

(19)



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(11)

**EP 0 713 661 B1**

(12)

**EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention  
of the grant of the patent:  
**27.01.1999 Bulletin 1999/04**

(21) Application number: **94913622.0**

(22) Date of filing: **26.04.1994**

(51) Int. Cl.<sup>6</sup>: **A47B 13/04**

(86) International application number:  
**PCT/ES94/00041**

(87) International publication number:  
**WO 95/28110 (26.10.1995 Gazette 1995/46)**

**(54) RAISED UP FURNITURE HAVING FLAT PARTS SUPPORTER**

**AUFRECHTSTEHENDES MÖBELSTÜCK ZUM TRAGEN FLACHER MÖBELELEMENTE**

**MEUBLE HAUT AVEC SUPPORT CONSTITUE DE PIECES PLANES**

(84) Designated Contracting States:  
**BE CH DE DK ES FR GB IT LI NL SE**

(43) Date of publication of application:  
**29.05.1996 Bulletin 1996/22**

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## Description

### Field of invention

The present invention relates to furniture of the kind of tables, chairs, stools, serving trolleys, writing desks, and other raised up furniture. The legs or supports in such pieces of furniture are flat parts, mainly pieces of board, and are detachable. The preferred material is the Medium Density Fiberboard, usually known as M.D.F.

### Backgrounds of invention

There are tables consisting in a top board made of M.D.F and four detachable legs, each one made of a piece of metal tube welded to a plate. This plate having four drills for screwing it to the table top from bellow.

Other furniture having slender supports is the one included in patent US-A-2.954.953. It has elongated, flat and slender parts that are placed in vertical planes. The parts have normal drills and screws, and can be very simple. But it needs twelve of said parts where the present invention needs only three or four.

In patent FR-A-2.059.798, a supporter is described that has two planar parts interlocked to each other. It is difficult to coat the contours of said planar parts and they generate a lot of waste when cut out from a board.

Another furniture is described in DDA-140979. It has four legs made of M.D.F. or chipboard, each leg having an angled cross-section made of two elongated, flat and slender pieces joined together. It has four cross-bars for composing a frame with the legs. This furniture still needs twelve parts where the present invention only needs three or four.

There is highly developed machinery for cutting out, moulding and finishing M.D.F. pieces, of which many detachable cupboards, sideboards and table tops are made.

The union fittings for pieces of board available nowadays in the market, are the kind of:

- a. cylinders having a drill in which a screw is fixed,
- b. eccentric nuts that house a spigot.

In both cases the cylinders have a length smaller than the thickness of the flat part or board. These fittings do not make the union strong enough because, as they are not embedded all the way through the thickness of the flat part, they tend to fatigue the material round them. Neither is useful using two fittings together because the material would be fatigued anyway.

### Description of invention

The object of the present invention is to provide raised up furniture in which usable surfaces and volumes are raised up on detachable flat parts mainly made of pieces of board. These flat parts are shaped

like legs, arms, brackets, stands, or the like, having proportionate shapes. Said detachable flat parts, or legs, do not need to be joined to each other, neither directly, nor with any crossbars. Each flat part only needs to be attached through its top surface to the other parts of the piece of furniture. Said other parts can be, for example, a top board in a table or a seating board in a chair.

The invention is mainly thought for M.D.F, of which many table tops are made.

Thus, a table can be very simple:

- a. a piece of board as table top,
- b. four pieces of board as legs,
- c. union means that are also quite simple.

According to this, the supporter in the piece of furniture is considered to be formed only by the legs or flat parts that are detachable, every leg or flat part being formed by a piece of board and union means.

The M.D.F. composition is quite homogeneous in all of its extension and among different board units, this makes them reliable in its behavior during the manufacturing process, and afterwards while using the furniture.

It comes out to be very advantageous that the stronger and heavier material would accumulate in the outer portions of the board, in this way the legs or flat parts gain in strength without increasing their thickness or weight. For this reason, another specially useful boards are the plywood or sandwich panels, preferably having the portions nearest to the outward faces stronger and the intermediate ones lighter.

A cylinder (2) is embedded in a horizontal drill made in the flat part (1) at right angle to its plane, that is to say, across the board of which the flat part is made (see Figures 1A, 1B and 4). The length of the cylinder matches, or approximately, the thickness of the piece of board into which it is fitted. The cylinder has two female threads made across its axis and near its heads, in which two screws (3) are turned. The screws are then near both outfaces of the flat part and assure transmitting the stress or pull from the screws to the strong layers of the M.D.F. The flat part has vertical drills made across its top surface. Said vertical drills are connecting the top surface with the horizontal drill into which the cylinder is fitted. The screws (3) are fitted in those vertical drills and turned into the female threads of the cylinder (2) (see Figure 4).

To facilitate the comprehension of invention, a series of figures are enclosed including other embodiments.

### Explanation of Figures

- Figure 1A- Detachable union having cylinder and screws.
- Figure 1B- Detachable union having cylinder and screws.
- Figure 2 - Detachable union having an edge-placed

cylinder.

Figure 3 - Detachable union having a plate.

Figure 4 - Detachable leg having several layers.

\* Figures 1A and 1B illustrate in detail the union between a horizontal board, a table top or chair seat for example and a flat part in vertical position, a leg for example. Figure 1A illustrates a sectional view across to the plane of the flat part. Figure 1B illustrates a sectional view parallel to said plane. A cylinder (2) is fitted into the horizontal drill made in the flat part (1). Two screws (3) are fitted through the horizontal board (4). Afterwards they are fitted into the vertical drills of the flat part and then screwed into the female threads of the cylinder. Thus, the leg can be easily attached in said way or reversibly detached. Sideways to screws are shown in Figure 1B two spigots (7) that prevent turning of the leg round the axes of screws. A supplementary top (6) is hiding screw heads.

\* Figure 2 illustrates the side elevation of a union similar to the one of Figures 1A and 1B, in which the cylinder (2) is embedded in the edge of a flat part that is bracket-shaped. It has one spigot (7) to prevent it turning round the screws (3).

\* Figure 3 shows a view similar to that of Figure 1A, in which a single board is at the same time the horizontal board (4) and the top of the piece of furniture. The screws (3) are attaching the flat part (1) to a metal plate (5) that is later screwed up to the horizontal board (4) from below. It will generally correspond a plate to each flat part or leg.

\* Figure 4 shows in perspective a flat part, the upper portion of a leg in this case, in which the flat part (1) is composed of three layers or boards joined together. The cylinder (2) is embracing them all. The screws (3) are fitted into the flat part (1) and screwed into the cylinder (2).

The approximate recommendable thickness of M.D.F. for manufacturing table and chair legs is:

- 30 mm. in most cases.
- 35 mm. if a special rigidity is required, like with dining tables
- 19 mm. in case of small or auxiliary furniture.

The diameter of the cylinder depends on the compressive strength of the material in which it is fitted, being recommended in general the use of 15 mm. with M.D.F.

When the legs are attached to a horizontal board, a table top or a chair seat for example, a twisting of the piece of furniture produces some stress on said horizontal board that are smaller than those produced while bending under furniture loading. That bending will

determine the thickness of the horizontal board. In case it was made of M.D.F, it is recommended a thickness of:

- 19 mm. in chairs and low tables.
- 23 mm. in tables smaller than 120 cm. in diameter.
- 30 mm. in bigger tables.

The parts can have standard unions in a way that they can be combined to create different models.

Described unions can be used also for joining the supports to non-horizontal parts, like the backrest of a chair.

The piece of furniture can have in its lower portion a stand to which the flat parts are joined.

Numeric control machines can cut out, mill and sand the boards to obtain the parts, and even can make in them the drills needed to make them detachable.

The parts can be obtained by shaping them in compressing moulds. The fiber can be compressed in moulds having the shape of the different parts.

It is not rejected the possibility of using and investigating new materials, or composing them from the already existing, as may be the inside reinforcing of the M.D.F. parts with wire nets or some long fiber next to its outward faces. Or the interior lightening of the parts with different materials.

Flat parts composing the supporter are mostly to be arranged in vertical planes, but those planes could be also slightly inclined.

### Claims

1. Piece of raised up furniture, like table, chair, writing desk, or the like, comprising a supporter, which supporter comprises:

- a. a plurality of parts having flat and proportionate shapes, and
- b. union means for fixing said flat parts (1), which supporter is arranged at planes intersecting at vertical or slightly inclined axes defining open volumes, said flat parts (1) having an exterior outline curved for at least 50% of its length, said flat parts (1) not being joined to each other and being made of:
  - c. flat materials, as boards or the like, or
  - d. materials that have been compressed into moulds, said union means including cylinders (2) having female threads, said cylinders (2) being embedded in the flat parts (1) with their main axes at right angle to said planes in which the flat parts (1) are arranged.

2. Piece of furniture as claimed in claim 1, characterized in that said flat parts (1) are made of wooden fiber.

3. Piece of furniture as claimed in claim 1, characterized in that said flat parts (1) are made of medium density fiberboard.
4. Piece of furniture as claimed in claim 1, characterized in that it comprises a plate (5) to which one of said flat parts (1) is joined with said union means. 5
5. Piece of furniture as claimed in claim 1, characterized in that said flat parts (1) are composed of two or more layers put together. 10

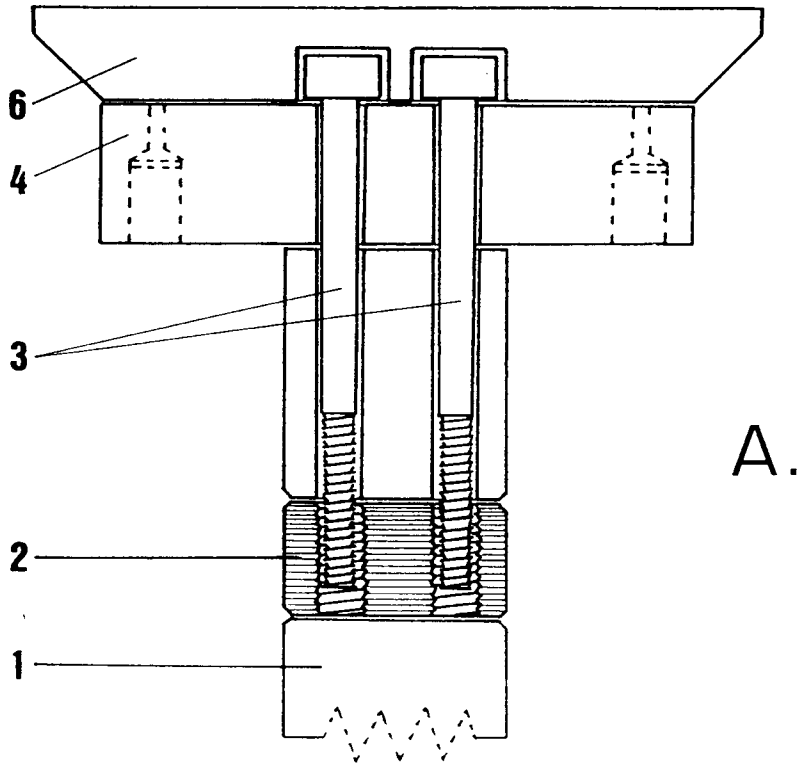
### Patentansprüche

1. Erhöhtes Möbelstück wie Tisch, Stuhl, Schreibtisch oder ähnliches mit Stützlager, wobei das Stützlager das folgende umfaßt: 15
- a. eine Vielzahl von Teilen mit flachen und proportionierten Formen und 20
- b. Verbindungsmittel für die Befestigung dieser flachen Teile (1),  
dabei ist das Stützlager in Flächen angeordnet, die in vertikale oder leicht schräge Achsen getrennt werden, indem sie offene Volumen definieren, dabei haben diese flachen Teile (1) bei mindestens 50% ihrer Länge einen äußeren gebogenen Umfang, dabei sind diese flachen Teile (1) nicht miteinander verbunden und wurden aus dem folgenden hergestellt: 25
- c. flaches Material wie Platten oder ähnliches oder
- d. Material, das in Formen gepreßt wurde, die genannten Verbindungsmittel bestehen aus Zylindern (2) mit Innengewinden, wobei diese Zylinder (2) in den flachen Teilen (1) eingebaut sind und ihre Hauptachsen senkrecht zu den Flächen stehen, in die die flachen Teile (1) angeordnet sind. 30
2. Möbel nach Anspruch 1, dadurch gekennzeichnet, daß die flachen Teile (1) aus Holzfasern hergestellt sind. 35
3. Möbel nach Anspruch 1, dadurch gekennzeichnet, daß die flachen Teile (1) aus Faserplatten mit mittlerer Dichte hergestellt sind. 40
4. Möbel nach Anspruch 1, dadurch gekennzeichnet, daß es aus einer Platte (5) besteht, an die eines der flachen Teile (1) mittels einem der genannten Verbindungsmittel verbunden ist. 45
5. Möbel nach Anspruch 1, dadurch gekennzeichnet, daß die flachen Teile (1) aus zwei oder mehr verbundenen Platten bestehen. 50

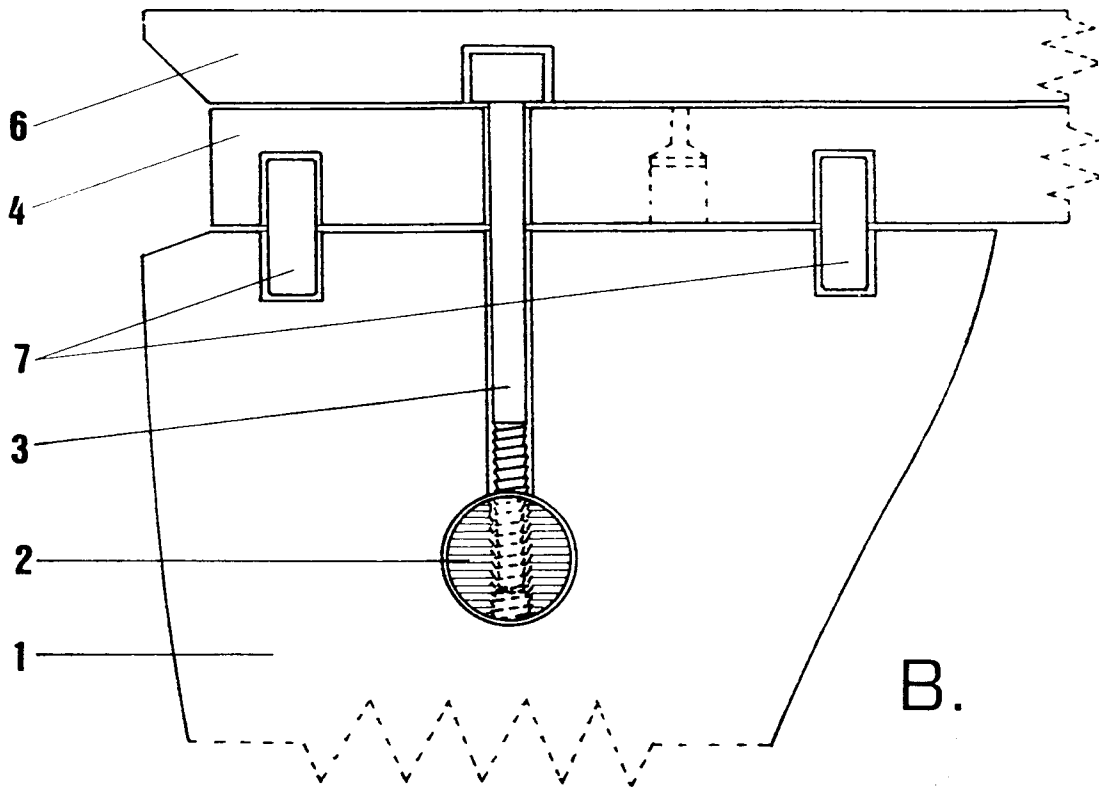
### Revendications

1. Pièce de mobilier élevée, comme table, chaise, secrétaire ou similaire, qui comprend un support, lequel comprend:
- a. une pluralité de pièces qui ont des formes plates et proportionnées, et
- b. des moyens d'union pour fixer les pièces plates (1), le support desquelles est ordonné en plans qui se coupent en axes verticaux ou légèrement inclinés définissant des volumes ouverts, ayant lesdites pièces plates (1) un contour extérieur courbé au moins sur un 50% de sa longueur; ces pièces plates (1), n'étant pas unies entre elles et étant fabriquées de:
- c. matériaux plats comme des panneaux ou similaires, ou
- d. matériaux qui ont été comprimés en moules, et dont la caractéristique est que les moyens d'union incluent des cylindres (2) qui ont des écrous femelles, lesdits cylindres étant encastés dans les pièces plates dont les axes principaux sont perpendiculaires à ces plans, dans lesquels les pièces plates (1) sont ordonnées.
2. Pièce de mobilier selon la revendication 1, caractérisée en ce que lesdites pièces plates (1) sont fabriquées en fibre de bois.
3. Pièce de mobilier selon la revendication 1, caractérisée en ce que lesdites pièces plates (1) sont fabriquées en panneau de fibres de densité moyenne.
4. Pièce de mobilier selon la revendication 1, caractérisée en ce qu'elle comprend une plaque (5) à laquelle une desdites pièces plates (1) est unie avec les moyens d'union.
5. Pièce de mobilier selon la revendication 1, caractérisée en ce que lesdites pièces plates (1) sont composées de deux ou plus lames unies.

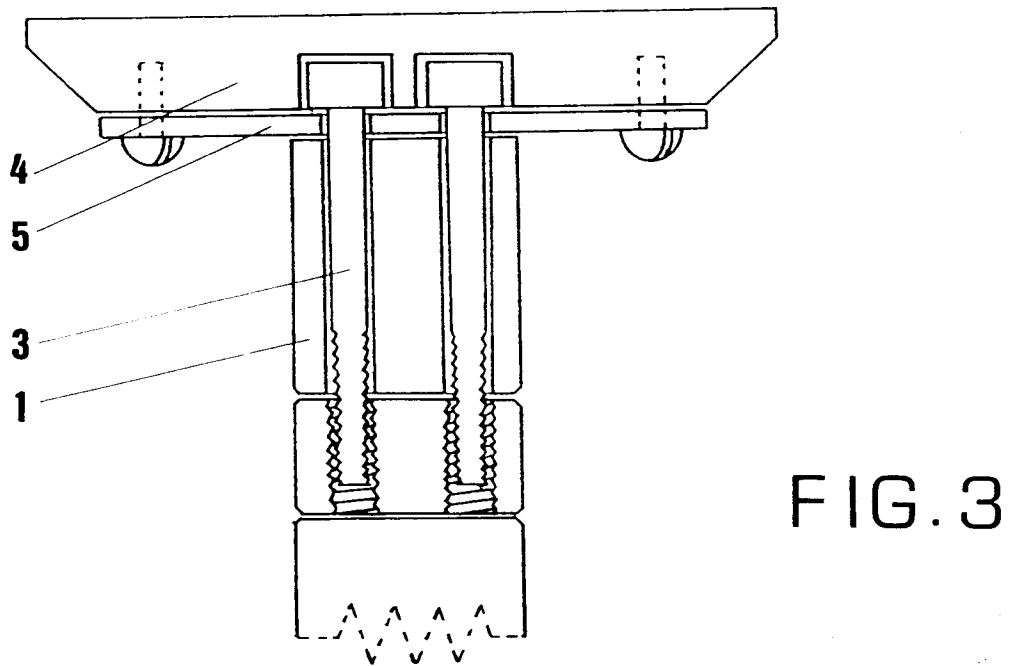
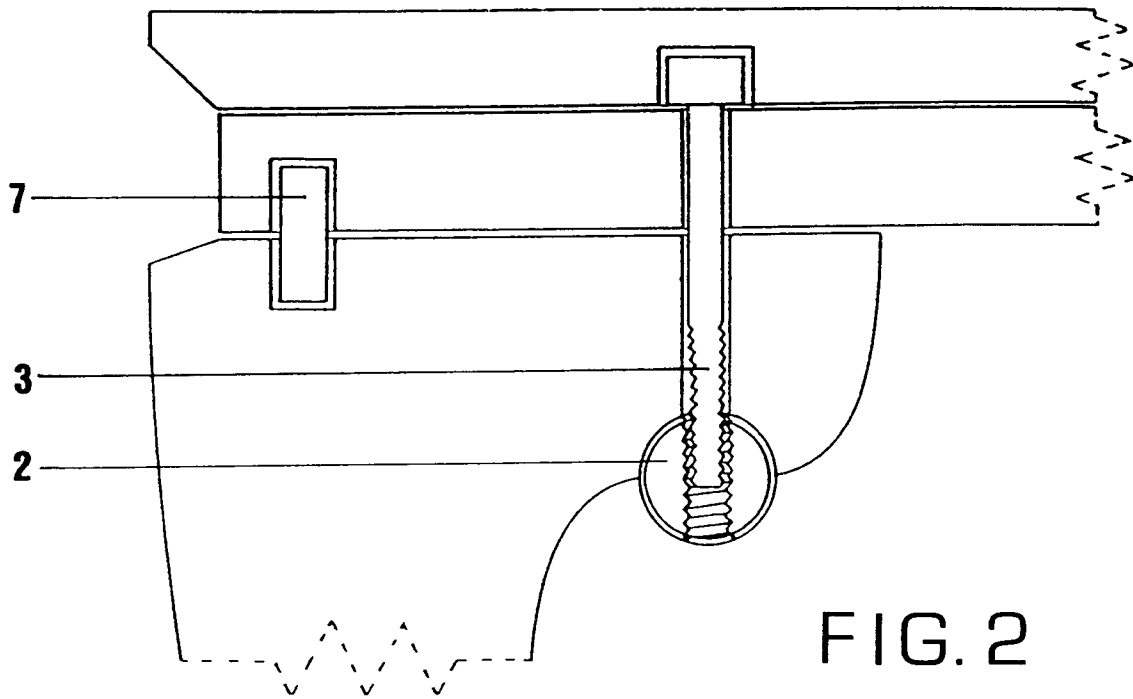
FIG.1



A.



B.



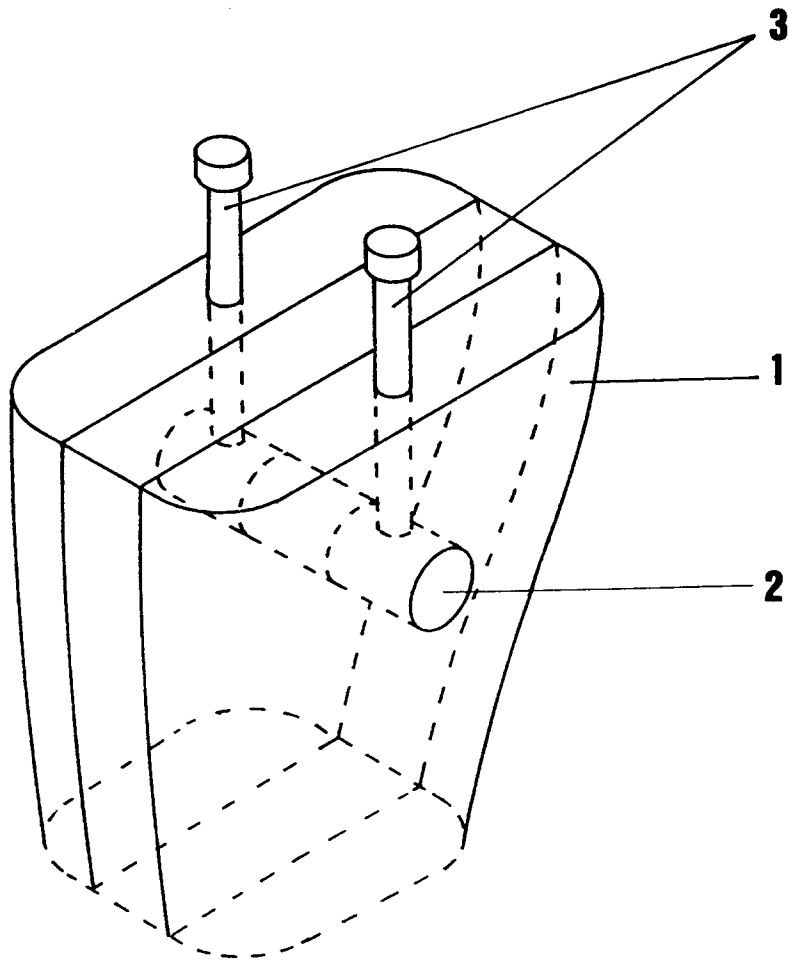


FIG. 4