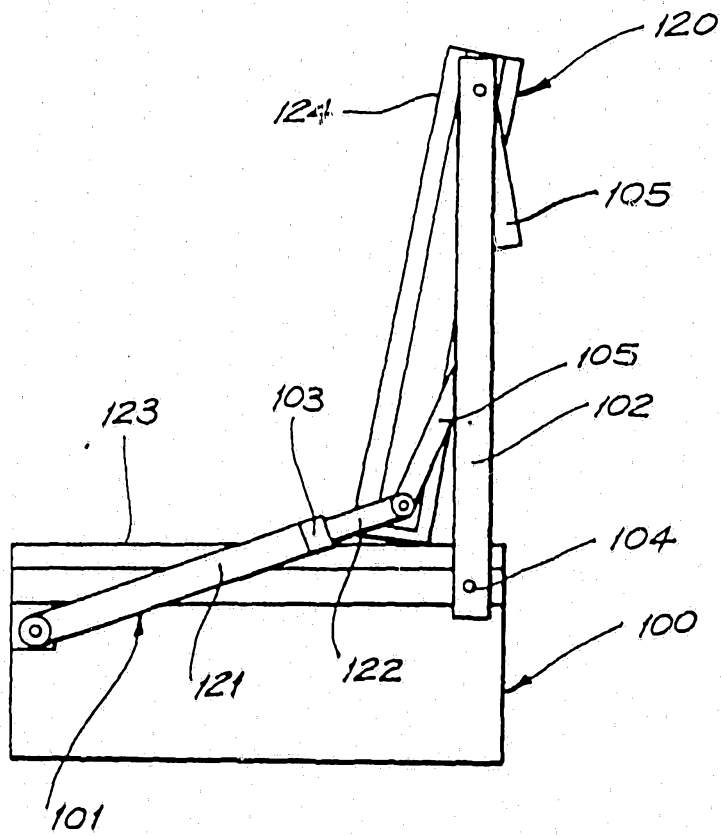


FIG. 11

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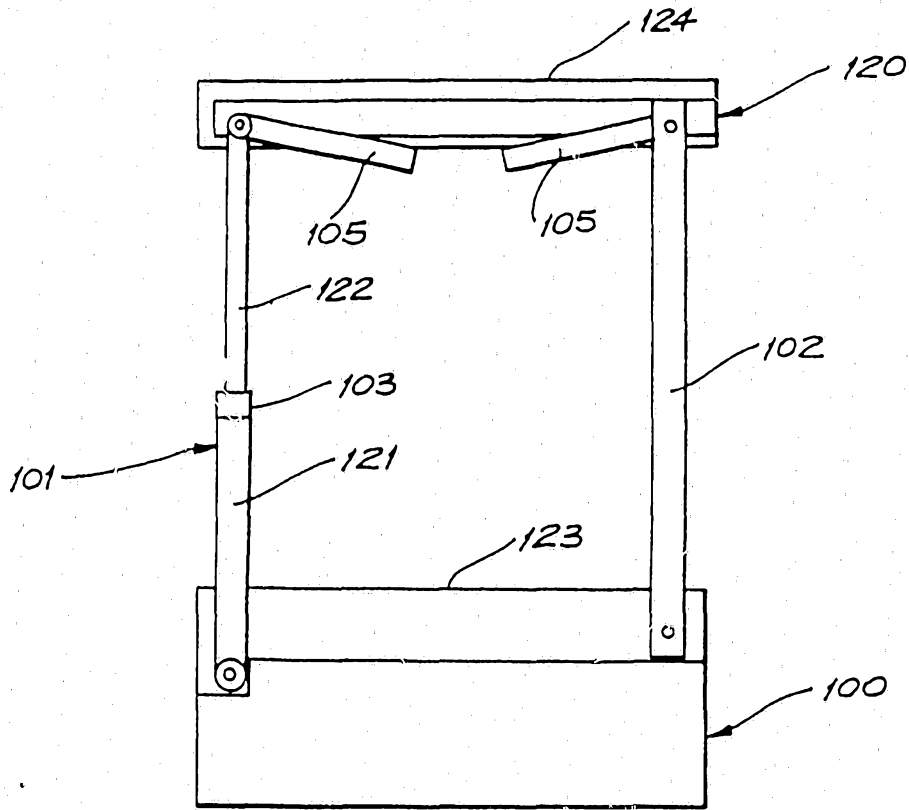


FIG. 12

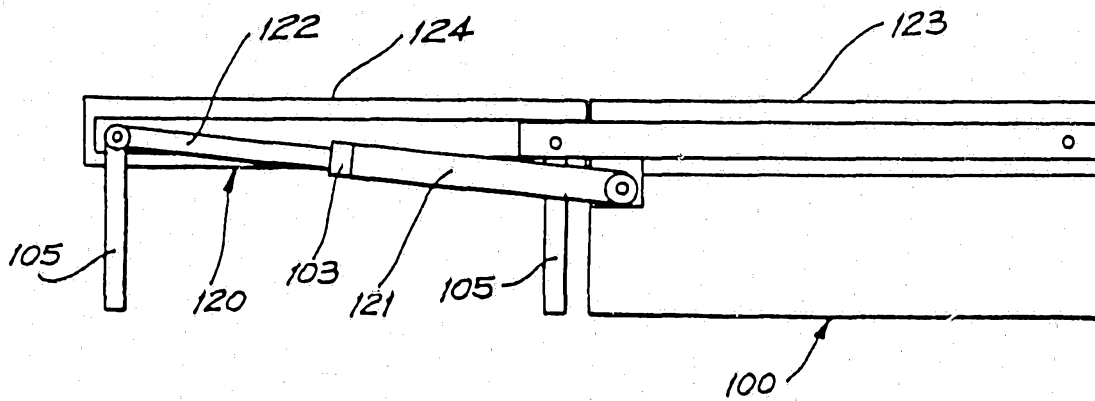
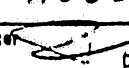


FIG. 13

SUBSTITUTE SHEET

INTERNATIONAL SEARCH REPORT

International Application No PCT/AU 87/00171

I. CLASSIFICATION OF SUBJECT MATTER (if several classification symbols apply, indicate all) ⁶		
According to International Patent Classification (IPC) or to both National Classification and IPC		
Int. Cl. ⁴ A47C 17/16		
II. FIELDS SEARCHED		
Minimum Documentation Searched ⁷		
Classification System	Classification Symbols	
IPC	A47C 17/16	
Documentation Searched other than Minimum Documentation to the Extent that such Documents are Included in the Fields Searched ⁸		
AU : IPC as above		
III. DOCUMENTS CONSIDERED TO BE RELEVANT ⁹		
Category ⁹	Citation of Document, ¹¹ with indication, where appropriate, of the relevant passages ¹²	Relevant to Claim No. ¹³
X, Y	AU, A, 41844/85 (ELWIN H. PAGE) 7 November 1985 (07.11.85)	(1,3-8)
X, Y	AU, A, 28592/84 (JOHANNES HENDRIK KOOTJMAN AND TRENT HAWELL KOOYMAN) 29 November 1984 (29.11.84)	(1,3-8)
X, Y	GB, A, 940375 (W. STEEL & CO. LIMITED) 30 October 1963 (30.10.63)	(2,3-8)
X, Y	AU, B, 36670/58 (WILLIAM JOHN FIELDEN) 1 October 1959 (01.10.59)	(2,3-8)
X, Y	AU, B, 7616/61 (FLER COMPANY & STAFF PTY LTD) 6 February 1964 (06.02.64)	(2,3-8)
X, Y	AU, B, 16122/53 (HARRY SKAR et al) 16 April 1953 (16.04.53)	(2,3-8)
A, Y	AU, B, 11611/55 (THE UNITED STATES BEDDING COMPANY) 23 February 1956 (23.02.56)	(8)
<p>⁹ Special categories of cited documents: ¹⁰</p> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier document but published on or after the international filing date</p> <p>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p> <p>"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</p> <p>"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step</p> <p>"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.</p> <p>"A" document member of the same patent family</p>		
IV. CERTIFICATION		
Date of the Actual Completion of the International Search	Date of Mailing of this International Search Report	
12 August 1987 (12.08.87)	(21.08.87) 21 AUGUST 1987	
International Searching Authority	Signature of Authorized Officer	
Australian Patent Office	 P. WARD	

ANNEX TO THE INTERNATIONAL SEARCH REPORT ON
INTERNATIONAL APPLICATION NO. PCT/AU 87/00171

This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent Document
Cited in Search
Report

Patent Family Members

AU 41844/85	BR 8502017	EP 161859	JP 61016711
	US 4555821	US 4592101	

END OF ANNEX