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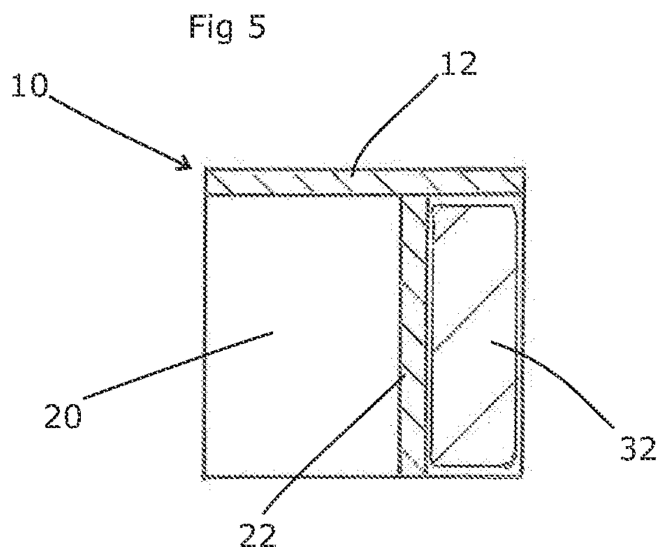
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(56) Documents Cited:
GB 2172798 A **EP 0565071 A1**
WO 1999/062380 A1 **WO 1991/004694 A1**
DE 102012007690 A1 **US 1399342 A**
JPS5444114U
JPS5712968U
JPH1118883 A

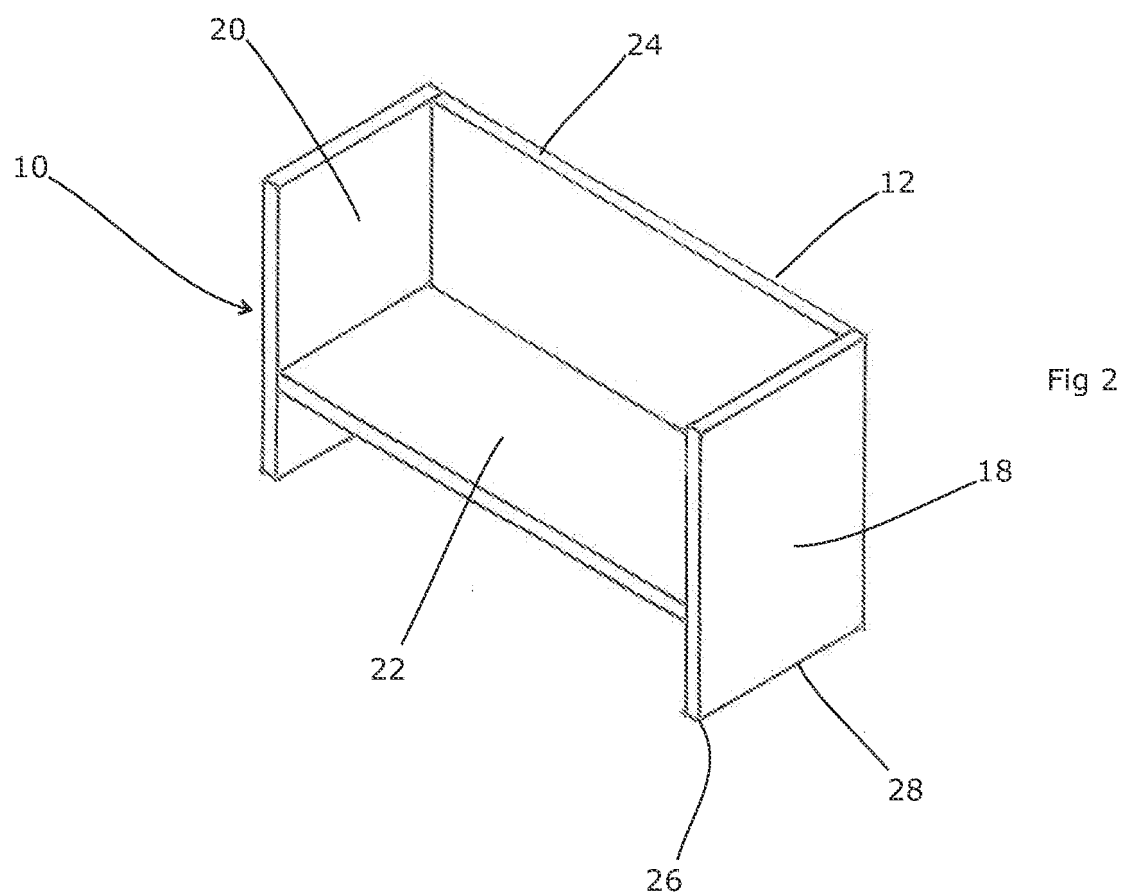
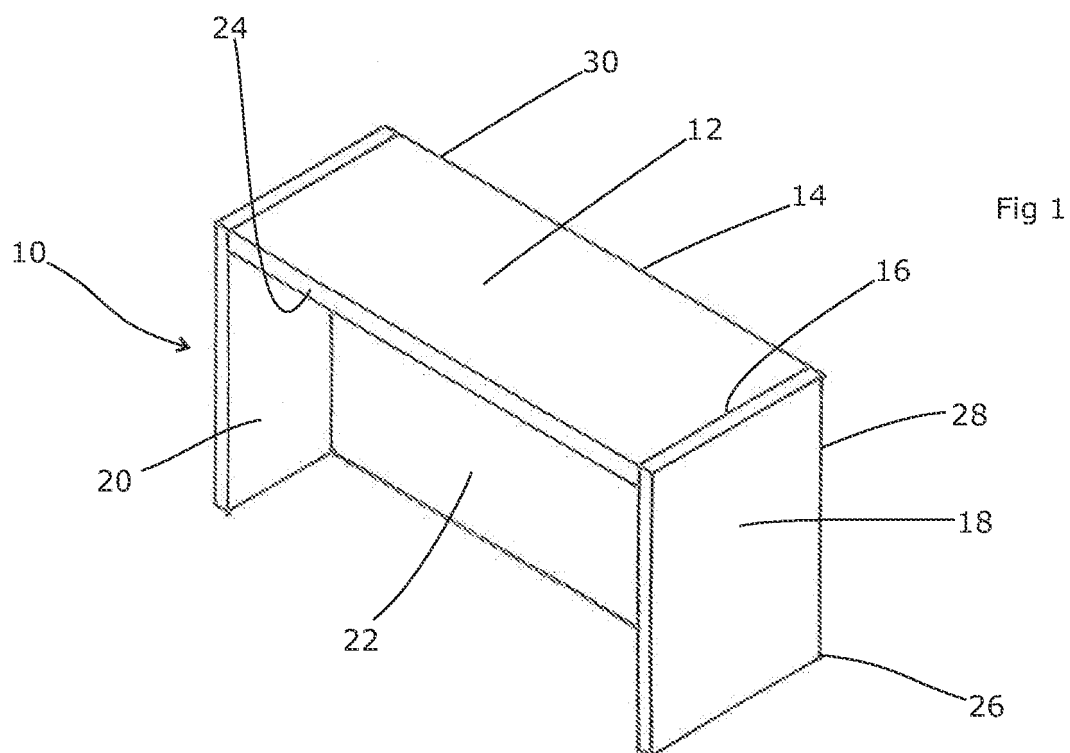
(58) Field of Search:
INT CL **A47B, A47C**
Other: **EPODOC, WPI and internet**

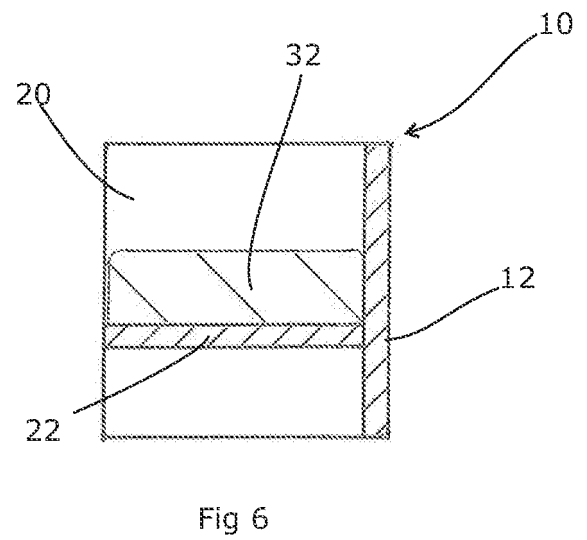
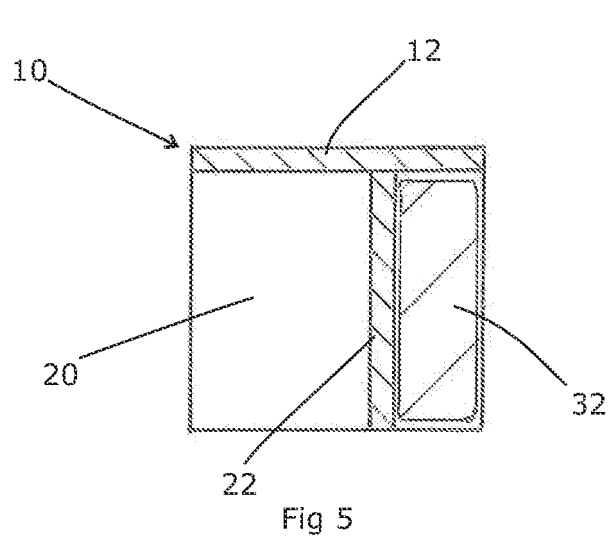
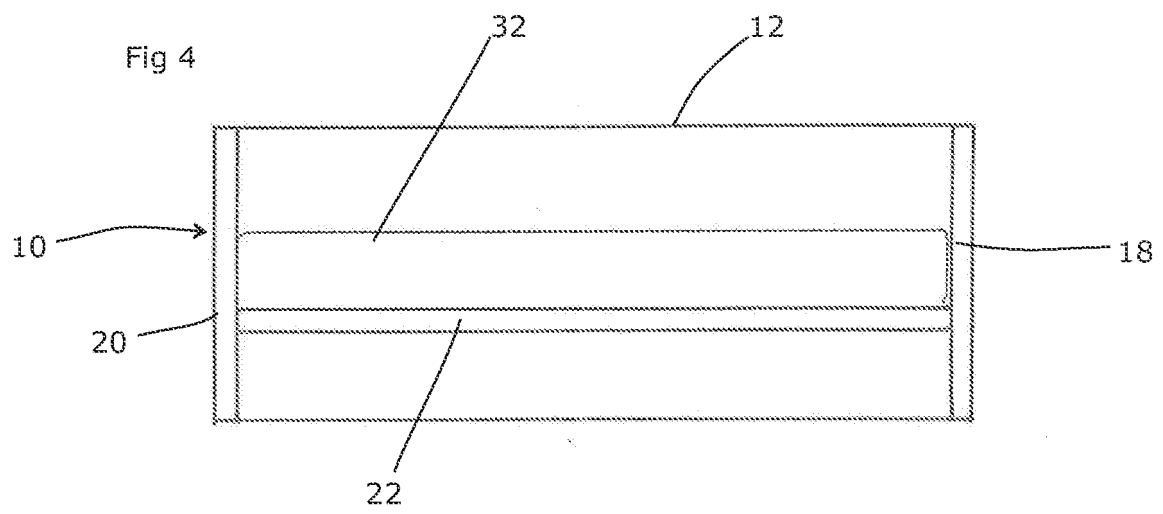
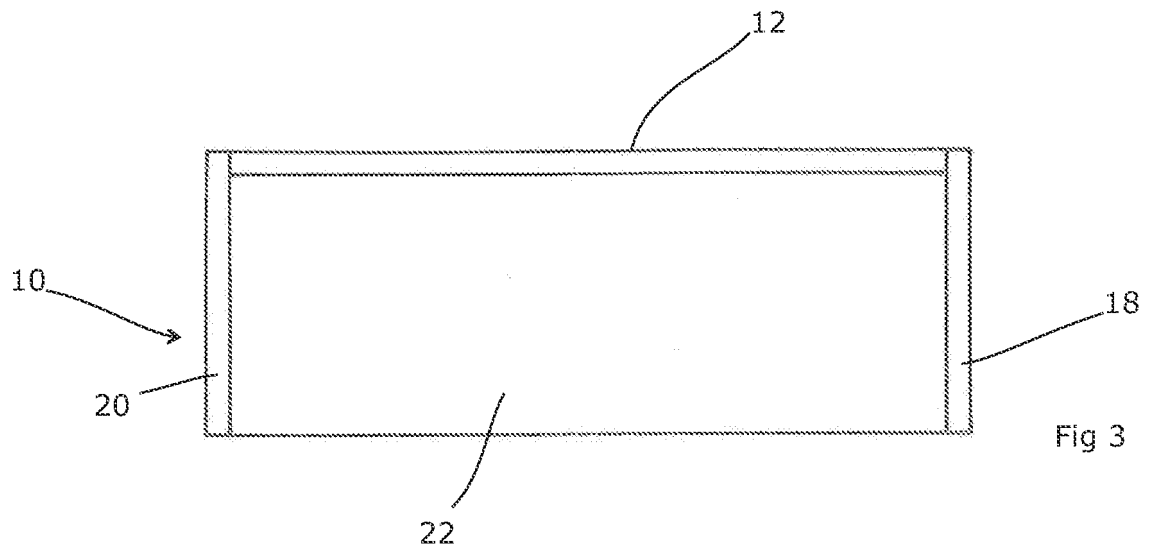
(54) Title of the Invention: **Combined Desk And Bed**
Abstract Title: **A desk convertible into a bed**

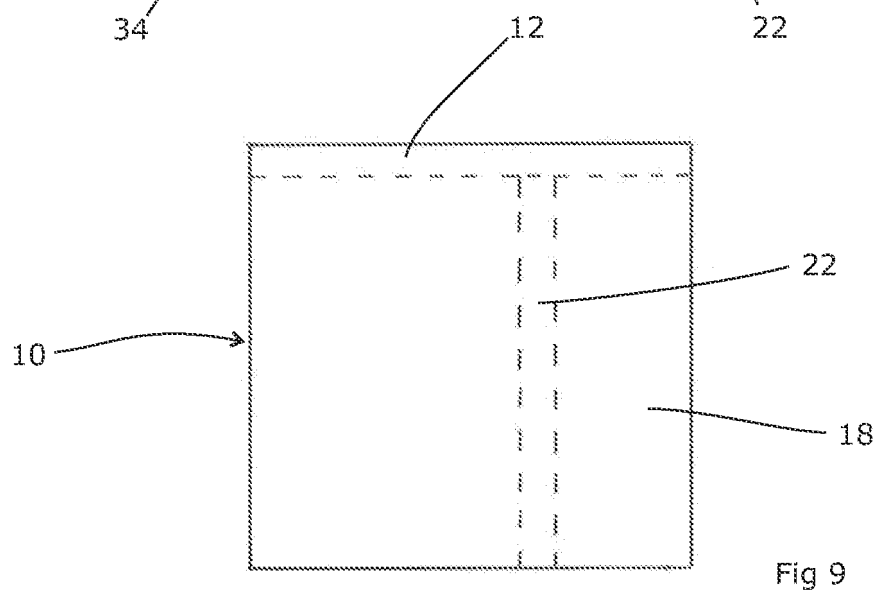
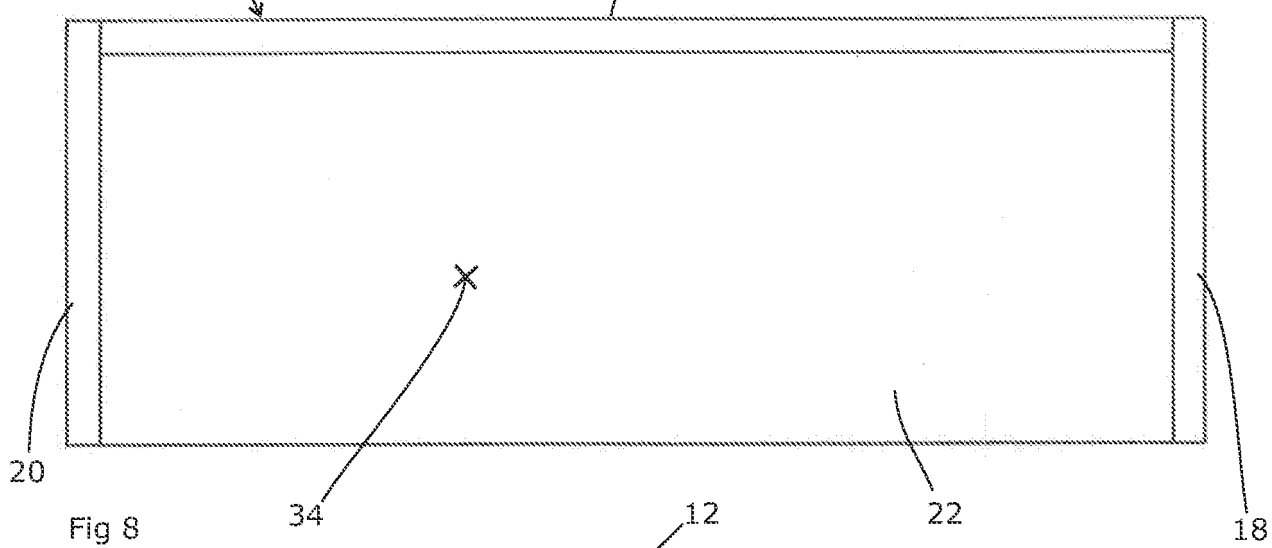
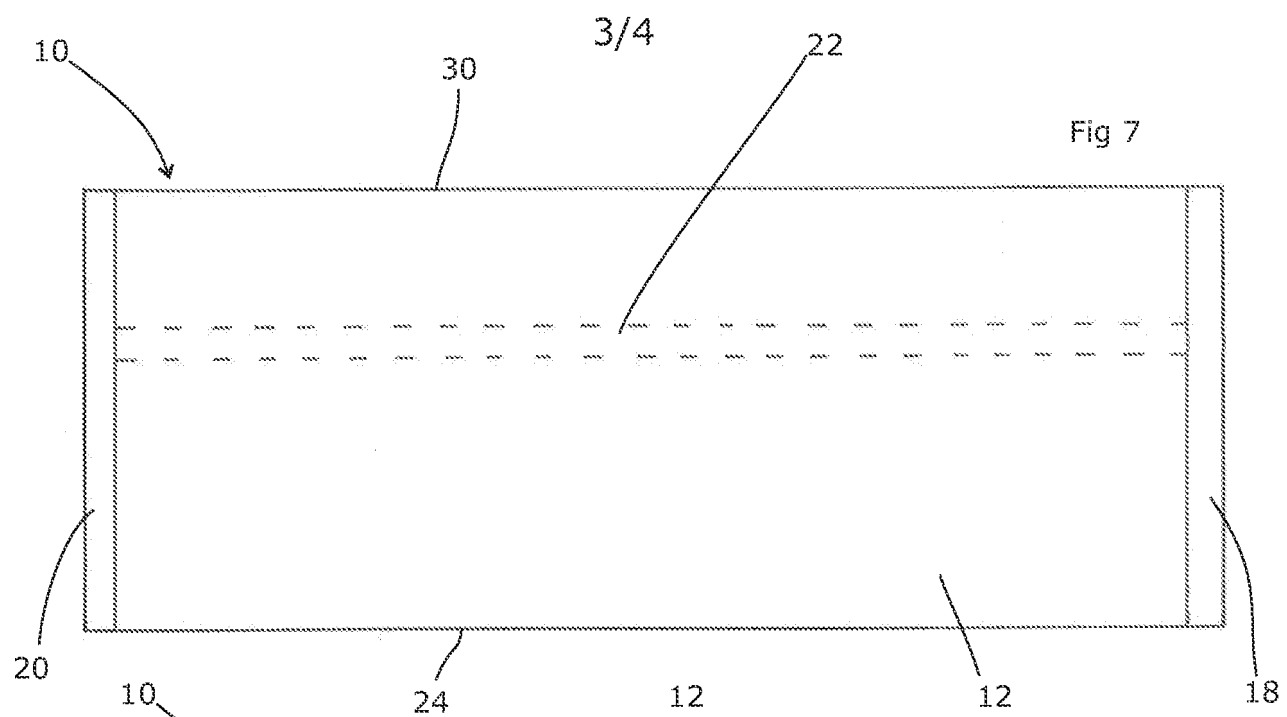
(57) An item of furniture comprising first 12 and second 22 planar support surfaces wherein the second surface 22 extends transversely from an underside of the first surface 12, legs extending from the first surface and spaced aside from the second surface and arranged to support the item with the first or second surface in a horizontal position and a mattress 32 sized to match the size of the second surface 22. The device may be convertible between a bed and desk arrangements. The mattress 32 may be less than 80cm wide and the second surface 22 may be spaced from a rear edge of the first surface 12 by a distance equal to the thickness of the mattress 32.



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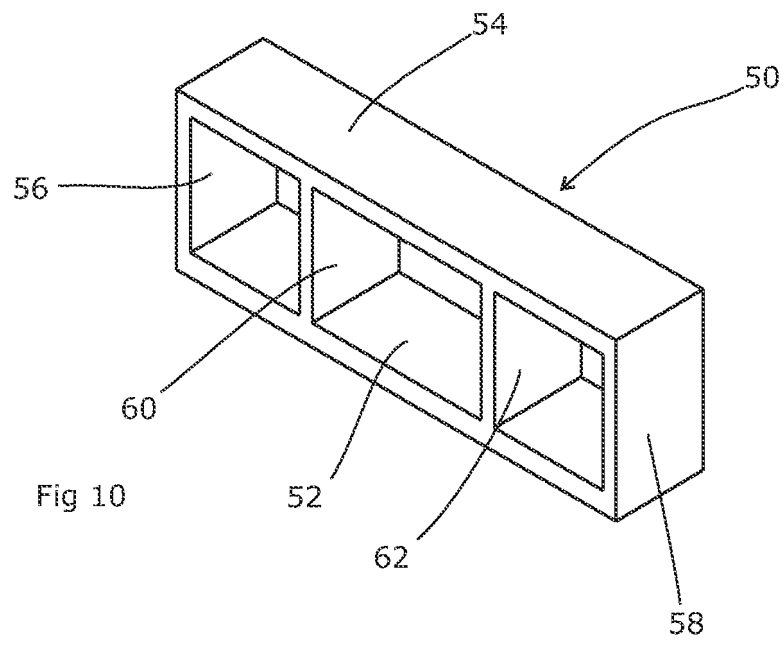


Fig 10

Combined Desk and Bed

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FIELD OF THE INVENTION

10 The present invention relates to an item of furniture able to combine the functions of a desk and a bed.

BACKGROUND ART

15 Many households like to maintain a spare bed in order to accommodate short-term visitors. However, the generally decreasing size of domestic dwellings, especially in urban areas, means that finding space for furniture that may only be used occasionally can present a challenge. This is particularly so given that the increasing prevalence of home working arrangements and the increasing adoption of information technology in the home both often mean that a desk is needed. In a small to medium size dwelling, this is typically placed in the spare bedroom, where a spare bed would otherwise be located.

20 As a result, efforts have been made in the past to combine a desk and a bed into a single item of furniture. Examples include EP-A-1,434,507 and EP-A-0,945,089, both of which provide a structure with moveable articulations that, when operated, move a desk structure out of the way and move a bed structure into place (or vice-versa). Both are examples of a genre of ideas which seek to ensure that that desk, when stowed, stays level and moves smoothly so that items left on the desk are not unduly disturbed

SUMMARY OF THE INVENTION

The constraint that the desk surface must remain horizontal at all times imposes a significant cost on the design of the furniture item. It means, in practice, that a base needs to be provided together with a system of articulations and links in order to guide the movement of the desk. The base needs to be substantial in order to remain stable during movement of the desk (with all its contents) and the bed. These result in a large and heavy structure costing between US\$2,000 and US\$4,500. Whilst this may be justified in some circumstances, such as a very constricted dwelling space in which the desk will be used most days and the bed used most nights, it is prohibitive for use of the device as an occasional guest bed.

We have realised that this constraint is not always relevant. For consumers who primarily want to use the item as a desk, but will need it as a bed only from time to time, the additional task of clearing the desk is not onerous as it will not be necessary on an especially frequent or regular basis. Likewise, a smooth articulated mechanism is unnecessary provided the conversion process is not unduly difficult.

The present invention therefore provides an item of furniture, comprising a first planar support surface and a second planar support surface, arranged with the second surface extending transversely from an underside of the first surface, legs located beneath the first surface and spaced aside from the second surface, arranged to support the item with either the first or the second surface in a substantially horizontal state, and a mattress sized to match the size of the second surface.

The result of this is an exceptionally simple design which can be converted from one function to the other by simply bodily rolling the item of furniture so that the appropriate surface is exposed and horizontal. As a result of its simplicity, the item can be manufactured at relatively low cost. The structure of two transverse surfaces and legs either side produces a rigid structure able to provide good support to both the desk and the bed and to withstand the rolling action. To provide a particularly rigid structure, the legs may be in the form of side walls having a stable foot formation on two transverse edges, one corresponding to the bed surface being upright and one corresponding to the desk surface being upright.

The first surface is thus located at a height (when upright) corresponding to the width of the second surface. This conveniently places the desk at a suitable work height of ideally between 60 and 80 cm, typically about 70cm. The second surface can be located underneath the first surface at a position spaced closer to the rear edge of the first surface than the front edge, as this will allow legroom under the first surface when used as a desk. Allowing a spacing between the second surface and the rear edge of the first surface both lifts the second (bed) surface from the floor to a more comfortable position and allows a concealed space behind the visible parts of the desk in which to store the mattress. Thus, we prefer that the spacing between the second surface and the rear edge of the first surface corresponds to the thickness of the mattress.

One consequence of this is that the resulting width of the bed surface and the mattress is the same as the height of the desk, i.e. about 70cm. This is narrower than a typical single bed, which varies between 90 and 99cm (as noted at http://en.wikipedia.org/w/index.php?title=Bed_size&oldid=562359255) and would normally be seen as insufficiently wide. However, the presence of the first surface immediately adjacent the second (bed) surface provides a "wall" against which the sleeping person can lean, thereby alleviating the otherwise problematic width.

BRIEF DESCRIPTION OF THE DRAWINGS

An embodiment of the present invention will now be described by way of example, with reference to the accompanying figures in which;

Figure 1 shows an isometric view of the item of furniture in a first orientation suitable for use as a desk;

Figure 2 shows an isometric view of the item of furniture in a second orientation suitable for use as a bed;

Figure 3 shows a view from the front of the item of furniture in the orientation of figure 1;

Figure 4 shows a view from the front of the item of furniture in the orientation of figure 2;

Figure 5 shows a vertical section through the item of furniture in the orientation of figure 1;

Figure 6 shows a vertical section through the item of furniture in the orientation of figure 2;

5 Figure 7 shows a view from above of the item of furniture in the orientation of figure 1;

Figure 8 shows a view from above of the item of furniture in the orientation of figure 2;

10 Figure 9 shows a view from one end of the item of furniture in the orientation of figure 1; and

Figure 10 shows an isometric view of an accompanying wall unit.

DETAILED DESCRIPTION OF THE EMBODIMENTS

15 Figures 1 and 2 show the unit of furniture 10 according to the present invention. In the orientation shown in figure 1, it comprises a desktop 12 which defines a first planar support surface, and which has a long dimension 14 and a short dimension 16 so as to define a typical rectangular desk shape. The desktop 12 is supported at either end by side walls 18, 20, each in the form of a rectangular panel extending vertically from the desktop 12 down to the floor and horizontally from the rear of the desktop 12 to the front.

20 A second planar support surface 22 also extends from an underside of the desktop 12 towards the floor. It extends substantially parallel to the long dimension 14 of the desktop 12, from one end of the desktop 12 to the other, at a location that is offset from the centreline of the desktop in the direction of the short dimension 16. Thus, the space under the desktop between the second planar support surface 22 and a front edge of the desktop 12 is deeper than the space between the second planar support surface 22 and a rear edge of the desktop 12. The second planar support surface 22 is supported at either
25 end by the side walls 14, 16 to which it is connected. In this embodiment, it also extends completely to the floor and assists in supporting the desktop 12, but this is not strictly essential.

Figure 2 shows the item of furniture after a 90 degree rotation about a horizontal axis aligned with the long dimension 14. This can be achieved in practice by lifting the front edge 24 of the desktop 12 and rotating the item 10 about a rear corner 26 of the side walls 18, 20 so that the (previously) vertical rear edges 28 of the side walls 18, 20 rest on the floor together with the rear edge 30 of the desktop 12. This places the desktop 12 in a vertical orientation and the second planar support surface 22 in a horizontal orientation. The latter will therefore define a bed surface, onto which a mattress can be placed.

For obvious reasons, it will be advisable to clear the top of the desk surface 12 prior to rotating the item 10. It may also be necessary to pull the item 10 forwards prior to rotating it, if for example the desk is pushed back against a wall.

Figure 3 shows the item 10 from the front, in the orientation of figure 1, showing the side walls 18, 20 supporting the desktop 12. Figure 4 shows the item 10 from the front, in the orientation of figure 2, with the bed surface 22 horizontal and with a mattress 32 placed on top of it in order to allow a comfortable sleep. Figures 5 and 6 show sections through the item, in the orientations of figures 1 and 2 respectively, illustrating that the mattress 32 fits within the space above the second planar support surface 22 when in use as a bed (figure 6) and behind the second planar support surface 22 when in use as a desk. The position of the second planar support surface 22, mentioned above as being offset from the centre of the desktop 12, is chosen so as to allow convenient storage of the mattress 32 behind the second planar support surface 22 when the item 10 is used as a desk. Often, a desk will be placed against a wall, thus immobilising the mattress 32. Alternatively, or in addition, stabilising straps could be provided to hold the mattress 32 in place.

The mattress 32 is easily moveable into position. Generally, the item 10 can be rolled into the bed orientation with the mattress 32 in its "stowed" position shown in figure 5. Once re-orientation of the item 10 is complete, the mattress 32 will then be below the bed surface 22 and can be pulled forwards out from underneath and lifted and pushed back onto the top of the bed surface 22 as shown in figure 6.

Figure 7 shows the unit 10 from above, in the desk orientation of figure 1, with the second planar support surface 22 shown in dotted and the offset position clearly illustrated. The spacing between the second planar support surface 22 and the rear edge 30 of the desktop is adequate to store the mattress 32, while the spacing between the second planar

support surface 22 and the front edge 24 of the desktop 12 is sufficient to allow for a user's legroom. Figure 8 shows the unit 10 from above, in the bed orientation of figure 2. The desktop 12 now defines a back wall for the bed, which together with the side walls 18, 20 defines three sides of a cot-style sleeping area 34. The overall length of the unit 10 is (in this embodiment) the typical length of a single bed plus the thickness of the side walls 18, 20. As a single bed is typically 1900mm long, and all the sections used to construct the unit 10 of this embodiment are nominally 60mm thick, this implies a total length for the unit of 2020mm. Likewise, a 780mm (nominal) depth for the desk allows a 240mm gap in which to store the mattress 32 and 480mm of legroom either side of a 60mm solid wall.

Typically, the height of a desk is determined by the range of comfortable sitting positions, with a measurement of about 750mm being particularly suitable. With a 60mm thick desktop 12, this allows the sleeping area 34 to have a width of 690mm. As explained above, this is narrower than would usually be regarded as necessary, but in practice we have found this to be workable given the cot-like configuration of the sleeping area 34 with the desktop 12 acting as a rear wall and stabilising the sleeper.

Figure 9 shows a view of the unit from one end, showing the unit 10 in the desk orientation. The bed orientation differs only via a 90 degree clockwise rotation, of course. The side wall 18 supports and retains in place the desktop 12 and the second planar surface 22 via suitable fixings that attach the side wall 18 to the end sections of the desktop 12 and the second planar surface 22 in the manner generally known in the furniture-making industry. For example, some fixings extend through or from the side wall into a suitable socket provided in the end sections. A similar arrangement exists at the other end of the unit 10.

The side walls are shown as solid rectangular items, which is the simplest design that provides the necessary functions of the side walls. However, they could take a different form, provided that they support the item when in both orientations and provided the two planar surfaces receive adequate support (which may or may not be provided via the side walls). For example, a more open, scalloped, or framework structure may be provided.

Likewise, the desktop is shown as being rectangular, but this is not essential to the invention. A straight back edge has the advantage that it allows the item to rest against the floor when the unit is in the bed orientation, but so long as this action is permitted, the

design of the desk is relatively free. For example, many desks have a "return" via which a partial L-shape is defined by an extending portion on one side or other of the front edge of the desk, and such returns are perfectly compatible with the present invention. Equally, the rear and side edges of the desk could be profiled, provided that the unit remained capable of being rotated to and from the bed orientation.

Figure 10 shows a wall unit that could, if desired, be supplied together with the desk/bed unit 10. Manufactured from the same 60mm sections as the desk/bed unit 10, it has a lower shelf 52 and an upper shelf 54 spaced by vertical walls 56, 58 at either end of the two shelves, and two vertical dividers 60, 62 to divide the lower shelf 52 into three compartments and assist in supporting the upper shelf 54. This would provide a positive aesthetic contribution if affixed to a wall above the desk/bed unit 10 and would also provide a convenient location onto which to clear items left on the desktop 12 prior to rotating the unit 10 to reveal the bed configuration.

A wide range of other storage configurations will of course be acceptable and are well-known per se in the art. Such other configurations such as a single shelf, a double shelf, a cupboard, or other forms of storage could be provided in combination with the desk/bed unit of the present invention.

It will of course be understood that many variations may be made to the above-described embodiment without departing from the scope of the present invention.

CLAIMS

1. An item of furniture, comprising a first planar support surface and a second planar support surface, arranged with the second surface extending transversely from an underside of the first surface, legs extending from the first surface and spaced aside from the second surface, arranged to support the item with either the first or the second surface in a substantially horizontal state, and a mattress sized to match the size of the second surface.
2. An item of furniture according to claim 1 in which the legs comprise side walls having a stable foot formation on at least two transverse edges thereof.
3. An item of furniture according to claim 2 in which the one of the transverse edges corresponds to the bed surface being upright and one corresponds to the desk surface being upright.
4. An item of furniture according to any one of the preceding claims in which the width of the second surface is less than 80 cm.
5. An item of furniture according to any one of the preceding claims in which the second surface is located underneath the first surface at a position spaced closer to a rear edge of the first surface than a front edge.
6. An item of furniture according to any one of the preceding claims in which the second surface is located underneath the first surface at a position spaced from a rear edge of the first surface by a distance corresponding to the thickness of the mattress.
7. An item of furniture substantially as described herein with reference to and/or as illustrated in the accompanying figures.



Application No: GB1317342.2

Examiner: Daniel Cox

Claims searched: 1-7

Date of search: 27 March 2014

Patents Act 1977: Search Report under Section 17

Documents considered to be relevant:

Category	Relevant to claims	Identity of document and passage or figure of particular relevance
X	1-5	DE102012007690 A1 KAYSER, See the figures
X	1-5	GB2172798 A DANIN, See figure 5 in particular
X	1-5	WO91/04694 A1 HOLLINGSWORTH, See figure 3 in particular
X	1-5	WO99/62380 A1 DANIN, See whole document
X	1-5	EP0565071 A1 MANZONI, See whole document
X	1-5	US1399342 A GUNN, See figure 3 in particular
X	1-5	JPS5444114U UNKNOWN, See figure 3 in particular
X	1-5	JPS5712968U UNKNOWN (2), See the figures
X	1-6	JPH1118883 A NAGATAKE, See figure 6 in particular

Categories:

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.



Field of Search:

Search of GB, EP, WO & US patent documents classified in the following areas of the UKC^X :

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Worldwide search of patent documents classified in the following areas of the IPC

A47B; A47C

The following online and other databases have been used in the preparation of this search report

EPODOC, WPI and internet

International Classification:

Subclass	Subgroup	Valid From
A47C	0017/62	01/01/2006
A47B	0085/06	01/01/2006