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(54) **INTERLOCKING FURNITURE ASSEMBLY
WITH POSITIVE INTERLOCKING MEANS**

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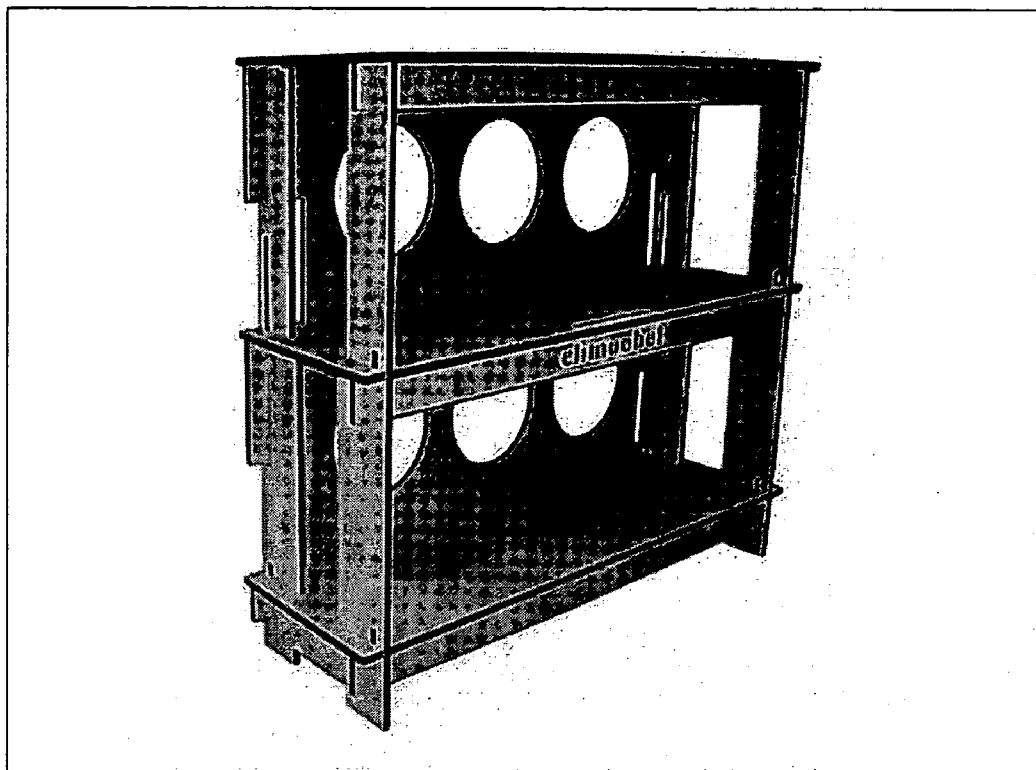
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(57) **ABSTRACT**

Examples of collapsible furniture which can be simply assembled using interlocking means and without the need for any conventional fastening means are described. The collapsible furniture is also easily disassembled for storage and transport.

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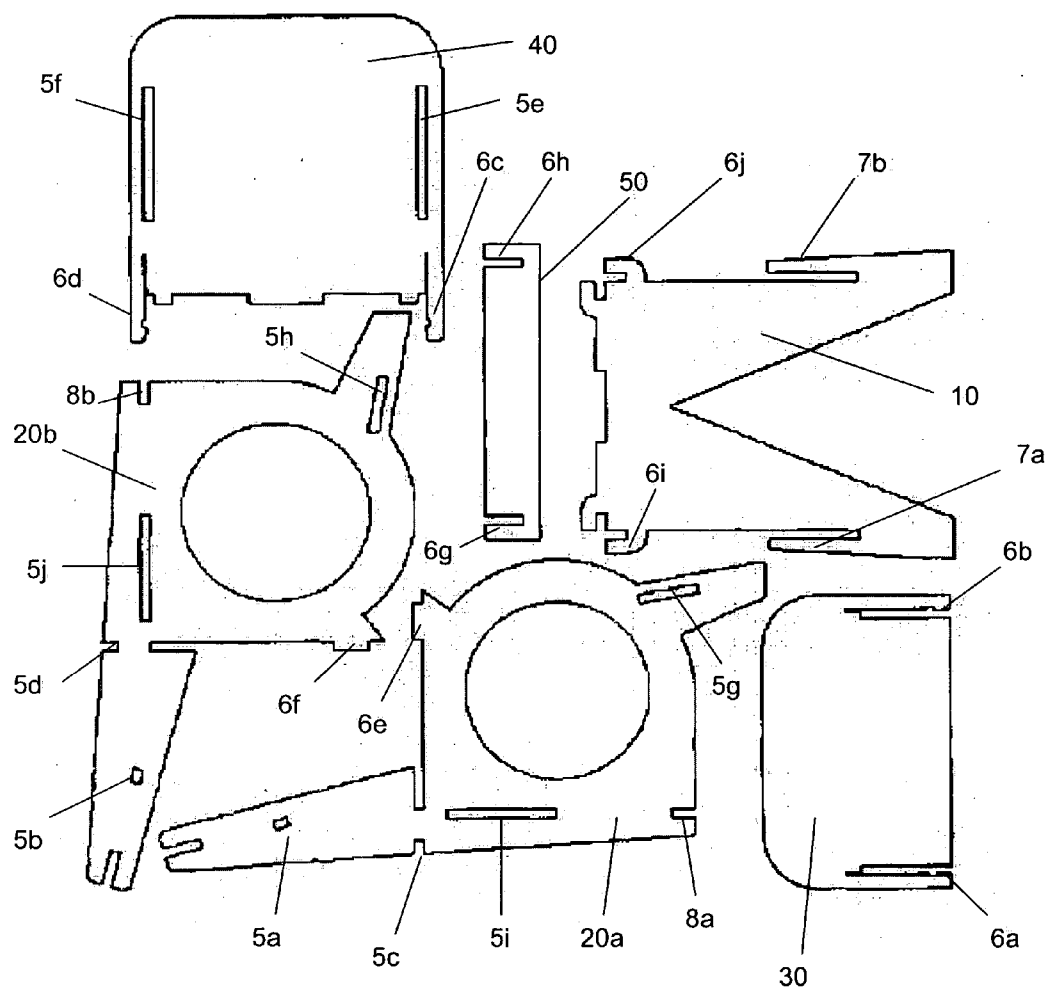


Fig. 1

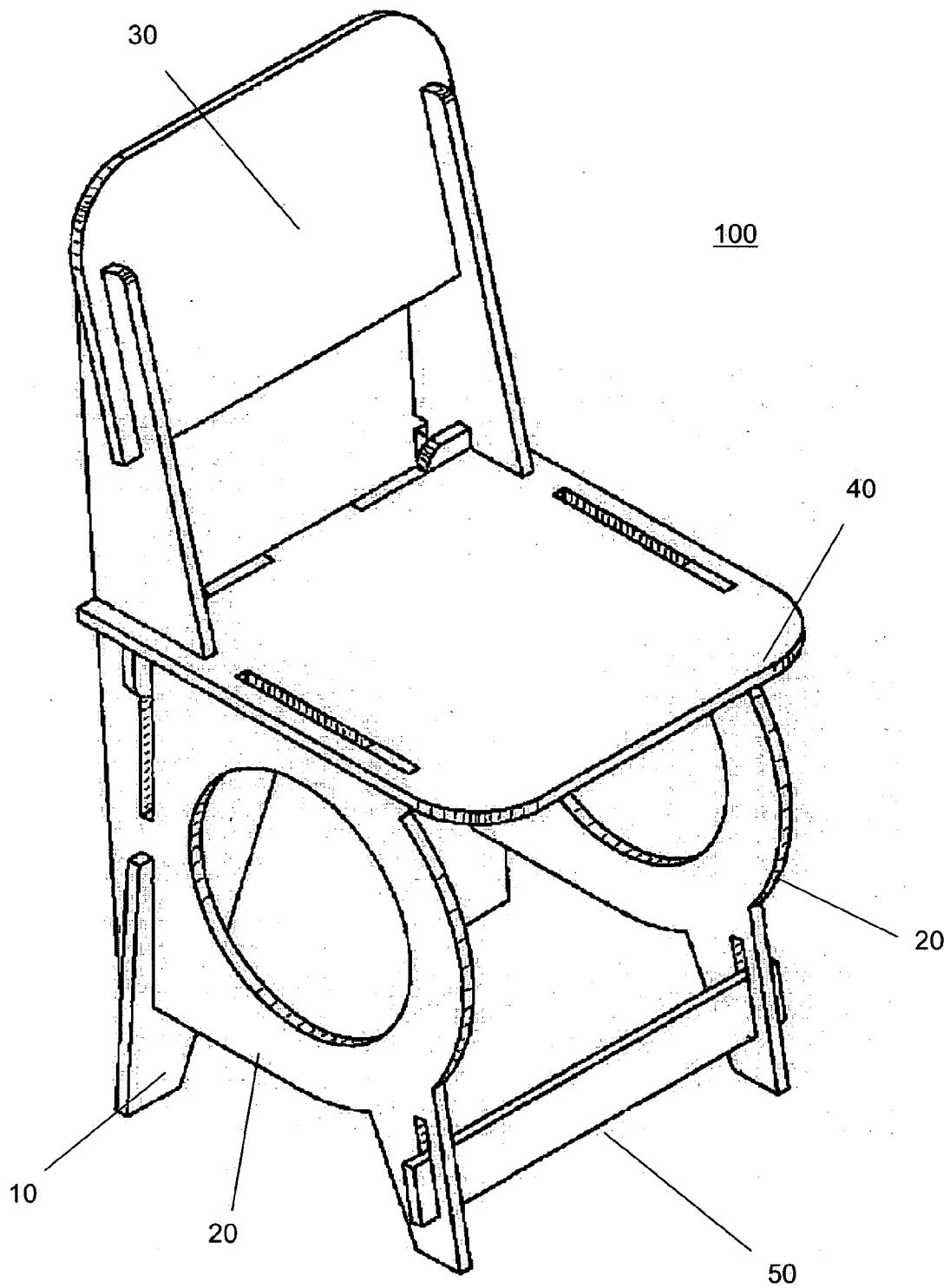


Fig. 2

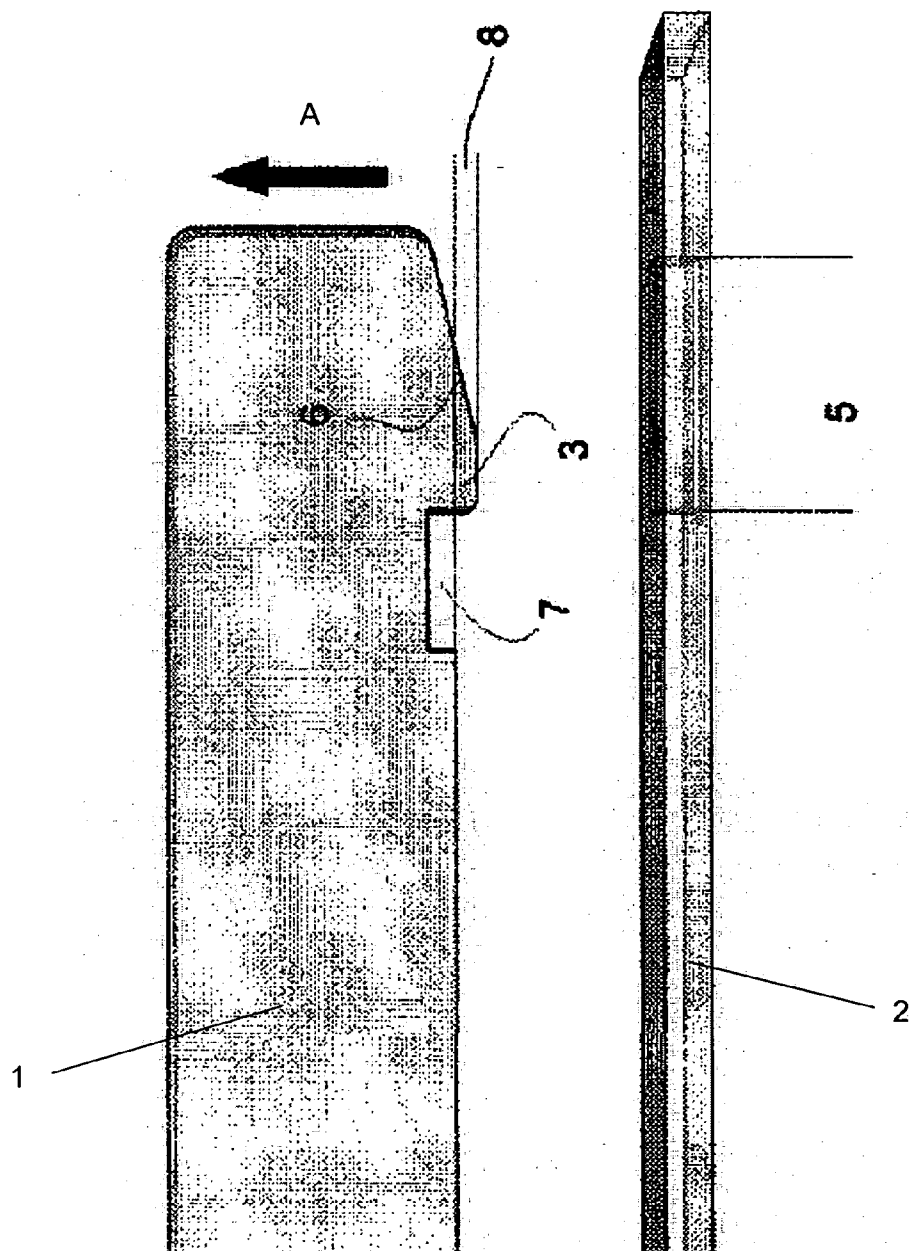


Fig. 3A

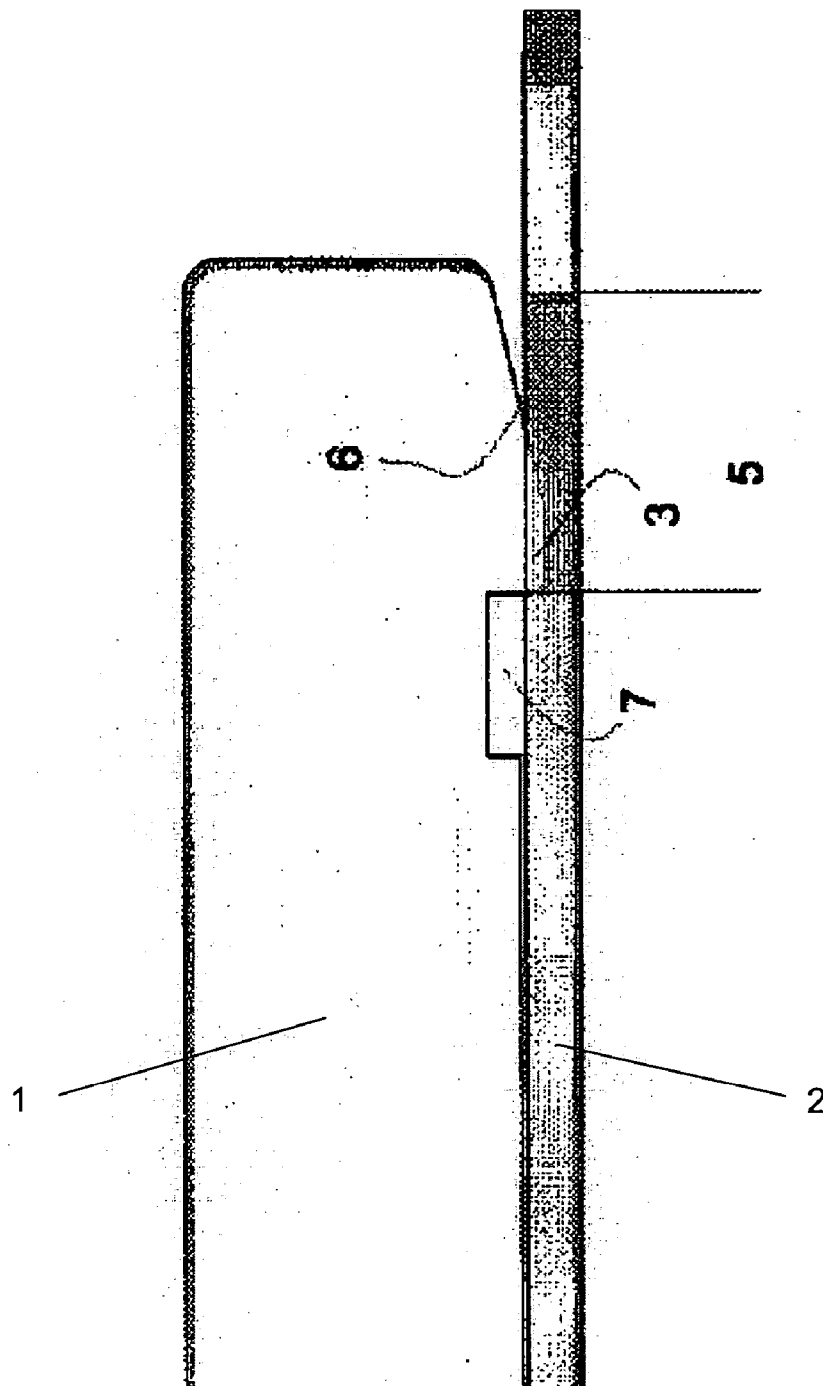


Fig. 3B

Fig. 4A

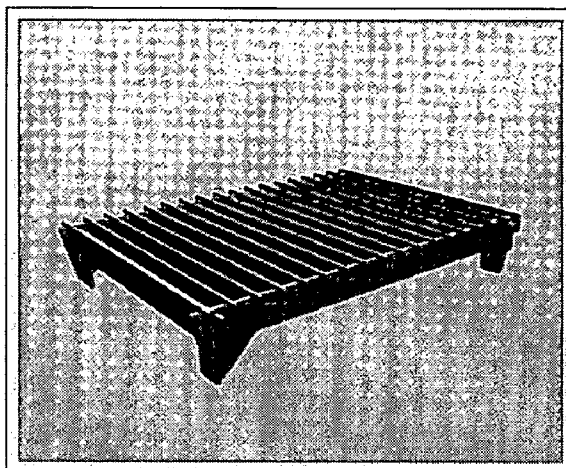


Fig. 4B

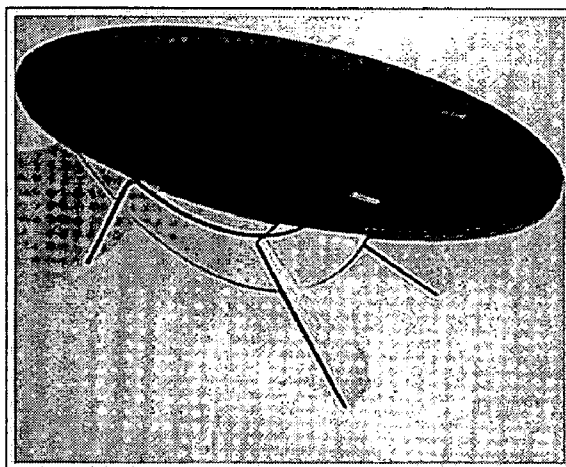


Fig. 4C

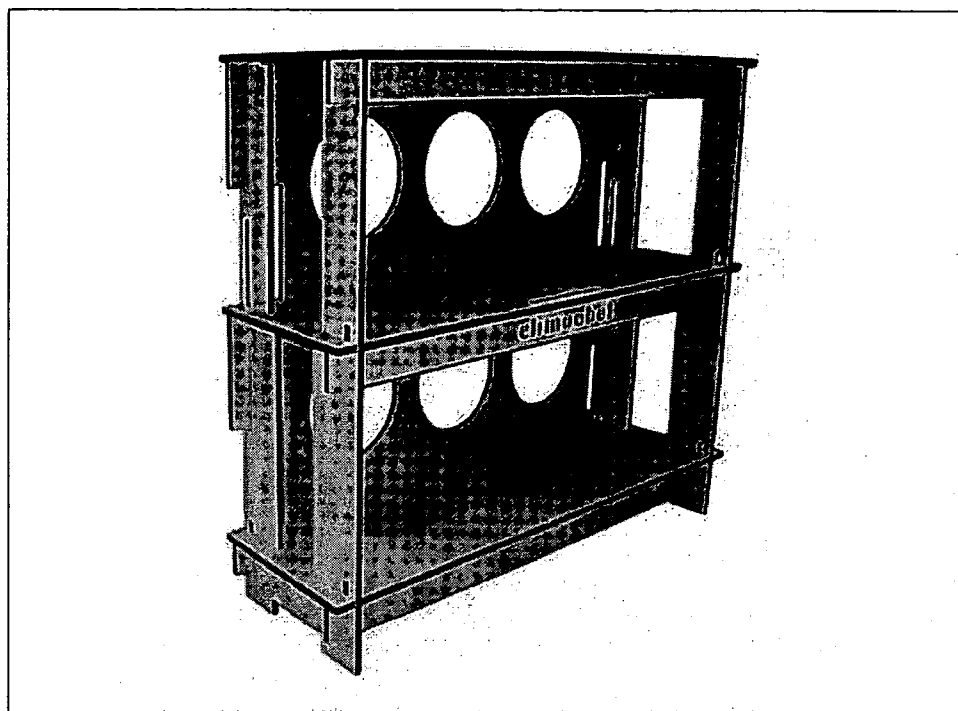


Fig. 4D

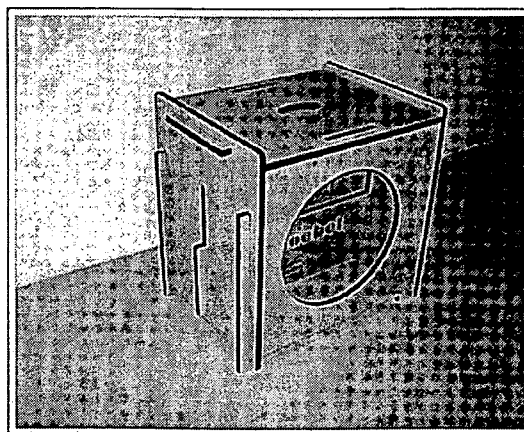


Fig. 4E

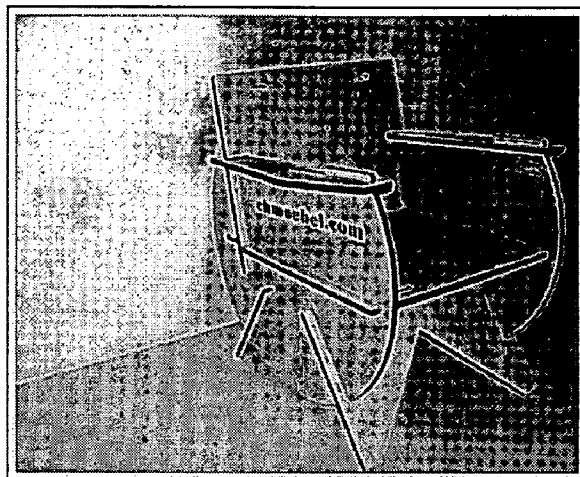


Fig. 4F

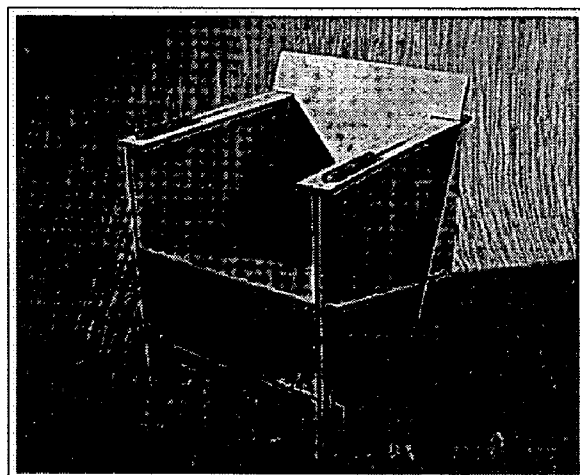
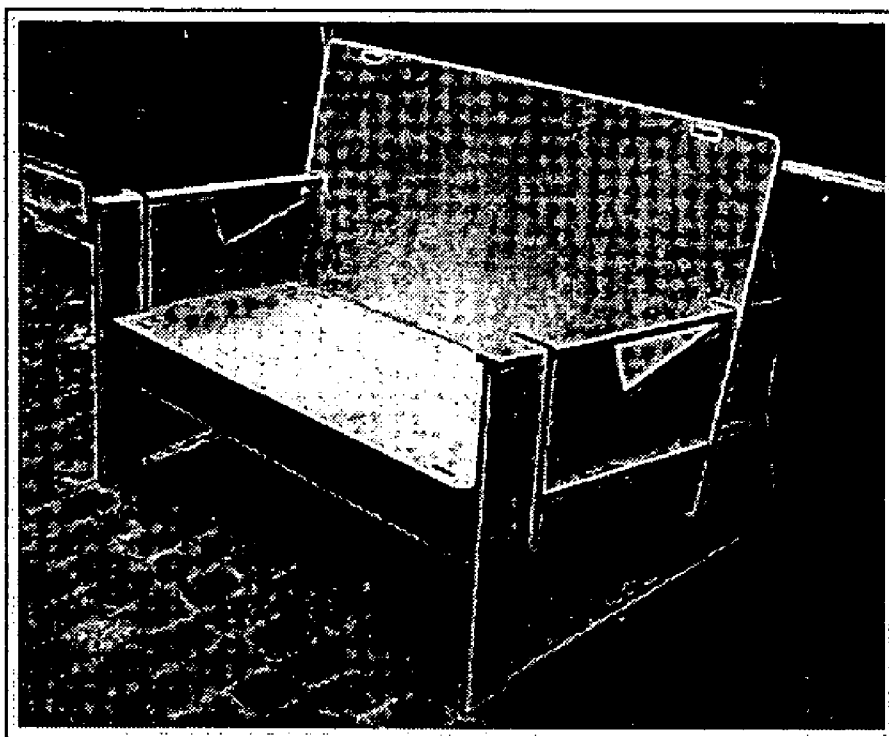


Fig. 4G



INTERLOCKING FURNITURE ASSEMBLY WITH POSITIVE INTERLOCKING MEANS

TECHNICAL FIELD

[0001] This disclosure relates generally to collapsible furniture which can be simply assembled without the need for any conventional fastening means and can be easily fabricated.

BACKGROUND

[0002] Conventional furniture construction uses glue and/or fasteners installed with tools. Once the conventional furniture has been assembled, shipping and storage costs are increased due to the size of the assembled conventional furniture.

[0003] Collapsible furniture is known in the art. For example, U.S. Pat. No. 5,387,027 proposes take-apart furniture. A disadvantage associated with the proposed take-apart furniture is that the members therein tend to slide causing structural instability.

SUMMARY

[0004] The present disclosure provides a number of examples of novel and unobvious mechanisms for collapsible furniture which allow the furniture to be easy to assemble without the use of tools, structurally rigid when assembled in order to support added weight, and easy to disassemble. Collapsible furniture provides distinct advantages over conventional furniture for the purposes of shipping and storage.

[0005] In one example of this disclosure, collapsible furniture consisting of substantially planar members which positively interlock and reversibly unlock is provided. Interlocking members have respective, complementary locking means (for example, male and female components) to provide structural rigidity. The members also have nook components to aid in the disassembly of the collapsible furniture. The collapsible furniture of the present disclosure can be assembled without the use of any nails, screws, glue or any other fasteners or adhesives. Furthermore, the planar members may be easily disassembled and compacted into space-saving form for convenient transport and storage.

[0006] The techniques discussed in this disclosure can be applied to various collapsible furniture of assorted sizes and shapes, such as, for example, a bed, desk, table, shelf, stool, chair (such as dining chair, lounge chairs, loveseat, other furniture on which one can sit), etc.

BRIEF DESCRIPTION OF THE DRAWINGS

[0007] The features of the present disclosure can be more readily understood from the detailed description below with reference to the accompanying drawings wherein:

[0008] FIG. 1 is a plan view of unassembled collapsible furniture members according to an example of the present disclosure.

[0009] FIG. 2 is a perspective view of an assembled furniture structure according to an example of the present disclosure.

[0010] FIG. 3a is a side view of interlocking means in an unlocked position according to an example of the present disclosure.

[0011] FIG. 3b is a side view of interlocking means in a locked position according to an example of the present disclosure.

[0012] FIGS. 4A through 4G show additional examples of furniture including the interlocking means of the present disclosure.

DETAILED DESCRIPTION

[0013] In describing examples and preferred embodiments in connection with the drawings, specific terminology is employed for the sake of clarity. However, the disclosure of this patent specification is not intended to be limited to the specific terminology so selected, and it is to be understood that each specific element includes all technical equivalents that operate in a similar manner.

[0014] FIG. 1 shows unassembled members for a collapsible chair, according to an example of the present disclosure. The unassembled collapsible members consist of a first back member 10, side members 20a and 20b, a second back member 30, a seat member 40, and a front member 50. The members 20a, 20b, 30, 40 and 50 have interlocking means which allow each of the side members 20a and 20b to interlock with each of the back member 30, the seat member 40 and the front member 50. The side members 20a and 20b provide support to the seat member 40 (which is horizontal when assembled), and the members 20a, 20b, 30, 40 and 50 provide structural rigidity when interlocked and combined with the first back member 10.

[0015] The interlocking means may comprise female components and complementary male components which when inserted in the female components and interlocked therewith secure the respective members to each other. For example, male components 6a and 6b of back member 30 can be inserted in female component 5a of side member 20a and female component 5b of side member 20b, respectively. In addition, male components 6c and 6d of seat member 40 can be inserted in female component 5c of side member 20a and female component 5d of side member 20b, respectively. Additional corresponding male and female component pairings may be interlocked to provide structural rigidity for the furniture structure including male components 6e and 6f of side members 20a and 20b inserted into female components 5e and 5f of seat member 40; male components 6i and 6j of back member 10 inserted into female components 5i and 5j of side members 20a and 20b; and male components 7a and 7b of back member 10 inserted into female components 8a and 8b of side members 20a and 20b.

[0016] FIG. 2 shows an assembled furniture structure 100 according to an example of the present disclosure. The front member 50 may be attached to side members 20 by interlocking male components 6g and 6h of front member 50 with female components 5g and 5h of side members 20a and 20b to provide additional stability to assembled furniture structure 100.

[0017] FIGS. 1 and 2 show a collapsible dining chair. However, it should be apparent to one skilled in the art that the subject matter of this disclosure can be incorporated in other furniture of assorted sizes and shapes, such as, for

example, a bed (FIG. 4A), table (FIG. 4B), shelf (FIG. 4C), stool (FIG. 4D), lounge chairs (FIGS. 4E and 4F), loveseat (FIG. 4G), desk, etc.

[0018] FIG. 3a shows a side structural view of positive interlocking means in an unlocked position while FIG. 3b shows a side structural view of positive interlocking means in a locked position according to an example of the present disclosure. The positive interlocking means of FIGS. 3a and 3b comprises a male component 1 and a female component 2. Male component 1 further comprises hook portion 3 and nook portion 7. Female component 2 has a recessed portion 5 for receiving hook portion 3. Recessed portion 5 is preferably dimensioned to receive and securely hold hook portion 3. Hook portion 3 is preferably dimensioned to enable unlocking without the use of excessive force.

[0019] Male component 1 is preferably flexible enough to deflect at a dimension generally designated as numeral 8 such that hook portion 3 will be level with the rest of male component 1 when male component 1 is bent slightly in direction A. By allowing for such a deflection, hook portion 3 may be easily inserted into recessed portion 5. Once inserted, hook portion 3 is secured within recessed portion 5 at a dimension 8 to assure male component 1 and female component 2 are interlocked, providing structural rigidity for assembled furniture structure 100.

[0020] In addition, hook portion 3 is sloped at such an angle, generally designated as numeral 6, to allow hook portion 3 to be slidably inserted into recessed portion 5 of the female component 2. By including the positive interlocking means illustrated in FIGS. 3a and 3b in addition to the interlocking means described above, the furniture structure of the present disclosure has an additional structural advantage over prior art furniture structures because the positive interlocking means provides additional structural rigidity by preventing interlocked members from sliding.

[0021] Nook portion 7 provides gripping means for reversibly unlocking male component 1 and female component 2. Although no tools are necessary for the assembly and disassembly of furniture structure 100, a tool, such as a screwdriver, may be inserted into nook portion 7 to act as a fulcrum in aiding in the unlocking of male component 1 and female component 2.

[0022] The members 10, 20a, 20b, 30, 40 and 50 may be made of any of the various materials used for furniture, such as plywood, plastic, other composite materials, etc.

[0023] The above specific examples and embodiments are illustrative, and many variations can be introduced on these embodiments without departing from the spirit of the disclosure or from the scope of the appended claims. For example, elements and/or features of different illustrative embodiments may be combined with each other and/or substituted for each other within the scope of this disclosure and appended claims.

What is claimed is:

1. A furniture structure comprising:

two side members;

at least one back member to be interlocked with said side members; and

a horizontal member to be interlocked with said side members,

wherein at least one of said side members, back members and horizontal member further includes positive interlocking means comprising a hook portion to interlock with a recessed portion of another one of said side members, back members and horizontal member.

2. The furniture structure according to claim 1 wherein said hook portion is sloped for slidably attaching to said recessed portion.

3. The furniture structure according to claim 1 wherein said positive interlocking means further comprises a nook portion for reversibly unlocking said hook portion from said recessed portion.

4. The furniture structure of claim 1, wherein at least one of said side members, back members and seat member includes a female component, and another of the members includes a male component configured to be inserted in and interlock with said female component.

5. The furniture structure according to claim 1, further comprising a front member to be coupled to said side members to provide additional support.

6. The furniture structure according to claim 1, wherein each side member includes first means for interlocking with said horizontal member, and respective second means for interlocking with said back members.

7. A furniture structure for seating, tables, shelving, beds and the like consisting of substantially planar members which positively interlock and reversibly unlock, comprising:

one or more horizontal members; and

at least one support member to be interlocked with said one or more horizontal members,

wherein at least one of said horizontal members and support members further includes positive interlocking means comprising a hook portion to interlock with a recessed portion of another one of said horizontal members and support members.

8. The furniture structure according to claim 7 wherein said hook portion is sloped for slidably attaching to said recessed portion.

9. The furniture structure according to claim 7 wherein said positive interlocking means further comprises a nook portion for reversibly unlocking said hook portion from said recessed portion.

10. The furniture structure of claim 7, wherein at least one of said horizontal members and support members includes a female component, and another of the horizontal members and support members includes a male component configured to be inserted in and interlock with said female component.

11. A furniture structure comprising:

a plurality of substantially planar members which positively interlock and reversibly unlock,

wherein at least one of said planar members includes positive interlocking means comprising a hook portion to interlock with a recessed portion of another one of said planar members.

12. The furniture structure of claim 11, wherein said furniture structure includes a chair.

13. The furniture structure of claim 11, wherein said furniture structure includes a table.

14. The furniture structure of claim 11, wherein said furniture structure includes a shelf.

15. The furniture structure of claim 11, wherein said furniture structure includes a stool.

16. The furniture structure of claim 11, wherein said furniture structure includes a desk.

17. The furniture structure of claim 11, wherein said furniture structure includes a bed.

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