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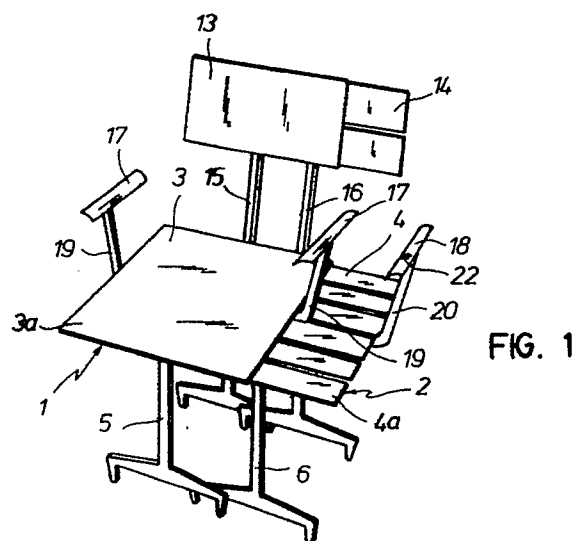
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(54) **Nesting furniture.**

(57) The furniture nests of the invention comprise an upper piece (1, 31, 46, 48, 61, 85) and at least one lower piece (2, 32, 45, 51, 62, 91) each of which has a supporting portion (3, 4, 33, 34, 50, 52, 87, 93) formed by a horizontal board (3a, 4a, 33a, 34a) and by elongate members (7, 37, 49, 67, 68, 69, 88, 94) extending downwardly therefrom; at least the lower pieces of furniture are provided with slots (8, 38, 53, 95) through which the elongate members of the upper piece of furniture pass. The board (3a, 33a) of an upper piece of furniture is very slightly higher than the board (4a, 34a) of the immediately lower piece of furniture and the upper piece of furniture maintains its height in the nested position thereof.

**FIG. 1****EP 0 442 241 A1**

The invention relates to furniture nests, formed by an upper piece of furniture and at least one lower piece of furniture which in turn is upper relative to a possible second lower piece of furniture, each piece of furniture comprising a supporting portion and support means on the floor.

There is an increasing trend to reduce the area of dwellings owing to the increasing cost of building. This reduction is immediately reflected in the size of the rooms, whereby there is the need to make the most advantage of the available space.

Part of this space is occupied by furniture, whereby the interest that the design of new furniture should respond to the above need to make the most of the space is appreciated. Several embodiments are already known in this direction: some relate to the convertibility between different types of furniture, such as the so-called bed settee; the prototype of others is to be found in the so-called pull-out bed, in which an upper bed is superimposed on a lower bed of a much lower height; and others are based on stacks of furniture, although it should be noted that the latter may not be used when they are stacked.

It is an object of the invention to provide a combined furniture unit which may be subdivided into two or more individual pieces, all in such a way that the furniture unit may be used for its specific function both when subdivided and before being subdivided.

This is achieved with furniture nests of the type first mentioned above, characterised in that the supporting portions of the upper and lower pieces of furniture comprise a generally horizontal board and at least one strong elongate member extending from the underside of said board, with at least the boards of the lower pieces of furniture being provided with elongate through slots through which the strong elongate members of an upper piece of furniture pass, the elongate members of an upper piece of furniture being insertable in between those of a lower piece of furniture; in that the lower surface of the board of an upper piece of furniture is at a height above floor level slightly greater than the height above floor level of the upper surface of the board of the immediately lower piece of furniture, said upper surface being adapted to slide below said lower surface until they are generally superimposed, and with the height difference between the upper surfaces of the supporting portions of all the pieces of furniture being small; and in that when the pieces of furniture are nested together the height above floor level of the supporting portion of the upper piece of furniture is maintained.

Further advantages and features of the invention will be appreciated from the following description in which there are given preferred embodiments of the invention without any limiting nature,

with reference to the accompanying drawings in which:

Figure 1 is a perspective view of two nesting pieces of furniture in an intermediate position between the nested position and the separated position.

Figure 2 is a perspective view from below of two nesting pieces of furniture, similar to those of Figure 1 in the separated position.

Figure 3 is a perspective view similar to that of Figure 1 of a further two pieces of furniture.

Figure 4 is a perspective view from below of the pieces of furniture of Figure 3.

Figure 5 is a schematic cross section view of the supporting portions of the two pieces of furniture of Figures 3 and 4.

Figure 6 is a perspective view of three nesting pieces of furniture in said intermediate position.

Figure 6A is a schematic cross section view of the supporting portions of three pieces of furniture according to Figure 6.

Figure 7 is a perspective view of the supporting portion of two nesting pieces of furniture in the separated position, in which the elongate members extending from the underside of the pieces of furniture and the slots of the lower piece of furniture are arcuate.

Figure 8 is a schematic view of the lower structure of the supporting portions of Figure 7.

Figure 9 is a schematic side elevation view of an upper piece of furniture, in this case a seat unit.

Figure 10 is a similar view to the previous Figure of a first lower seat unit with portions of the upper piece of furniture according to Figure 9 being shown in phantom line.

Figure 11 is a similar view to the two previous Figures of a second lower seat unit, with portions of the upper piece of furniture according to Figure 9 and of the first lower piece of furniture of Figure 10 being shown in phantom line, the latter acting in turn as an upper piece of furniture relative to the second lower piece of furniture.

Figure 12 is a perspective view of an upper piece of furniture, in the form of a stool.

Figure 13 is a similar view to the previous one of a lower stool.

In Figures 1 and 2 there are to be seen pieces of furniture formed by an upper piece 1 and a lower piece 2. These pieces of furniture are provided with respective supporting portions 3 and 4. In the present specification the term supporting portion is used to describe the part of the piece of furniture serving as support for the user of the piece of furniture, such as the seat portion of a piece of furniture for sitting (stool, chair, armchair, etc.) or the space on which the user of a bed, divan, table, etc., lies, lays or uses. Each support-

ing portion comprises a generally horizontal board 3a, 4a, understanding as board one generally flat piece or a series of generally flat coplanar pieces of reduced thickness and made from any rigid material. The lower surface of the board 3a of the upper piece 1 of furniture is at a height above floor level very slightly greater than the height of the upper surface of the board 4a of the lower piece 2 of furniture. Furthermore the upper surface of the piece 2 may slide under said lower surface of the piece 1, until both boards are generally superimposed.

As may be seen partially in Figure 1, when the pieces 1, 2 of furniture are nested together the height above floor level of the board 3a of the supporting portion 3 of the upper piece of furniture is maintained. In other words, the upper piece 1 of furniture is usable under the same conditions when it is separated as when it is nested together with one or more lower pieces of furniture, since the nesting together of the pieces of furniture of the invention does not raise the upper piece 1 of furniture.

The said pieces 1 and 2 of furniture are provided with respective support means 5 and 6 on the floor which are generally juxtaposed in the nested position.

The supporting portion 3 is provided with the plurality of elongate members 7 which in this case are straight and parallel and extend from the underside of the board 3a. They are spaced apart at a set distance. In turn, the board 4a of the lower piece 2 of furniture is provided with a plurality of corresponding slots 8 which receive the elongate members 7 in the nested position. In certain cases also the board 3a of the upper piece of furniture is also provided with slots 8. Where slots exist, the series of coplanar small boards separated by the slots is also called board.

Said elongate members 7 are all connected at a lowermost centre portion thereof to a support 9 transverse to the elongate members. In turn, the supporting portion 4 is also provided with elongate members 7 resting on a second transverse support 11. The elongate members 7 of the lower piece 2 of furniture are generally equidistant between the slots 8 and are insertable with the elongate members of the upper piece of furniture. When both pieces 1, 2 of furniture are superimposed, both transverse supports 9, 11 become juxtaposed.

Preferably the respective support means 5, 6 extend from the transverse supports 9, 11. It is seen that the support 9 must be spaced apart from the board 3a to make room, in the nested position, for the small boards into which the slots 8 divide the board 4a. Therefore said transverse support 9 and the elongate members 7 are connected at a lowermost centre portion as said above.

The elongate members 7 also act as a reinforcing member.

The pieces 1, 2 of furniture may also be provided with respective backrest portions 13, 14 such that the rear surface of the backrest portion 13 of the upper piece 1 may be generally superimposed upon the front surface of the backrest portion of the lower piece 2.

Said backrest portions 13, 14 are respectively connected to coupling members 15, 16 of the transverse supports 9, 11 and preferably said backrest portions are provided with members similar to those provided on the supporting portions 3, 4. Only the slot 12 of the backrest portion 14 is to be seen in the Figures.

The embodiment shown is provided with arms 17 on the upper piece 1 and a single arm 18 on the lower piece 2, said arms being attached to the respective pieces of furniture by way of stems 19, 20; the arm 18 is shown to be provided with a notch 22 allowing penetration of the stem 19 and, therefore, correct juxtapositioning and superpositioning of similar members, when so desired, since the juxtapositioning of the auxiliary members of the piece of furniture (legs, arms and the rest) is not absolutely necessary.

A further arrangement is shown in Figures 3 to 5, with an upper piece 31 of furniture and a lower piece 32. These pieces of furniture may comprise other elements such as backrests, arms or others which have not been shown.

In this case the respective supporting portions 33 and 34 have a structure schematically shown in Figure 5 which provides particular ruggedness. In this structure there may be seen the elongate members 37 extending downwardly from the board 33a of the upper piece 31 of furniture and also the slots 38 of the board 34a of the lower piece 32 of furniture. The lower edges of the elongate members 37 are seen to have generally coplanar wings 24 which are parallel to the board 33a. With regard to the lower piece of furniture, there is formed a board 25 which may be understood to be formed by the wings corresponding to the lower edges of the elongate members 37 of the lower piece 32 of furniture. The wings 24 and board 25 substantially reinforce the strength of the respective boards 33a and 34a. In this case said supporting portion is sustained by a front cross member 36 and the rear cross member 39 from which the support means or legs 40 extend. In a similar fashion the supporting portion 33 is sustained by a front cross member 41 and a rear cross member 42, from which the legs 43 and 44 extend. It should be observed that to be able to form the nested position, the front cross member 41 must be higher than the top surface of the board 34a and also the corresponding legs 43 must be spaced further apart than the width of the

lower piece 32 of furniture.

Figure 6 shows a similar case to the previous one but in which the piece 45 of furniture is a lower one relative to the upper piece 46 of furniture, but in turn is an upper one relative to a second lower piece 47 of furniture. The boards 33a, 34a and 26, respectively of the upper piece of furniture, of the first lower piece of furniture and of the second lower piece of furniture, relative to which the former one is an upper piece are to be seen in Figure 6A. The elongate members 37, together with the wings 24 and board 25 are also to be seen.

Figures 7 and 8 relate to other furniture nests, of which only the respective supporting portions are shown. The upper piece of furniture 48 is provided with elongate members 49 (extending from the lower surface of the board of the supporting portion 50) and which are arcuate. The lower piece 51 of furniture is provided in the board of the supporting portion 52 thereof with slots 53 which are also arcuate and through which the curved elongate members 49 pass when the pieces of furniture rotate relative to each other around an ideal vertical axis passing through the apex 54. The said supporting portions 50, 52 bear upon rightangled structures 55, 56 which are particularly to be seen in the schematic drawing of Figure 8, where the extended position of the structure 56 has been shown in phantom line, together with the path 57 to be followed by the apex 56a until it coincides with the apex 55a.

In Figures 9 to 11 there are shown schematically an upper piece 61 of furniture, a first lower piece 62 of furniture which in turn is an upper piece to a second lower piece 63 of furniture. Each of the three pieces of furniture is provided with a respective supporting portion comprising the corresponding board 64, 65 and 66. In Figure 10 there are also drawn in phantom certain items of the upper piece 61 of furniture as they would be in the nested position and in Figure 11 there are drawn in phantom items of the pieces 61 and 62 of furniture as they would be in the nested position of the three pieces.

Each board 64, 65, 66 is formed by a thin rigid sheet from which elongate members 67, 68, 69 extend, only one being shown since the others are hidden by the corresponding first member. Support means 70, 71, 72 associate some of the elongate members with the floor and in each chair a front cross member 73, 74, 75 connects the elongate members at the front end and a rear cross member 76, 77, 78 connects them at the rear end.

The front cross member and the rear cross member of each upper piece 61, 62 of furniture are respectively further forward relative to the same cross members of the piece 62, 63 which is lower relative to the said upper piece.

With this arrangement which is particularly to be appreciated in Figure 11, the mutual nesting of the pieces of furniture is caused to produce, in the first place, a generally complete juxtapositioning of said front and rear cross members and support means and in the second place mutual interfitting of the elongate members.

The rear cross member 76, 77 of an upper piece of furniture has a minimum height above floor level slightly greater than the maximum height above floor level of the board 65, 66 of the immediately lower piece 62, 63 of furniture. This peculiarity allows a lower piece of furniture to be inserted from behind to adapt itself below the immediately upper piece of furniture, so that the inner side surfaces of the support means of an upper piece of furniture are suitable to engage the outer side surfaces of the support means of the immediately lower piece of furniture.

Where the pieces of furniture are provided with respective backrests 80, 81, 82 having a similar constitution to that of the supporting portion, they also become superimposed, as is to be seen particularly in Figure 11. To facilitate the separation of the lower pieces of furniture in the nested position, it is contemplated that they should be provided with holding means 83, 84.

Figure 12 shows an upper piece of furniture having the form of a stool 85, comprising a leg 86 with a rearwardly open or half round vertical cavity. The board of the supporting portion 87 is rigid and is sustained by a vertically orientated elongate member 88 extending forwardly from behind from the mid area of the supporting portion 87.

The leg 86 is divided into feet 89 and furthermore is provided with a footrest 90 for the user. The immediately lower piece 91 of furniture (Figure 13) is provided with a part 92 adapted to be inserted in the cavity of the leg 86 and in turn is provided with a rear vertical cavity. The board of the supporting portion 93 is also rigid, is provided with elongate members 94 and between both there is a slot 95 adapted to receive the elongate member 88 in the nested position. The footrest 96 is provided with an opening 97 allowing it to embrace the leg 86 of the upper stool 85.

A second lower stool may also be contemplated, having two slots for the members 94 in a like rigid board.

In all the cases described there is obtained the important advantage of having a furniture unit which occupies the space of a single piece of furniture, may be used and may be converted into two or more pieces of furniture of identical functionality, with uninterrupted use of the upper piece of furniture being possible while the lower pieces are being removed.

It is obvious that the furniture nests of the

invention respond to a situation other than that of the simple stacking of pieces of furniture, since in such stacking the pieces of furniture are only suitable for use when they have been individually separated from the stack. Furthermore, the furniture nests of the invention are quite compatible with the decoration of an environment, without offering the sensation of provisionality of a stack and without the unpleasant appearance of such stacks.

### Claims

1. Furniture nests, formed by an upper piece (1, 31, 46, 48, 61, 85) of furniture and at least one lower piece (2, 32, 45, 51, 62, 91) of furniture which in turn is upper relative to a possible second lower piece (47, 63) of furniture, each piece of furniture comprising a supporting portion (3, 4, 33, 34, 50, 52, 87, 93) and support means (5, 6, 40, 70, 71, 72) on the floor, characterised in that the supporting portions (3, 4, 33, 34, 50, 52, 87, 93) of the upper (1, 31, 46, 48, 61, 85) and lower pieces (2, 32, 45, 51, 62, 91) of furniture comprise a generally horizontal board (3a, 4a, 33a, 34a, 64, 65, 66) and at least one strong elongate member (7, 37, 49, 67, 68, 69, 88, 94) extending from the underside of said board (3a, 4a, 33a, 34a, 64, 65, 66), with at least the boards (4a, 34a, 65, 66) of the lower pieces (2, 32, 45, 51, 62, 91) of furniture being provided with elongate through slots (8, 38, 53, 95) through which the strong elongate members (7, 37, 49, 67, 68, 69, 88, 94) of an upper piece (1, 31, 46, 48, 61, 85) of furniture pass, the elongate members of an upper piece of furniture being insertable in between those of a lower piece of furniture; in that the lower surface of the board (3a, 33a, 64, 65) of an upper piece (1, 31, 46, 48, 61, 85) of furniture is at a height above floor level very slightly greater than the height above floor level of the upper surface of the board (4a, 34a, 65, 66) of the immediately lower piece (2, 32, 45, 51, 62, 91) of furniture, said upper surface being adapted to slide below said lower surface until they are generally superimposed, and with the height difference between the upper surface of the supporting portions (3, 4, 33, 34, 50, 52, 87, 93) of all the pieces of furniture being small; and in that when the pieces of furniture are nested together the height above floor level of the supporting portion (3, 33, 50, 87) of the upper piece of furniture is maintained.
2. The furniture nest of claim 1, characterised in that the lower edges of the elongate members (37) are provided with wings (24) generally coplanar and parallel to said boards (33a, 34a).
3. The furniture nest of claim 2, characterised in that the wings of the lower piece of furniture form a single board (25).
4. The furniture nest of any of claims 1 to 3, characterised in that said elongate members (7, 37, 67, 68, 69, 88, 94) and said slots (8, 38, 95) are straight and are disposed in parallel.
5. The furniture nest of any of claims 1 to 4, characterised in that said elongate members (49) and said slots (53) are concentrically arcuate so that the passage from the nested position to the separated position of the upper piece (48) of furniture and the lower piece (51) of furniture, or viceversa is effected by pivoting one piece of furniture relative to the other. (Figures 7 and 8.)
6. The furniture nest of any of claims 1 to 5, characterised in that the support means (5, 6, 40) on the floor of each piece of furniture are generally juxtaposable with the support means (5, 6, 43, 44) on the floor of the next immediate piece of furniture.
7. The furniture nest of any of claims 1 to 6, each of which has a backrest portion (13, 14, 80, 81, 82), characterised in that the rear surface of the backrest portion (13, 80, 81) of the upper piece (1, 61, 62) of furniture is adapted to be generally superimposed on the front surface of the backrest portion (14, 81, 82) of the lower piece (2, 62, 63) of furniture.
8. The furniture nest of any of claims 1 to 4, 6 or 7, characterised in that each of the pieces (31, 32) of furniture has a structure constituted essentially by: a supporting portion (33, 34); support means (40, 43, 44) on the floor respectively associated with said supporting portions (33, 34); a front cross member (36, 41) connecting said supporting portions (33, 34) at the front end thereof; and a rear cross member (39, 42) connecting said supporting portions (33, 34) at the rear end thereof; and in that the front cross member (41) of an upper piece (33) of furniture has a minimum height above floor level slightly greater than the maximum height above floor level of the supporting portion (34) of the immediately lower piece (32) of furniture. (Figures 3 and 4.)
9. The furniture nest of claim 8, characterised in that the front cross member (73, 74) and the rear cross member (76, 77) of an upper piece

(61, 62) of furniture are respectively further forward relative to the same cross members (74, 75 and 77, 78) of a lower piece (62, 63) of furniture such that the mutual superimposition of the pieces (61, 62, 63) of furniture allows a generally complete juxtapositioning of the support means (70, 71, 72) of the pieces of furniture in the nested position thereof. (Figures 9 to 11.)

10. The furniture nest of any of claims 1, 4, 6 or 7, characterised in that the elongate members (7) of the upper piece (1) of furniture are connected to a first transverse support (9) which in turn is attached to the support means (5), while the elongate members (7) of the lower piece (2) of furniture are attached to a second transverse support (11), said first (9) and second (11) transverse supports being generally juxtaposable. (Figures 1 and 2.)

11. The furniture nest of claim 1, characterised in that the upper piece (85) of furniture comprises: a leg (86) having a rearwardly open vertical concavity while the immediately lower piece of furniture comprises a leg (92) adapted to the substantially inserted in the concavity of the leg (86) of the upper piece (85) of furniture. (Figures 12 and 13.)

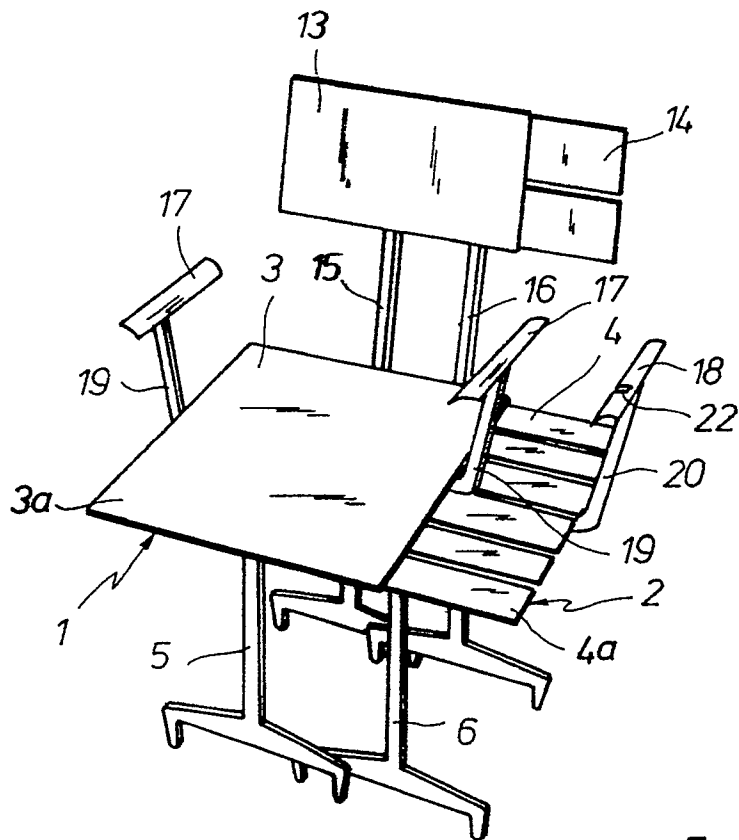


FIG. 1

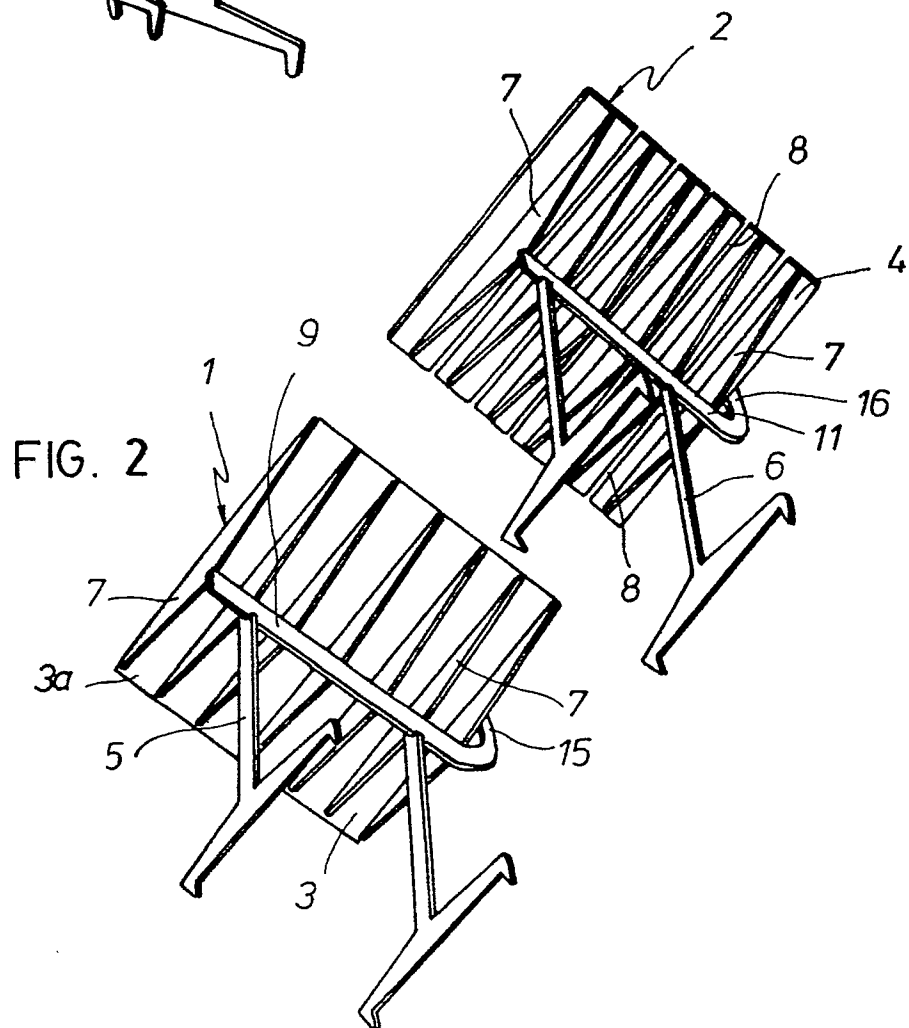
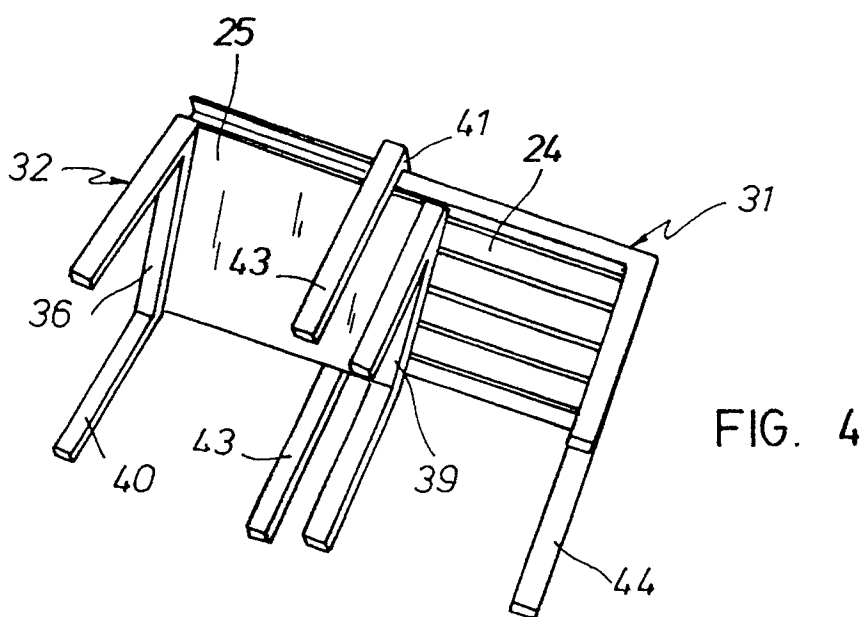
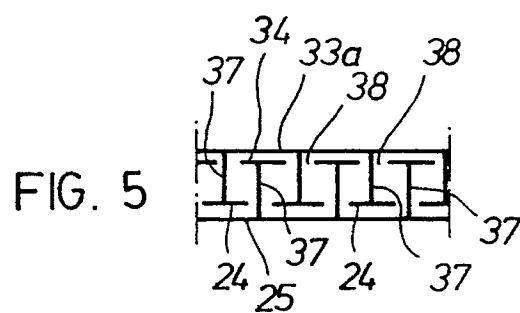
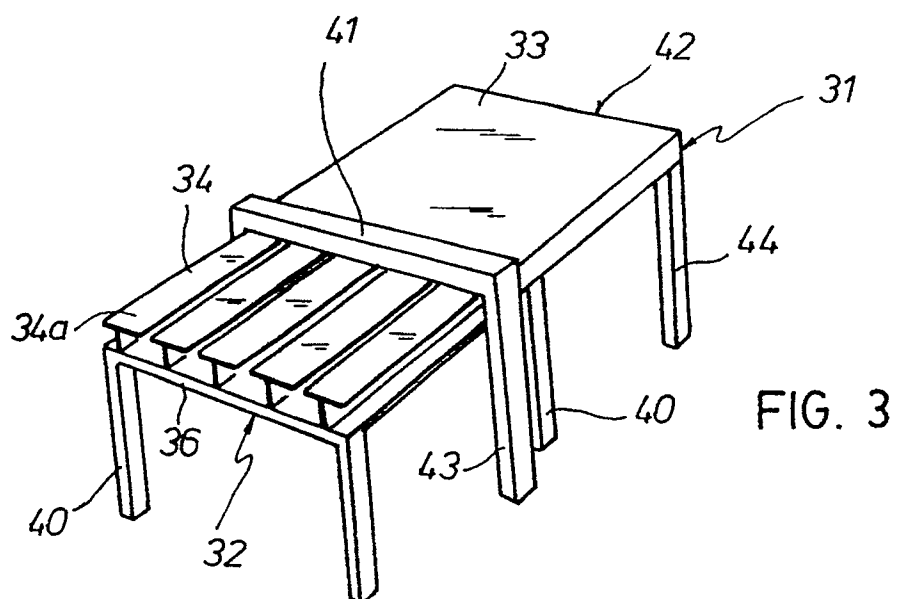


FIG. 2



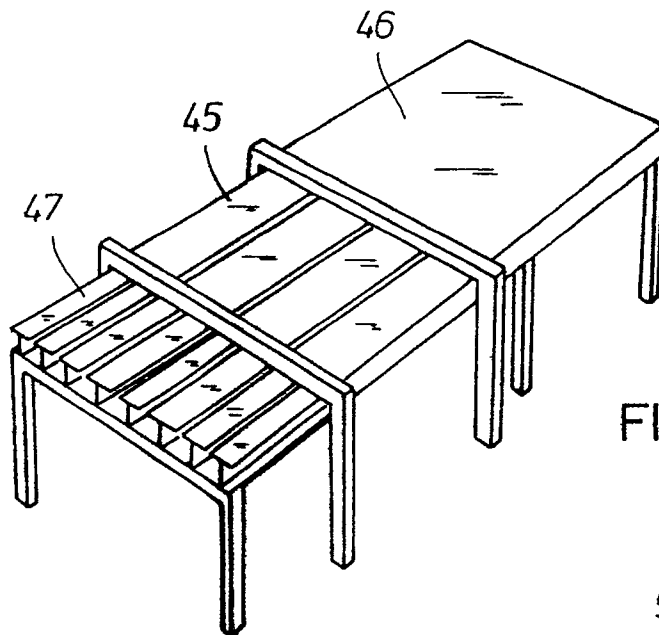


FIG. 6

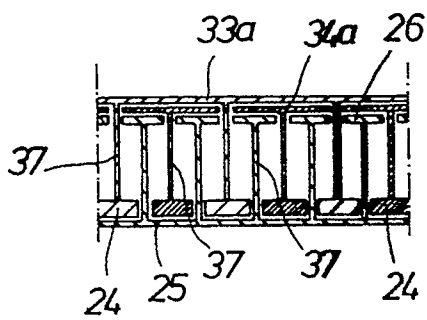


FIG. 6A

FIG. 8

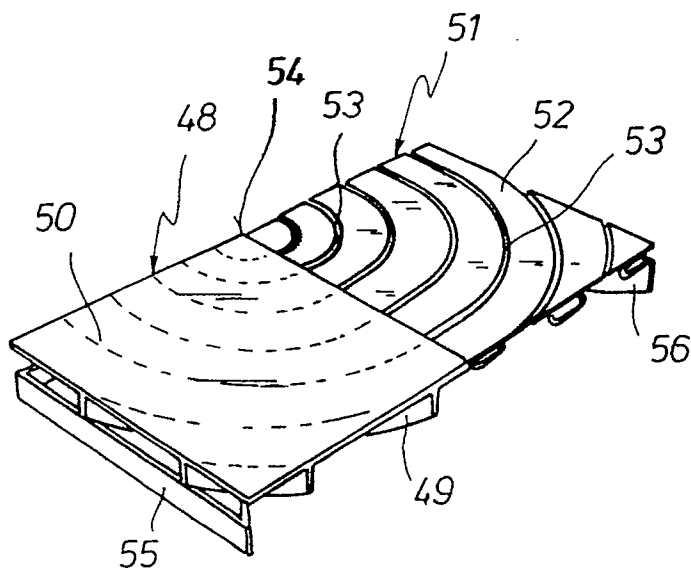
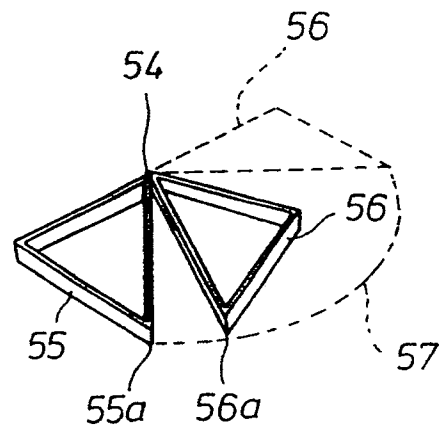


FIG. 7

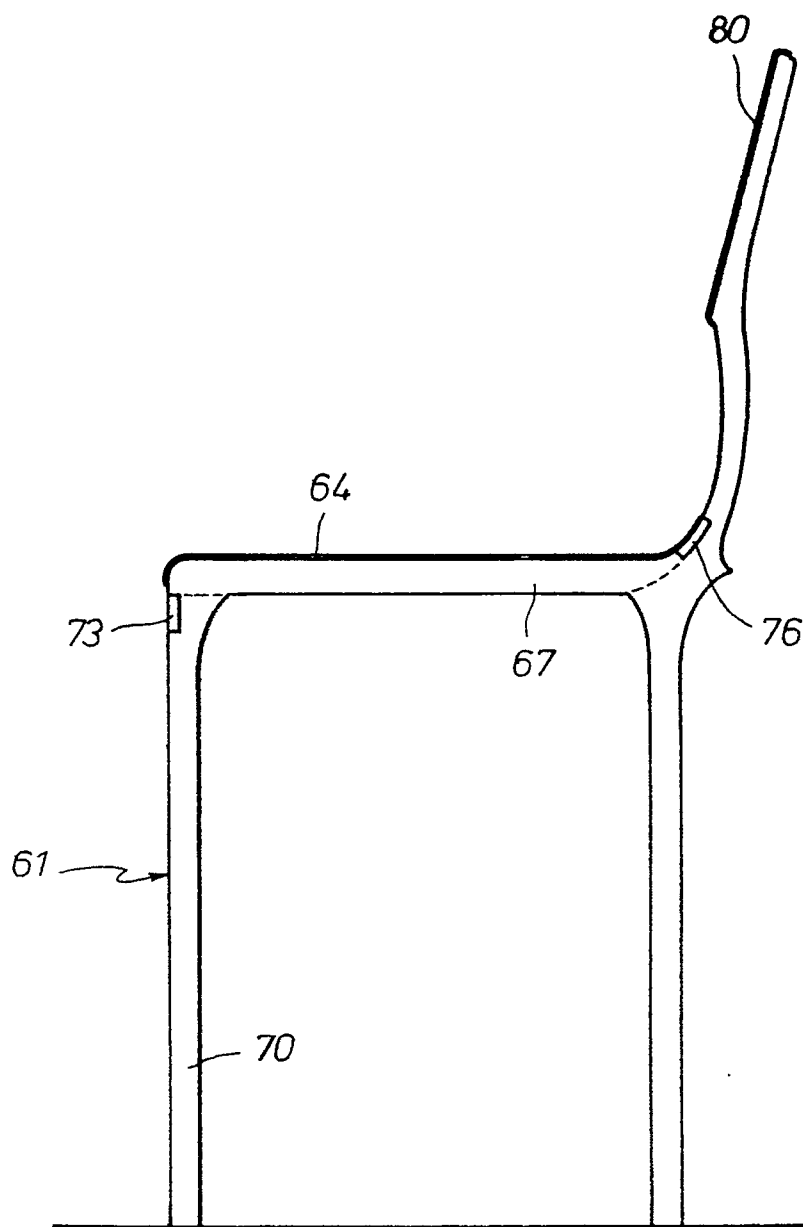


FIG. 9

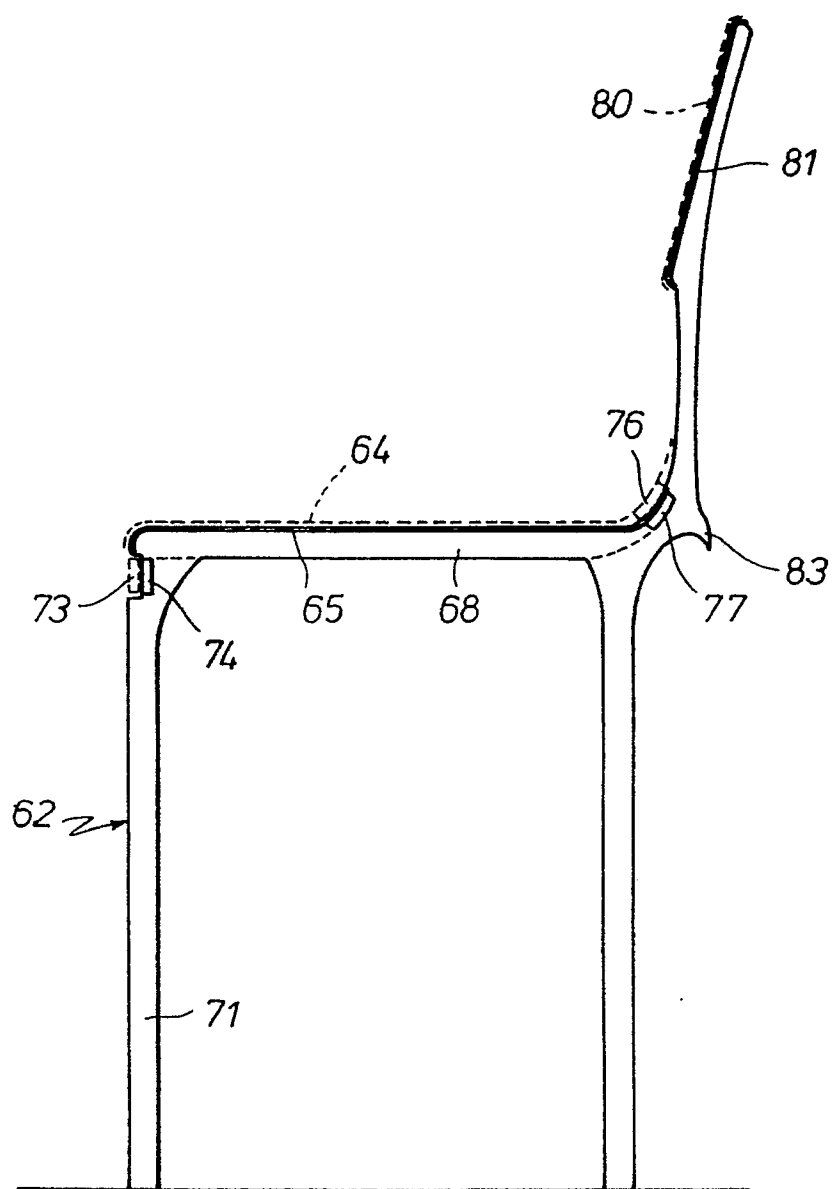


FIG. 10

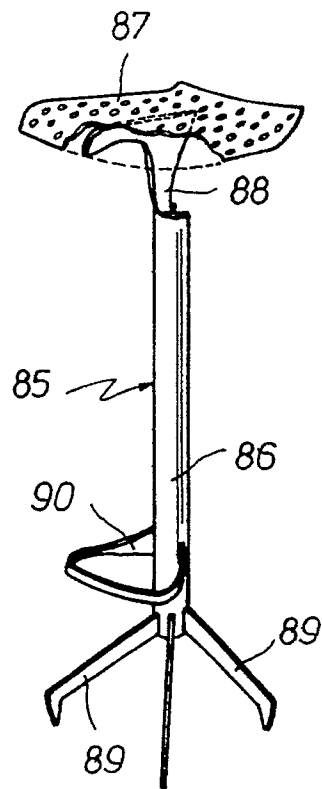


FIG. 12

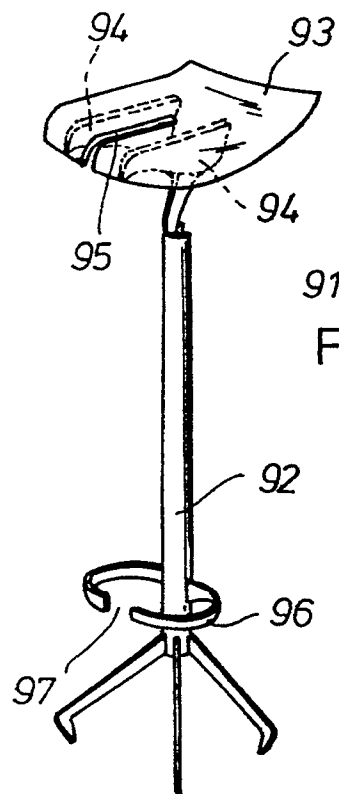


FIG. 13

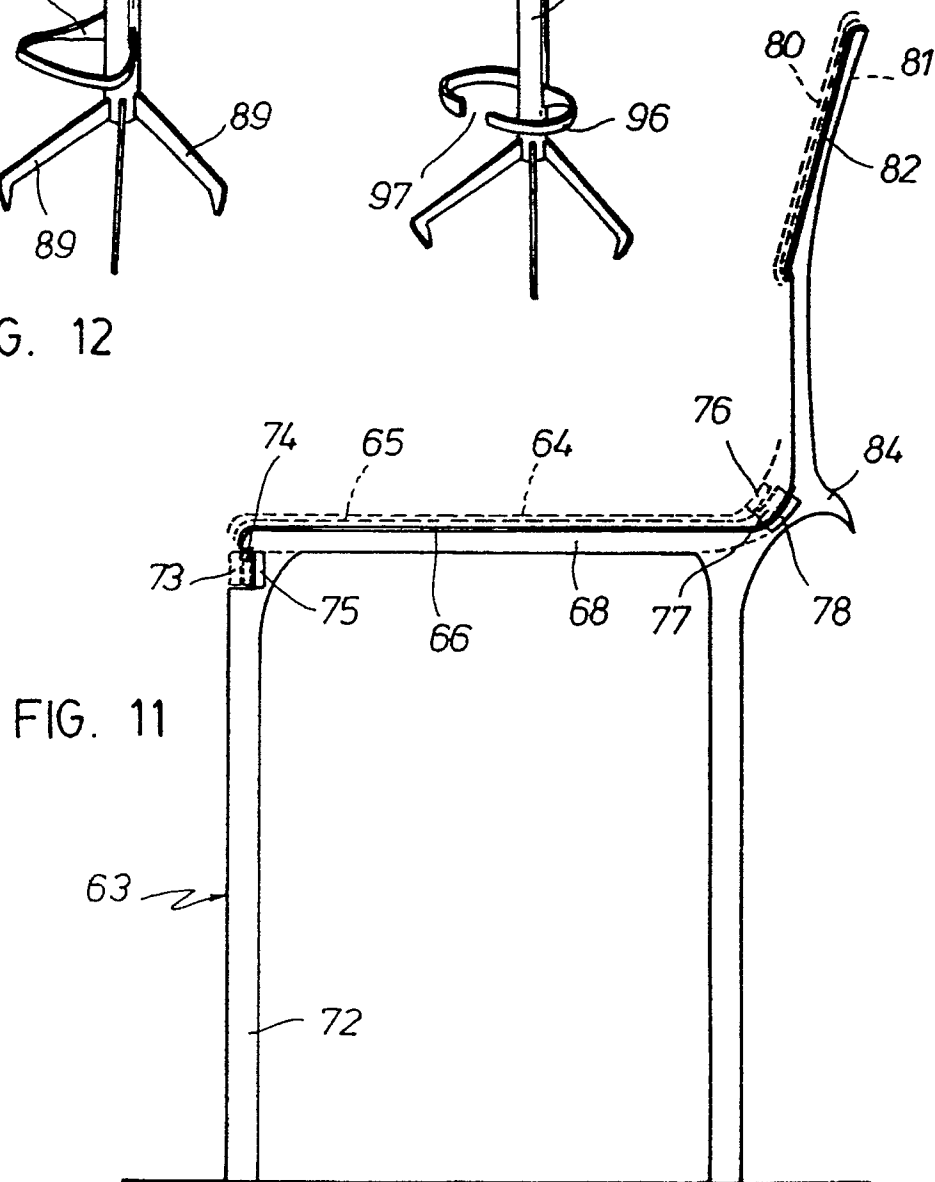


FIG. 11



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## EUROPEAN SEARCH REPORT

Application Number

EP 90 50 0015

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
Y	DE-C- 839 080 (MASSEIDA) * Page 2, lines 37-84; figures 1-3 *	1-4,8	A 47 C 3/04
A	---	7	A 47 B 3/06
Y	FR-A-1 588 934 (HEVALLIER) * Page 1, line 20 - page 2, line 35; figures 1-4 *	1-4,8	
A	---	7	
A	US-A-2 016 850 (BITTERMANN) * Whole document *	5	
A	---		
A	CH-A- 269 750 (SCHAUB & ECKERT) * Page 1, line 27 - page 2, line 5; figures 1-5 *	6,8-10	
A	---		
A	US-A-1 664 356 (DELLERT) * Page 1, lines 61-71; figures 4,5 *	11	
A	---		
A	US-A-3 430 588 (HEYER) * Whole document *	8,9	
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			TECHNICAL FIELDS SEARCHED (Int. Cl.5)
			A 47 C A 47 B
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 24-04-1990	Examiner DE SENA Y HERNANDORENA A
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