United States Patent

[11] **3,570,418**

[72] Inventor **Anthony Edward William Gooding**
400 Durnsford Road, London,S.W.19, England

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[33] **Great Britain**
[31] **55,559**

[54] **ASSEMBLY OF ELEMENTS TO FORM ARTICLES OF FURNITURE**
4 Claims, 11 Drawing Figs.

[52] **U.S. Cl.** **108/111,** 108/153, 297/440, 312/265
[51] **Int. Cl.** **A47b 3/06**
[50] **Field of Search** 108/153, 111, 158, 114; 312/265, 264; 297/440, 450, 1, 442, 443

[56] **References Cited**

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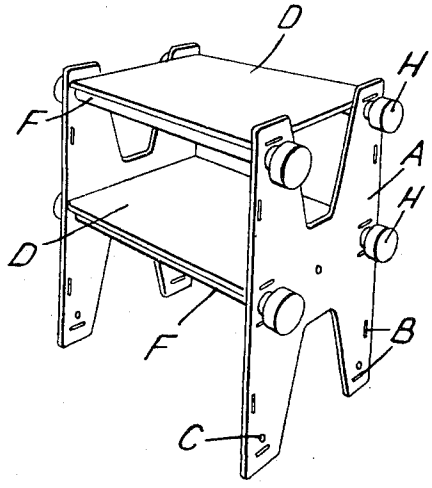
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Primary Examiner—Francis K. Zugel
Attorney—Watson, Cole, Grindle and Watson

ABSTRACT: The invention relates to an assembly of elements which can be readily placed together to form differing types of furniture. Equally, such furniture may be dismantled and the type of furniture changed, for instance the form may be a chair or a table or a table top with a shelf, etc. It consists of generally two rigid supports between which is placed a rigid element, such rigid element being engaged by means of tongues and slots, and the whole structure being rigidly held together by interconnecting elements adapted to tighten the supports towards each other.



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2 Sheets-Sheet 1

Fig.1.

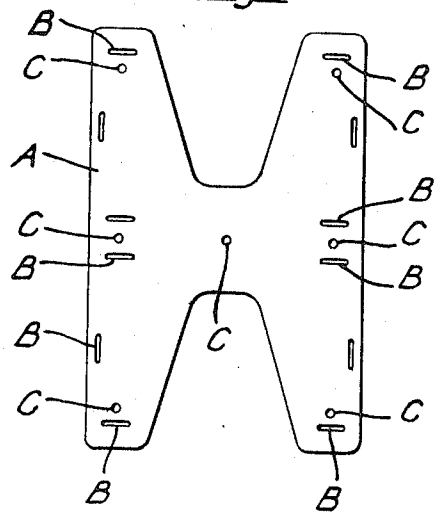


Fig.2.

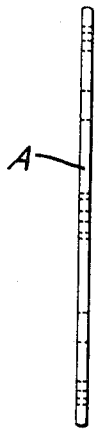


Fig.3.

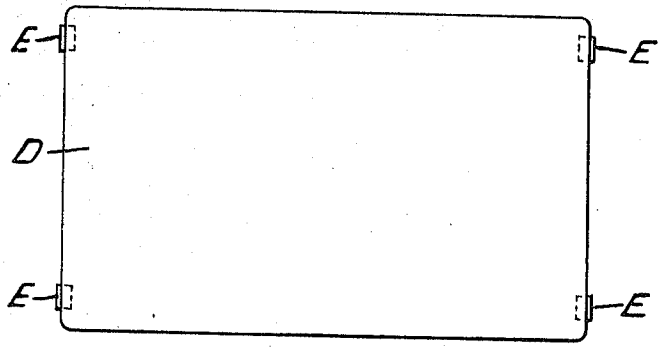


Fig.4.

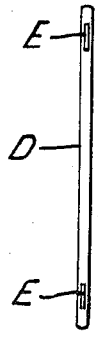


Fig.5.

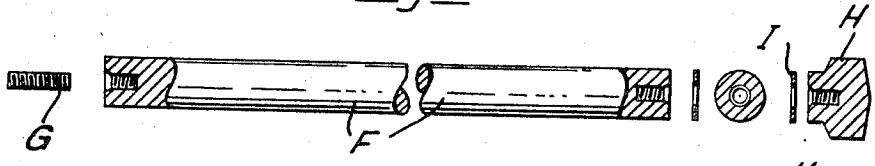
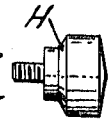


Fig.6.



Inventor

Anthony Edward William Gooding

By

Watson, Cole, Grindle & Watson

Attorney

Fig. 7.

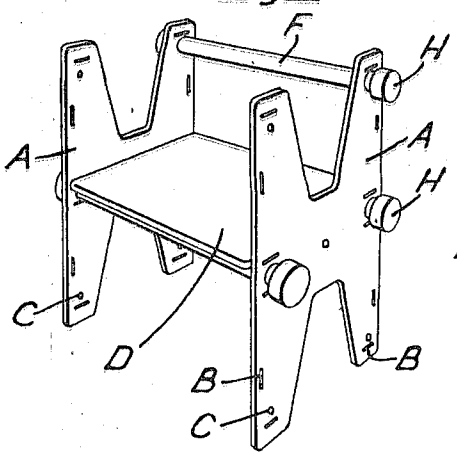


Fig. 8.

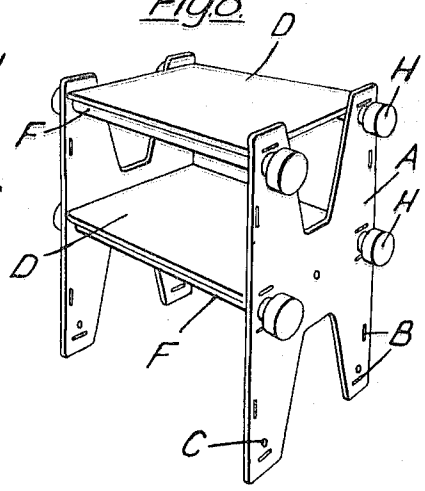


Fig. 9.

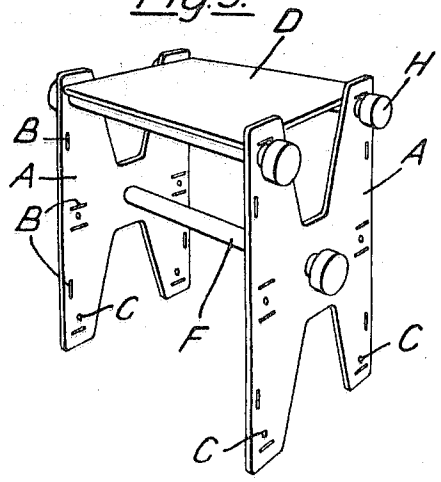


Fig. 10.

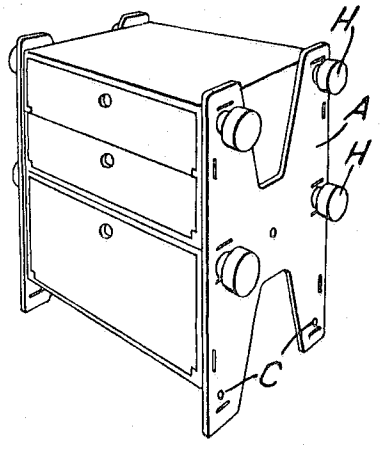
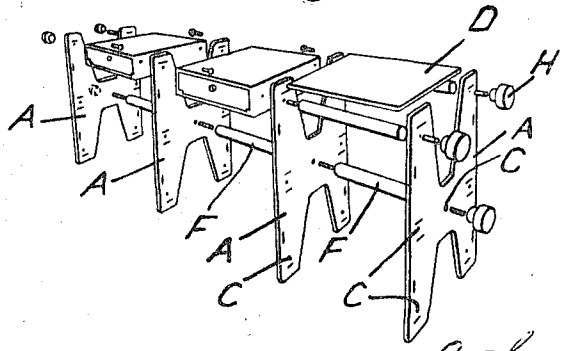


Fig. 11.



Inventor

Anthony Edward William Gooding

By

Watson, Cole, Grindle & Watson

Attorney

ASSEMBLY OF ELEMENTS TO FORM ARTICLES OF FURNITURE

DESCRIPTION

This invention relates to an assembly of elements to form articles of furniture.

The invention seeks to provide a number of standardized parts which can be assembled to form furniture such as chairs, tables, desks, occasional tables, bookcases etc. The invention lends itself to children's furniture and will enable children to assemble and reassemble such furniture, not only for practical purposes but also add amusement and be of educational purpose.

One of the objects of the invention is to provide furniture which can be assembled and dismantled without the necessity of tools.

Another object is to provide an assembly of elements which may be assembled into differing forms of furniture.

A still further object is to provide furniture which may consist of elements which are, generally, of a number of flat pieces of rigid material lending themselves for packing and transportation in a flat condition but which can be easily assembled for use.

The invention aims at providing knock down furniture which can be assembled and dismantled by unskilled persons and children and which may form amusement as well as an educational value.

In addition, a further object is to provide a series of modular parts which may be assembled to form a variety of differing forms of furniture including say, chairs, tables, bookcases, tables with shelves, desks, sets of drawers, and similar types.

Furthermore, a series of assemblies may be coupled to each other with the object of providing useful groups of furniture.

Briefly, the invention is an assembly of elements to form an article of furniture consisting of at least two supports of flat rigid material, detachable elements to interconnect said supports rigidly in spaced vertical planes and at least one flat rigid element adapted to extend between the supports in a plane at right angles thereto, the interconnecting elements being adapted to tighten the supports against the rigid element(s). The supports may be provided with recesses, holes and/or battens in suitable positions to support the board(s) and the board may be provided with tongues or projections to correspond with recesses or apertures on the supports. The supports may be shaped to form legs for the furniture. The interconnecting elements may be rails, preferably round, and provided with screw holes in their ends for the purpose of receiving screw-threaded "knobs" for gripping the interconnecting element between the supports. The interconnecting elements may be provided with cork-coated ends as also may be the knobs to assist in the tightening. Tension elements with tightening means may be used as interconnecting elements.

Simple forms of the invention are illustrated in the accompanying drawings in which:

FIG. 1 is a flat support;

FIG. 2 is a side view of the support;

FIG. 3 is a flat rigid board adapted to extend between two supports;

FIG. 4 is a side view of such board;

FIG. 5 is a sectional view of an example of the interconnecting elements, the elements illustrated from left to right being:

a screw dowel;

a spacing rail;

a cork washer;

a sectional view of the rail;

another cork washer; and

a screw-threaded knob; (In construction, the screw dowel will connect the elements together);

FIG. 6 is a knob which incorporates a screw for connecting to the rail;

FIG. 7 is an example of an assembled chair;

FIG. 8 is an example of an assembled table and shelf;

FIG. 9 is an example of an assembled table;

FIG. 10 is an example of an assembled double drawer unit; and

FIG. 11 is an exploded illustration showing an assembly of differing parts.

Generally speaking, the assembly will consist of at least two supports which may be of any convenient rigid form. For attractiveness and convenience the support may be shaped as shown in FIG. 1 and indicated by the reference A. The same reference letters are used to indicate the same parts throughout the drawings so that the support A is also indicated in the FIGS. 7 to 11. In the form shown, a number of slots B are provided at suitable places and correspond with each other on each support. In addition holes C are provided in the support A and, again, the holes correspond with each other on each support. In use, at least two supports A are used in a vertical position and in the form shown in FIG. 1 it is immaterial which side of the support is used for a base. Between the two supports is placed at least one rigid element and in FIG. 3 is illustrated a suitable board D and this form is also illustrated in FIGS. 7 to 9 and in FIG. 11. This board D is provided with tongues E arranged and shaped to fit into the slots B. The tongues E may be formed either by mortising in the sides or by moulding as part of the board D. The tongues may be made from wood, plastic material or metal. In order to make any structure rigid there are provided interconnecting elements and an example is given in FIG. 5. This consists of a rail F the same length as the rigid element to be supported between the supports. In the form illustrated the rail F is round and at both ends it is adapted to receive a dowel screw G. A knob H is provided, also adapted to receive a dowel screw and in assembly, the screw is in the knob H and then it receives a cork washer I, it passes through one of the holes C, through another cork washer and then into the end of the rail F. A similar knob is attached to the other end of the rail and by tightening the two knobs, the supports A are drawn towards each other against the board D and thus rigidity is obtained. Greater rigidity is obtained by using say three rails with their assemblies.

By referring to FIG. 7, there is illustrated an assembly of elements forming a chair. The two supports A form the legs, and board D is the seat and there are three rails F, one forming a back rest to the chair and the other two, not only tightening the two supports towards each other but also forming an additional strengthening support for the seat itself. If a table is required, the knobs H on the rails are loosened and the board D is moved to the upper section of the support A. The rods may be changed round as illustrated in FIG. 9. If a shelf is required for the table, an additional board D is introduced and the rails arranged as shown in FIG. 8, illustrating two flat surfaces and using four rails.

In a modification, the assembly can be adapted to be used for a set of drawers or for a single drawer. A set is illustrated in FIG. 10, the drawers with their framework forming the rigid center part. In this modification, it may be arranged that the screw from the knobs H are held actually in the framework of the drawers.

In FIG. 11 there is illustrated an exploded form of differing parts. The basic supports A are common and the interconnecting elements arranged for their tongues to fit into the slots in the supports and the supports drawn together to form a rigid structure.

If a bookcase is required it is only necessary to use say three boards D.

If a low table is required, the supports A may be stood on which is the side in FIG. 7 and the board D arranged on the other side.

If a desk is required, the board D may be supported so that it extends beyond the support and, in this case, it may be desirable to provide an additional support for the edge of the projecting part.

The relative sizes may be modified without affecting the invention. It is only necessary that the respective tongues and slots correspond. Larger boards may be provided and the lengths of the rails adapted to suit the boards or other inter-

mediate rigid elements. The dowel screws may be used to connect rails together to form longer lengths and thus make longer tables or benches. Similarly, the boards may be arranged to interlock at their edges.

The shaping of the supports may be varied in any way. Also the boards can be upholstered on one side for making a more comfortable seat. Similarly, the rails may be padded for use as back rests.

In FIG. 6, there is shown a knob H having a screw-threaded projection adapted to fit into the end of a rail.

The forms shown are more applicable for children's furniture and the knobs H are such that a child can turn them and alter the furniture. Thus such a change will form amusement for the child as well as being of value from an educational point of view.

Another feature of the invention is the advantage that the furniture may be packed for transport in packages which will be more or less flat and may be stored in the warehouses, shops or homes with the minimum of space. It can also be dismantled easily and reassembled after removal.

The forms shown apply to children's furniture but the invention is applicable to other forms of furniture, the same principles being employed. For adult furniture the invention can be used, but the material may be of a heavier nature. So far as material is concerned, it is possible to use timber in most forms and also plastics as well as metal, or any combination.

The material may be colored in any decorative manner.

The invention is also applicable for use in miniature furniture as a toy or plaything.

In many ways, the assembly may be regarded as a set of parts for "knock down" furniture.

I claim:

1. A piece of furniture, comprising:

at least two rigid supports, each including corresponding fastening apertures spaced at corresponding locations on said at least two rigid supports and guide apertures located adjacent the edges of said at least two rigid supports;

at least one rigid element of predetermined length extending between said rigid supports and including projections received in said guide apertures, said guide apertures serving to locate said at least one rigid element in the assembly of the piece of furniture;

at least three parallel rigid strut members of said predetermined length in abutting relationship between said rigid supports, each strut member including fastening elements in the ends thereof; and

fastening means extending through said fastening apertures and engaging said fastening elements to draw said supports in firm abutting relationship with the ends of said rigid strut members thereby forming a self-supporting rigid unit standing on said supports, said fastening apertures including at least two sets of at least three holes respectively located at upper, lower and intermediate portions of said at least two rigid supports, and said guide apertures being elongated, said at least three holes of each set being in vertical alignment and said guide apertures being aligned vertically and horizontally along their longitudinal axis, said vertically aligned apertures being spaced approximately intermediate between said spaced fastening apertures.

2. A piece of furniture as in claim 1 wherein said fastening elements are threaded holes and said fastening means each include a threaded member engaging a respective threaded hole and each fastening means having a manually rotatable knob and being operable to draw said at least two rigid supports toward each other into secure abutting relationship with the ends of said strut members and said rigid element.

3. A piece of furniture as in claim 2 further comprising resilient washerlike elements sandwiched between the ends of said strut members, an inner surface of said knob and respective inner and outer surfaces of an associated support, said resilient washerlike elements aiding in locking said fastening means.

4. A piece of furniture as in claim 3 wherein each of said knobs includes an extending shoulder forming said inner surface at its exposed end for engagement with a said washerlike element.