

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau



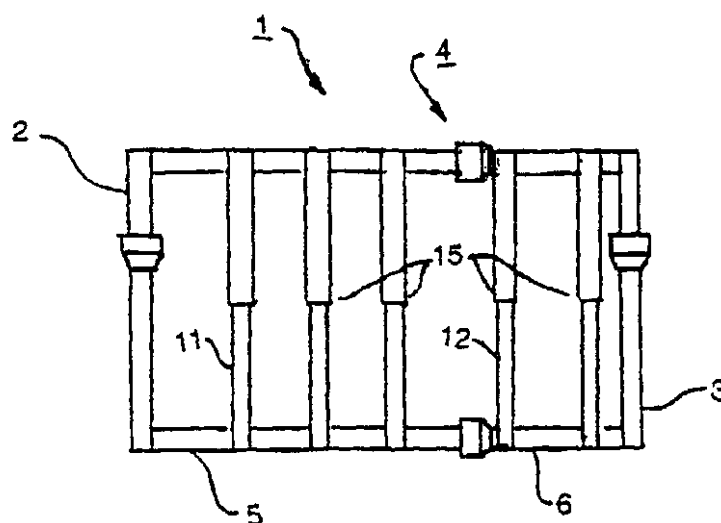
(43) International Publication Date
18 January 2001 (18.01.2001)

PCT

(10) International Publication Number
WO 01/03550 A1

- (51) International Patent Classification⁷: A47C 19/04, 27/00, A47D 7/01, 7/03
- (21) International Application Number: PCT/NZ00/00115
- (22) International Filing Date: 29 June 2000 (29.06.2000)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
336603 7 July 1999 (07.07.1999) NZ
- (71) Applicant and
(72) Inventor: MORRIS, Danny [GB/NZ]; Free Spirit, 9C Melandra Road, Stanmore Bay, Hibiscus Coast 1463 (NZ).
- (74) Agents: PIPER, James, William; James W Piper & Co, Unicorn House, 300A Richmond Road, Grey Lynn, Auckland 1002 et al. (NZ).
- (81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.
- (84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).
- Published:
— With international search report.
- For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: FURNITURE



(57) Abstract: A furniture item comprising at least a pair of members (2, 3) defining a dimension in one direction of said item, the members of said pair being connected together by adjustable connecting means (4), the arrangement and construction being such that said dimension in one direction can be adjusted by means of said adjustable connecting means.



WO 01/03550 A1

Furniture

TECHNICAL FIELD OF THE INVENTION

This invention relates to adjustable furniture. For convenience only, the present invention will be described with reference to furniture such as beds for which the invention may be particularly applicable. However, it is to be understood that it is not to be limited as such. Moreover, because the invention may have other applications it is to be understood that the background art and possible embodiments of the invention as discussed below are given by way of example only.

10 BACKGROUND ART

Traditionally beds have been made to only a few specific sizes depending on requirements. For example, a cot for babies, a single bed for one person, or a double bed for two people, the double bed being either a large "king" size or a slightly smaller "queen" size.

Due to these set sizes, people are left with little choice of alternative sizes to suit their individual requirements. For example, it may be necessary to buy an adult size bed for a child's room where this size may not be required until several years later. Hence space in the room which may have more appropriate uses when the child is young, is unnecessarily taken up by the bed. Moreover, in designing a bedroom the architect may be constrained by the fixed size of the bed so that it is difficult to optimise the design.

Furthermore, in the case where a cot is provided for a child, this may only be suitable for a short period of childhood, after which a larger bed must be bought. Not only does this involve extra costs but also a child may be reluctant to part with their bed. Folding beds and modular type

beds (ie. beds where a base may be slid under the bed) do address some aspects of the problem with fixed sized beds in that a double size bed can be folded or stowed away so as to only take up the space of a single size bed. However, the bed size is still limited to a standard length and width so that the size of the bed cannot always be optimised.

- 5 Similar problems with obtaining optimum sizing of furniture to suit a room or to suit changing requirements may also arise with various other types of furniture such as couches, tables, bookcases and the like. These too, as with beds, are of fixed dimensions once assembled thus putting a constraint on the design of a room, and may with time become too large or too small for requirements. Moreover, they may be no longer required for their initial function, and
10 simply take up space.

Another problem with fixed sized furniture arises when installing the furniture in the room. Since the size is fixed it may be difficult or impossible to carry the furniture in its assembled form into the room due for example to narrow doorways, or staircases, thus making it difficult to install or rearrange such furniture.

- 15 Furthermore, items of furniture which are no longer required such as beds for occupants which have left take up space or must be stored. There is a need to be able to continue to use these items of furniture such as by converting them to other furniture, for example a bed could be converted into a dining table, a couch, a coffee table etc.

OBJECT

- 20 It is therefore an object of the present invention to provide various types of furniture which address the above problems or at least provide the public with a useful choice. It is another object of the present invention to provide furniture constructed so that the size thereof can be easily varied, to give a wide range of sizes to suit varying requirements, and which can also be converted to other items of furniture.

25 DISCLOSURE OF THE INVENTION

According to one aspect of the present invention there is provided a furniture item comprising: at least a pair of members defining a dimension in one direction of said item, the members of

said pair being connected together by adjustable connecting means, the arrangement and construction being such that said dimension in one direction can be adjusted by means of said adjustable connecting means.

5 According to another aspect of the present invention there is provided a furniture item substantially as described above further comprising at least a second pair of members defining a dimension in a second direction substantially perpendicular to said one direction, the members of said second pair being connected together by a second adjustable connecting means, the arrangement and construction being such that said dimension in said second direction can be adjusted by means of said second adjustable connecting means.

10 The invention may be applicable to a variety of furniture items where it is desirable to be able to change the dimensions. For example, the furniture item may be a book case and the dimension in one direction may be a width or a height of the book case. Alternatively the furniture item may be a bed, with the dimension being a length or width of the bed.

15 The adjustable connecting means may involve any device or devices whereby the members may be optionally located in a plurality of positions relative to each other. For example this may involve linkage means connected between members of the pair, the arrangement and construction being such that the members may be located relative to each other in a plurality of configurations.

20 A suitable linkage arrangement may involve linkages such as found with folding beds. In this case linkages may be arranged such that the width of the furniture item may be set to a range of widths, rather than the two widths provided by a conventional folding bed.

Alternatively or in addition the adjustable connecting means may involve a sliding element fixedly connected relative to one of the members, and slidably engaged with an element fixedly connected relative to another of the members, the arrangement and construction being such that
25 when the elements are slid relative to each other the members are constrained to move relative to each other along a substantially straight line.

In the case of such a sliding element fixedly connected relative to one of the members, this may be of any suitable section which may be engaged with a complementary surface formed on the other member. For example this may involve an angle or channel, which engages with a pin or pins on the other member, or a cylindrically shaped member which slides inside an aperture or tube formed on the other member.

The adjustable connecting means may also involve locking means for locking the elements or members relative to each other in a plurality of configurations. For example this may involve clamping means which depend on frictional forces between adjacent surfaces, or fastening devices which positively locate the elements or members relative to each other, or a combination of both.

The members may thus be fastened together at different relative locations to each other, enabling variation in the dimension or dimensions of the furniture item. The connecting means may also make use of other items in a room to provide location of the members relative to each other. For example, locational forces may be provided by frictional forces between item and the floor.

Various types of fastening and clamping devices are possible. For example these may involve the use of pins or bolts which fit into apertures provided at a plurality of locations on the elements. A possible arrangement may be similar to that used for telescopic tripods or tent poles where a pin provided inside one tubular member is resiliently biased so as to spring out and engage in an aperture in the telescoping member. The fastening and clamping device may also involve threaded members which may be tightened to clamp contacting surfaces of the elements together.

Friction members may also be provided to improve the locking effect. For example in the case of tubular members "O" rings may be used. In this case one possible arrangement may involve an "O" ring which is slidable along a tubular member which fits inside a larger diameter pipe having a flared inlet for accommodating the "O" ring, the arrangement being such that movement in one direction forces the "O" ring tight against the outer surface of the tubular member and the flared surface of the pipe thus preventing relative movement in that direction.

Alternatively a Crox nut type pipe coupling may be used with an "O" ring nipple, the "O" ring being clamped against the sliding surface with tightening of the coupling.

Members and elements of the furniture item may be made from a variety of materials as required or desired. In this respect the design and function of the adjustable connecting means
5 may be chosen to suit the type of materials used. For example, in the case of a bed using metal or plastic tube for the frame, the connecting means may involve telescoping portions of the metal or plastic tube with metal or plastic tube type couplings. With a metal bed having for example angle or channel section structural members the connecting means may involve elongate slots formed in sections of the members, with threaded pins fixed to the mating
10 members, and fitted with wing nuts which may be tightened to clamp the members together at optional relative positions. In the case of a bed with wooden slats for the mattress support, the adjustable connecting means may involve flexible bands such as "O" rings which resiliently hold portions of the slats together while allowing limited relative movement therebetween in a lengthwise direction of the slats.

15 In the case of a wooden book case, the connecting means may involve elongate slots formed in sections on one structural member of the book case and threaded pins fixed to the mating portions on another structural member of the book case, and fitted with wing nuts which may be tightened to clamp the members together at optional relative positions.

In the case of an adjustable bed, a mattress for the bed may be constructed so that the size
20 thereof can be changed to suit the adjusted size of the bed. Suitable materials for the mattress may involve foam, air, water and more traditional materials. The mattress design may involve a modular construction so that sections may be added or removed as required. In this case a mattress cover may be provided which can accommodate the largest anticipated size, and portions of the cover can be folded under the mattress when the mattress size is reduced.

25 Sections of the mattress may be connected by any suitable means. For example in the case of a foam type mattress this may involve interlocking sections formed on the edges of the mattress sections. A suitable type of interlocking may involve for example, protruding and recess portions such as found on bubble packaging or sound proofing foam. An adjustable thick cover (eg. padded calico or thick cotton) may also be used to cover any additional sections, preventing

slippage and any unevenness, thus giving the overall appearance and feel of a traditional mattress.

In the case of water mattresses, a standard sectional water mattress can be utilised with additional compartments being filled, as and when required. Similarly with air mattresses the
5 size can be adjusted by inflating additional compartments.

As well as addressing the above problems encountered with fixed dimension type furniture, the present invention may also open up other aspects related to the uses of furniture which have not heretofore been considered. For example, a bed of variable dimensions may be made in the form of a house which could be extended to make a mansion, a bed representing a fort could be
10 transformed into a castle, a bed in the form of a mini car could be transformed into one in the form of a stretch limousine. Additional accessories may also be added accordingly; for example book cases, writing desks etc. A bed in the form of a fort could have a drawbridge which becomes a desk.

According to a further aspect of the invention, there is provided a convertible furniture item
15 including in combination, one or more tubular frame members adapted to be extensible in one or more directions, extensible post members adapted to be connected to and to support the frame members at various distances above floor level, the frame members further adapted to be connected to one or more conversion member adapted to convert one furniture item to a different furniture item, for example, a bed to a table, a dining table to a sofa or chair or a coffee
20 table to a dining table.

Preferably the one or more frame members are adjustable by means of telescoping tubular members extensible to predetermined length intervals wherein they are held in position by one or more detent mechanisms.

Preferably the detent mechanisms are spring loaded pins located in an inner telescoping tube
25 member adapted to engage a corresponding hole or slot in an outer telescoping tube member for holding the telescoping tubes at a predetermined length.

In the alternative, there are no detent mechanisms to hold the telescoping tubes in position but are held in position by the sheer weight of the frame member(s).

Preferably the conversion members include headboards, sideboards, interlocking slats or platform members adapted to convert one item of furniture into another.

- 5 Conveniently, the conversion members are also extensible adjustable to correspond to the extension adjustable to correspond to the extension of the frame member(s).

Preferably there are accessory fittings adapted to be detachably fitted to the frame members or conversion members, for example, a pivoting reading lamp, a writing table, a tray or a support for a television set, video recorder or personal computer, etc.

10 BRIEF DESCRIPTION OF THE DRAWINGS

Further aspects and advantages of the present invention will become apparent from the ensuing description which is given by way of example only and with reference to the accompanying drawings in which:

- 15 Figure 1: is a schematic plan diagram of an adjustable bed according to an embodiment of the present invention showing a plan view according to Example 1;

Figure 2: is a side view of the bed of Fig. 1;

Figures 3 and 3a: are enlarged views of a typical connecting device;

Figure 4: is a head end view of the bed of Fig. 1; and

- 20 Figure 5: is a foot end view of the bed of Fig. 1.

Figures 6, 7 and 8: are perspective view of the invention according to Example 2.

PREFERRED EMBODIMENT

Example 1

With reference to Figures 1 to 5, there is shown a furniture item according to Example 1 of the present invention in the form of a bed generally indicated by arrow 1. The bed 1 comprises a first pair of members defining a lengthwise direction, in the form of a bed head 2 and a bed foot 3. The bed head 2 and bed foot 3 are connected together by adjustable connecting devices generally indicated by arrow 4 provided on either side of the bed 1. As shown in detail in Fig. 3a, each of the connecting devices 4 comprise a portion of an outer tube 5 connected to the bed head 2 and a portion of an inner tube 6 connected to the bed foot 3. The diameters of the portions of the tubes 5, 6 are such that the tube 6 can slide freely inside tube 5 while being constrained thereby so as to move along its longitudinal axes.

The connecting devices 4 also comprise a locking coupling in the form of a Crox coupling generally indicated by arrow 7 having a nut portion 8 which is threaded onto a threaded portion 9 formed on the end of the tube 5, with an "O" ring 10 fitted inside the nut portion 8. The "O" ring fits snugly around the tube 6 and is clamped tightly against the tube 6 when the nut 10 is tightened onto the thread 5, thereby locking the tube 6 relative to the tube 5.

With this arrangement the distance between the bed ends 2 and 3 may be adjusted to a required length, by sliding the pipe 6 inside the pipe 5. The bed ends 2, and 3 can then be locked in position relative to each other by tightening the coupling 7.

The bed is also provided with a number of cross members 11 and 12 to provide support for the mattress of the bed. The cross members 11 are fixedly connected at predetermined spacing to the pipe 5, while some or all of the cross members 12 may be slidably fitted to the pipe 6. This enables the spacing of the cross members 12 to be adjusted to suit the length of the bed 1.

To ensure a desired spacing of the cross members 12 with different degrees of extension of the bed 1, a suitable location device may be used. For example this may involve protrusions on the pipe 6 which locate the ends of the cross members 12 at the required spacing. Alternatively a flexible member may be tied between the cross members 12 so that as the bed 1 is increased in

length, the cross members 12 are separated from each other, while as the bed 1 is decreased in length the cross members 12 are able to lie closer to each other.

Although not shown in the drawings, additional leg supports may be provided if required at intermediate portions along the pipe member 5. These may be pivotally attached to the pipe
5 member 5 and folded down to give additional support when the bed is in an extended condition.

With the present embodiment the width of the bed 1 is also adjustable in a similar manner. As shown in Fig. 4 and Fig. 5, the bed head 2 and bed head 3 are each made up as two sections which are connected together by a second pair of adjustable connecting devices generally indicated by arrow 13 and 14. These connecting devices 13 and 14 are similar in design and
10 function to the connecting devices 7 except that the dimensions of the telescoping pipe sections may be different depending on the design and strength requirements. Moreover, the cross members 11 and 12 are formed with telescoping tubular sections 15 which can telescope inside each other as the width of the bed 1 is changed.

With such an arrangement the width of the bed as well as the length can be adjusted to suit
15 requirements.

For example the bed can be made smaller for transport or installation, and then expanded to a desired size once installed.

The bed can also be extended or widened to suit the size of a child as they grow, or can be easily adjusted at any time as may be required by children when playing. Moreover, the size of
20 the bed can be easily increased or decreased as required to suit individual requirements.

Various types of mattress design may be used with the bed. For example a foam mattress of modular construction may be used, and sections may be added or removed as required. The mattress for the bed may be made of a modular construction so that separate modules may be connected or removed as required to suit the different sizes of the bed.

Example 2

Figures 6, 7, 8 and 9 show a preferred embodiment of the invention according to Example 2 in the form of a bed 20 which can be converted to other items of furniture. The bed preferably has a frame 22 of powder coated steel tube, however other tubing such as aluminium, copper or plastic tube may be used. The tubular frame is extensible lengthwise and breathwise with sliding cross members 23, 25 which are spaced by lineage means in the form of a chain (not shown) and is supported by extensible post members 24 which can be screwed to the frame. The extensible post members allow the bed to be converted to a dining table or a coffee table and are major conversion members. The post members in some models, may be covered by a cosmetic member 26 into which the post member is inserted. Also shown is an adjustable headboard 28 which can be extended to accommodate different widths of the bed. The headboard has a projections 30, 32 or stumps which are insertable into sockets 34 in the frame. The bed has wooden slats 36, 38 which have complementary fitting tongue and groove edges 40 so that as the bed is lengthened, additional slats can be added end piece slats 36. The end piece slats have rubber plugs (not shown) which are insertable into sockets at the ends of the bed. The slats also provide the top of a dining or coffee table and can have a painted or polished finish surface. In the alternative to a slotted top, an integral top of metal or panel board or wood can be used (not shown). Accessory fittings in the form of pivoting support stands 42 for portable or television receivers or computer monitors can also be removably attached the frame.

20 ADVANTAGES

We believe the advantages of our invention to be as follows, however it should be appreciated that all such advantages may not be realised on all embodiments of the invention, and the following list is therefore given by way of example only as being indicative of potential advantages of the present invention. Furthermore, it is not intended that the advantages of the present invention be restricted to those of the list which follows.

1. The sizes of furniture items can be easily adjusted to suit requirements, thus extending the range of application of a particular type of item.
2. In the case of a bed, this can be easily changed in size to suit requirements.

3. Items of furniture can easily be converted to other items of furniture according to changing needs.

Aspects of the present invention have been described by way of example only and it should be appreciated that modifications and additions may be made thereto without departing from the
5 spirit or scope as herein set forth in the claims.

Throughout the description and claims of this specification the word "comprise" and variations of that word, such as "comprises" and "comprising", are not intended to exclude other additives, components, integers or steps.

CLAIMS

1. A furniture item comprising at least a pair of members defining a dimension in one direction of said item, the members of said pair being connected together by adjustable connecting means, the arrangement and construction being such that said dimension in one direction
5 can be adjusted by means of said adjustable connecting means.
2. A furniture item as claimed in claim 1 further comprising at least a second pair of members defining a dimension in a second direction substantially perpendicular to said one direction, the members of said second pair being connected together by a second adjustable connecting means, the arrangement and construction being such that said dimension in said second
10 direction can be adjusted by means of said second adjustable connecting means.
3. A furniture item as claimed in claim 1 or claim 2 wherein the adjustable connecting means is any device or devices whereby the members can be located in a plurality of positions relative to each other.
4. A furniture item as claimed in claim 3 wherein there are linkage means connected between
15 members of the pair, the arrangement and construction being such that the members can be located relative to each other in a plurality of configurations.
5. A furniture item as claimed in claim 4 wherein the linkages can be arranged such that the width of the furniture can be set to a range of widths greater than two widths.
6. A furniture item as claimed in claim 4 or claim 5 wherein the linkages are claims.
- 20 7. A furniture item as claimed in any one of the preceding claims wherein the adjustable connecting means includes a sliding element fixedly connected relative to one of the members, and slidably engaged with an element fixedly connected relative to another of the members, the arrangement and construction being such that when the elements are slid relative to each other, the members are constrained to move relative to each other along a
25 substantially straight line.

8. A furniture item as claimed in claim 7 wherein the sliding element fixedly connected relative to one of the members is of any suitable section which can be engaged with a complementary surface formed on the other member.
9. A furniture item as claimed in claim 8 wherein the sliding element is an angle or channel,
5 which engages with a pin or pins on the other member.
10. A furniture item as claimed in claim 8 wherein the sliding element is a cylindrically shaped member which slides inside an aperture or tube formed on the other member.
11. A furniture item as claimed in any one of the preceding claims wherein the adjustable connecting means also includes locking means for locking the elements or members relative
10 to each other in a plurality of configurations.
12. A furniture item as claimed in claim 11 wherein the locking means includes clamping means which depend on frictional forces between adjacent surfaces.
13. A furniture item as claimed in claim 11 wherein the locking means includes fastening devices which positively locate the elements or members relative to each other.
- 15 14. A furniture item as claimed in any one of preceding claims wherein the members are fastened together at different locations relative to each other enabling variations in the dimension or dimensions of the furniture item.
15. A furniture item as claimed in any one of the preceding claims wherein the adjustable connecting means includes the use of other items in a room to provide location of the
20 members relatively to each other.
16. A furniture item as claimed in any one of the preceding claims wherein the adjustable connecting means includes the use of locational forces provided by frictional forces between the furniture item and the floor.
17. A furniture item as claimed in any one of the preceding claims wherein the connecting
25 means includes the use of pins or bolts which fit into apertures provided in a plurality of locations on the members or elements.

18. A furniture item as claimed in any one of the preceding claims wherein the connecting means includes the use of telescoping tubular members wherein a pin provided inside one tubular member is resiliently biased so as to spring out and engage in an aperture in another tubular member.
- 5 19. A furniture item as claimed in any one of the preceding claims wherein the connecting means includes the use of threaded members which may be tightened to clamp contacting surfaces of the elements or members together.
20. A furniture item as claimed in any one of the preceding claims wherein the connecting means includes the use of frictional "O" ring members to improve the locking effect.
- 10 21. A furniture item as claimed in claim 20 wherein the "O" ring is slidable along a tubular member which slides inside a larger diameter pipe having a flared inlet for accommodating the "O" ring, the arrangement being such that movement in one direction forces the O-ring tight against the outer surface of the tubular member and flared surface of the pipe thereby preventing relative movement in that direction.
- 15 22. A furniture item as claimed in claim 21 wherein the adjustable connecting means includes a Crox nut type coupling used with an "O" ring nipple, the "O" ring being clamped against the surface of the sliding tubular member on tightening of the coupling.
23. A furniture item as claimed in any one of the preceding claims constructed of metal or plastic tube.
- 20 24. A furniture item in the form of a bed with a frame constructed of metal or plastic tube and having adjustable connecting means involving telescoping portions of the metal or plastic tube with metal or plastic tube type couplings.
- 25 25. A furniture item in the form of a bed having angle or channel section structural members, and adjustable connecting means including elongate slots formed in sections of the members with threaded pins fixed to mating members, and fitted with wing nuts which may be tightened to clamp the members together at optional relative positions.

26. A furniture item in the form of a bed with wooden slats for mattress support, having adjustable connecting means involving flexible bands such as "O" rings which resiliently hold portions of the slats together while allowing relatively movement therebetween in a length wise direction of the slats.
- 5 27. A furniture item in the form of a book case having connecting means involving elongate slots formed in sections on one structural member of the book case and threaded pins fixed to the mating portions on another structural member of the book case and fitted with wing nuts which may be tightened to clamp the members together at optional relative positions.
- 10 28. A furniture item in the form of a mattress for an adjustable bed which may be constructed so that the size thereof can be changed to suit the adjusted size of the bed, the mattress design involving a modular construction so that sections may be added or removed as required.
29. A mattress as claimed in claim 28 wherein a mattress cover is provided which can accommodate the largest anticipated size of the mattress, and portions of the cover can be folded under the mattress when size of the mattress is reduced.
- 15 30. A furniture item as claimed in claim 29 wherein the mattress is a foam type mattress having interlocking sections formed on the edges of the mattress sections.
31. A mattress as claimed in claim 30 wherein the interlocking sections are protruding and recessed portions which are adapted to interlock together.
- 20 32. A mattress as claimed in claims 29 or 30 wherein the mattress has an adjustable cover which is used to cover any additional sections of the mattress, preventing slippage and any unevenness, thereby giving the overall appearance and feel of a traditional mattress.
33. A mattress as claimed in claim 32 wherein the mattress is a water mattress with compartments which can be filled as required to increase the size of the mattress.
- 25 34. A mattress as claimed in claim 31 wherein mattress is an air mattress, the size of which can be adjusted by inflating additional compartments.

35. A convertible furniture item including in combination, one or more tubular frame members adapted to be extensible in one or more directions, extensible post members adapted to be connected to and to support the frame members at various distances above floor level, the frame members further adapted to be connected to one or more conversion members adapted to convert one furniture item to a different furniture item, for example, a bed to a table, a dining table to a sofa or chair or a coffee table to a dining table or any combination thereof.
36. A convertible furniture item as claimed in claim 35 wherein the one or more frame members are adjustable by means of telescoping tubular members extensible to predetermined length intervals wherein they are held in position by one or more detent mechanisms.
37. A convertible furniture item as claimed in claim 36 wherein the detent mechanisms are spring loaded pins located in an inner telescoping tube member adapted to engage a corresponding hole or slot in an outer telescoping tube member for holding the telescoping tubes at a predetermined length.
38. A convertible furniture item as claimed in claim 36 wherein there are no detent mechanisms to hold the telescoping tubes in position but are held in position by the sheer weight of the frame member(s).
39. A convertible furniture item as claimed in any one of claims 36 to 38 wherein the conversion members include headboards, sideboards, interlocking slats or platform members adapted to convert one item of furniture into another.
40. A convertible furniture item as claimed in claim 39 wherein the conversion members are also extensibly adjustable to correspond to the extension of the frame member(s).
41. A convertible furniture item as claimed in any one of the preceding claims wherein there are accessory fittings adapted to be detachably fitted to the frame members or conversion members, for example, a pivoting reading lamp, a writing table, a tray or a support for a television set, video recorder or personal computer.
42. A furniture item substantially as herein described with reference to the accompanying illustrations.

43. A convertible furniture item substantially as herein described with reference to the accompanying illustrations.

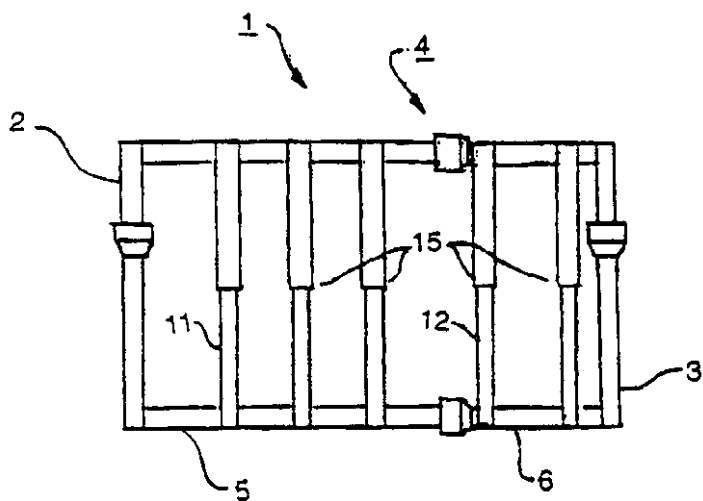


FIG. 1

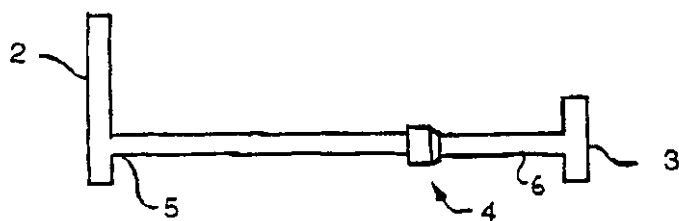


FIG. 2



FIG. 3

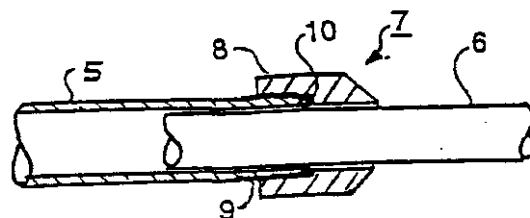


FIG. 3a

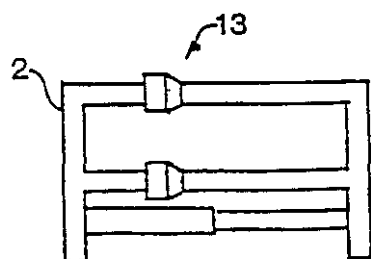


FIG. 4

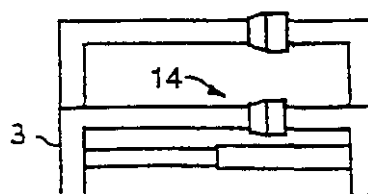
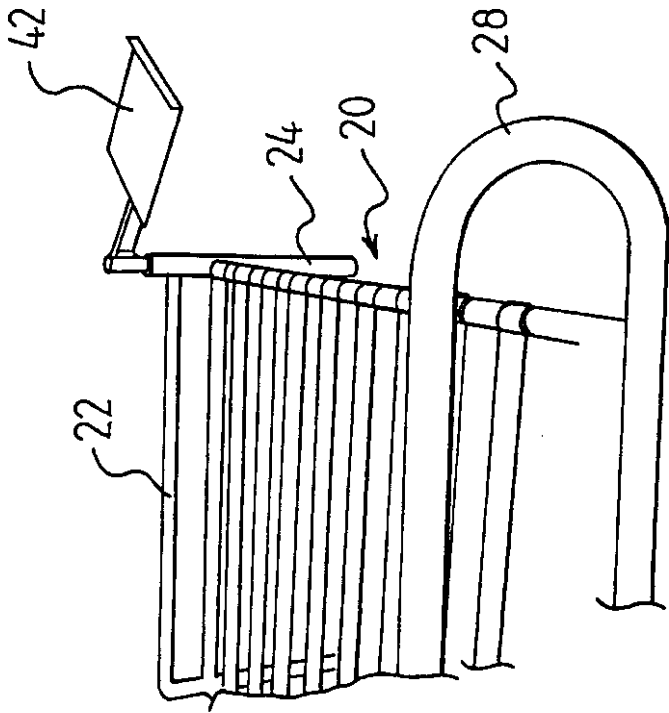
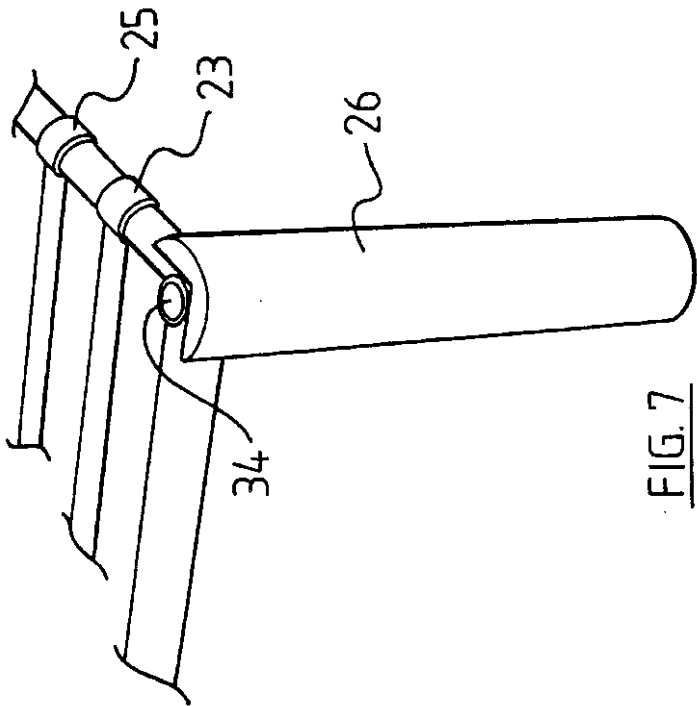


FIG. 5



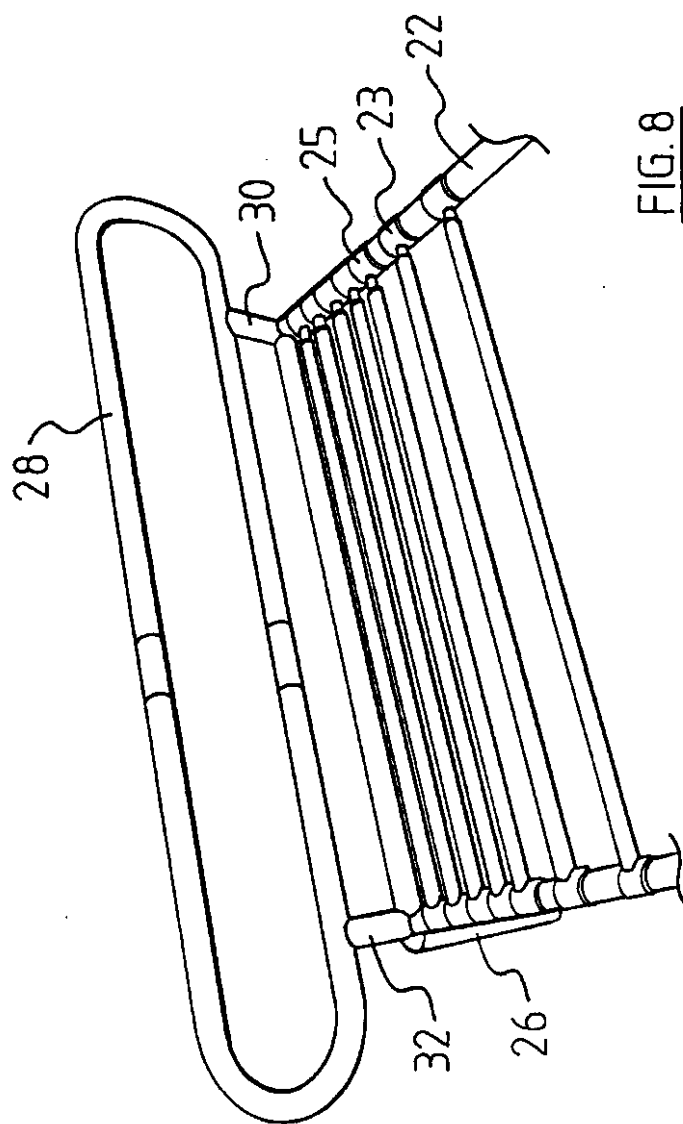
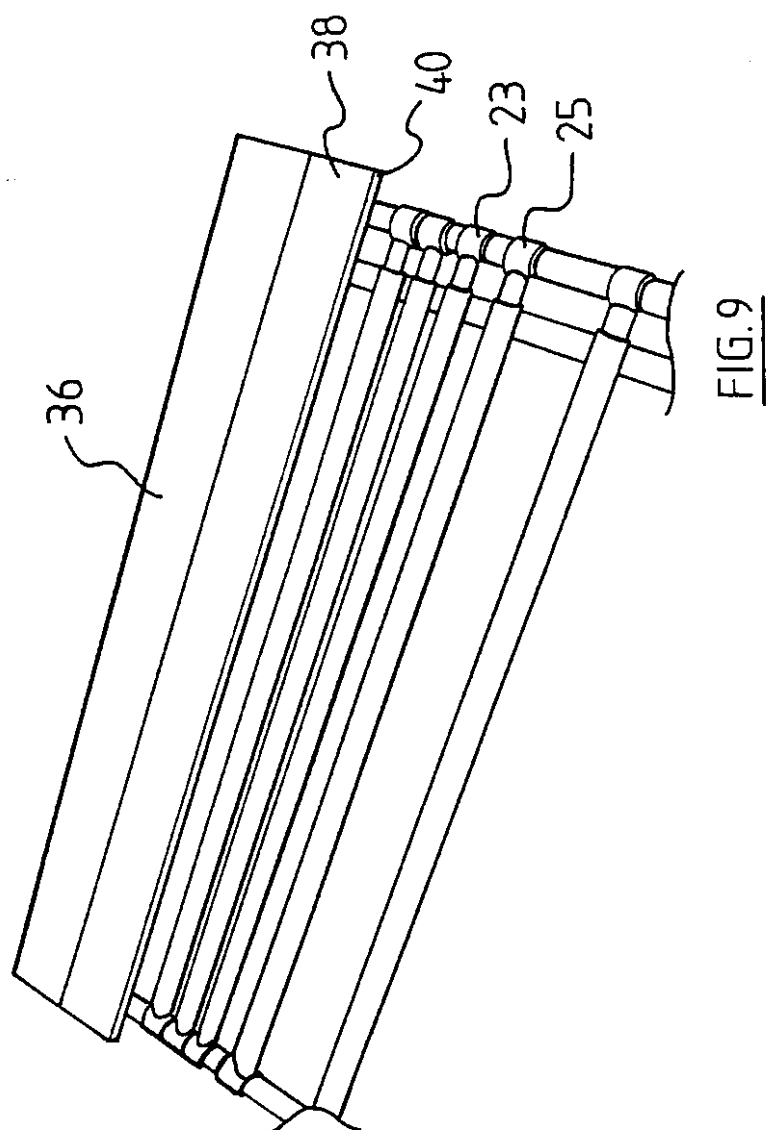
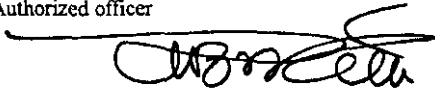


FIG. 8



INTERNATIONAL SEARCH REPORT

International application No.
PCT/NZ 00/00115

A. CLASSIFICATION OF SUBJECT MATTER		
Int Cl ⁷ : A47C 19/04, 27/00 A47D 7/01, 7/03		
According to International Patent Classification (IPC) or to both national classification and IPC		
B. FIELDS SEARCHED		
Minimum documentation searched (classification system followed by classification symbols) IPC : A47C 19/04, 27/00 A47D 7/01, 7/03		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) WPAT : IPC as above + keywords (CONVERT or ADJUST or TELESCOPE or EXTEND)		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 4679261 A (STANLEY et al), 14 July 1987 Figure 1	1-26
X	US 4295234 A (WHITEHEAD), 20 October 1981 Figures	1-26
X	EP 116184 A (PORRO & PORRO Srl), 22 August 1984 Figures	1-26
☒ Further documents are listed in the continuation of Box C ☒ See patent family annex		
* Special categories of cited documents: "A" Document defining the general state of the art which is not considered to be of particular relevance "E" earlier application or patent but published on or after the international filing date "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) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed "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 "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "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 "&" document member of the same patent family		
Date of the actual completion of the international search 29 September 2000		Date of mailing of the international search report 12 OCT 2000
Name and mailing address of the ISA/AU AUSTRALIAN PATENT OFFICE PO BOX 200 WODEN ACT 2606 AUSTRALIA E-mail address: pct@ipaaustralia.gov.au Facsimile No.: (02) 6285 3929		Authorized officer  G.B. NATH Telephone No.: (02) 6283 2126

INTERNATIONAL SEARCH REPORT

International application No.
PCT/NZ 00/00115

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 4192028 A (KNOKE), 11 March 1980 Figures	1-26
X	US 3871039 A (GARCEAU et al), 18 March 1975 Figures	1-26

INTERNATIONAL SEARCH REPORT

International Application No.

PCT/NZ 00/00115

Box I Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a)

Box II Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:
The international application does not comply with the requirements of unity of invention because it does not relate to one invention or to a group of inventions so linked as to form a single general inventive concept.

See attached sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.: 1-26

Since the claims groups i) to iv) could be searched together, this report covers the claim nos. 1-26

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
☐ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/NZ 00/00115

Continuation of Box II

In coming to this conclusion the International Searching Authority has found that there are seven inventions.

- i) Claims 1-23 are directed to a furniture item having adjustable connecting means wherein the dimensions of the furniture can be adjusted in one or more directions.
- ii) Claim 24 is directed to a bed having adjustable connecting means wherein the adjustable connecting means has telescopic portions.
- iii) Claim 25 is directed to a bed having adjustable connecting means wherein the adjustable connecting means has slots, threaded pins and wing nuts.
- (iv) Claim 26 is directed to a bed having adjustable connecting means wherein the adjustable connecting means has flexible bands.
- (v) Claim 27 is directed to a bookcase having connecting means wherein the connecting means have slots, threaded pins and wing nuts.
- (vi) Claim 28 is directed to a modular mattress wherein the size of the modular mattress can be changed.
- (vii) Claim 35 is directed to a convertible furniture item wherein the furniture item can be converted from one form to another and is adapted to be extendible in one or more directions.

Since the above mentioned groups of claims do not share any of the technical features identified, a technical relationship between the inventions do not exist. Accordingly the claims do to relate to one invention only.

It is noted that the claims have adjustability as a common feature. However this feature is a common general knowledge in the art and is prior published in several citations (for example US 4679261, US 4295234, EP 116184, US 4192028, US 3871039) and cannot be considered as a special technical feature.

INTERNATIONAL SEARCH REPORT

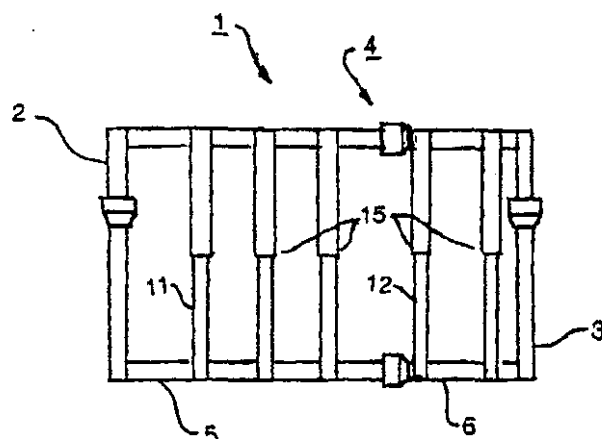
Information on patent family members

International application No.
PCT/NZ 00/00115

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 Member		
US	4 295 234	CA 1145103		
US	4 192 028	CA 1089604		
US	3 871 039	CA 1026055	FR 2269897	GB 1491334
END OF ANNEX				

AN ABSTRACT



IN ENGLISH: -

Title:	Furniture
Abstract:	A furniture item comprising at least a pair of members (2, 3) defining a dimension in one direction of said item, the members of said pair being connected together by adjustable connecting means (4), the arrangement and construction being such that said dimension in one direction can be adjusted by means of said adjustable connecting means.

IN CHINESE: -

名稱:	傢俬
摘要:	一種最少由一對構件(2、3)組成的傢俬,這對構件決定傢俬在一個方向上的尺寸。這對構件用可以調整的連接工具(4)連接,整件物件的安排和結構是經過調整上述可調整的連接工具,從而調整在一個方向上的尺寸。