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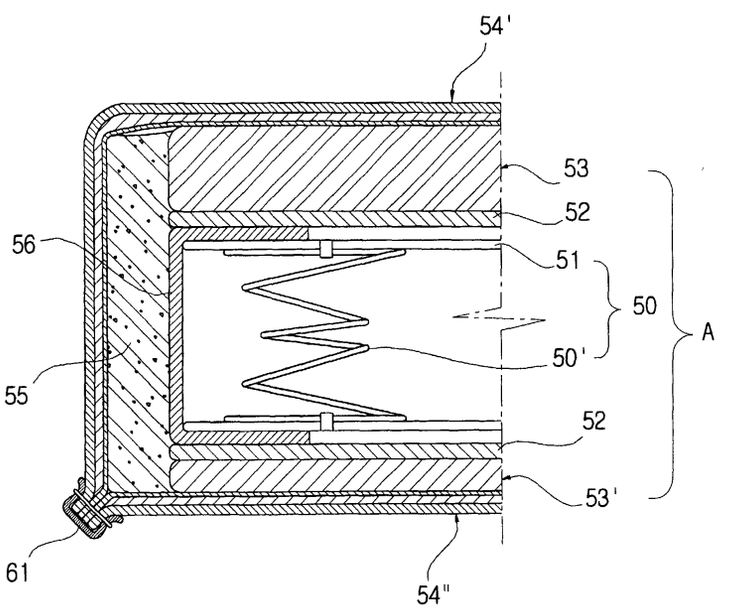
(54) Bed mattress and method of manufacturing the same

(57) A bed mattress of a mattress body having a spring frame (50) with several springs (50') disposed with a certain intervals therein, two pad layers (52) on the top and bottom sides of said spring frame (50) and at least one cushion member (53) disposed on either or both surfaces of said two pad layers (52), further comprising; a foam-molded wall member (55) for surrounding said mattress body; and a mattress cover (54',54") for covering the structural body of said mattress body and said wall member (55), for simplifying the process of manufacturing the bed mattress, and enhancing workability and productivity is disclosed.

FIG. 2



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Description

BACKGROUND OF THE INVENTION

FIELD OF THE INVENTION

[0001] The present invention relates to a bed mattress and a method of manufacturing the bed mattress. More particularly, the present invention relates to a bed mattress constructed such that a mattress body, in which a spring frame, cushion members mounted on upper and lower sides of the spring frame and the like are combined with one another, is enclosed with a foam molded layer and a method of manufacturing the same.

DESCRIPTION OF THE PRIOR ART

[0002] FIG. 1 shows an example of a conventional bed mattress. The mattress comprises a spring frame 2 having upper and lower supporting rims 1' between which springs 1 made of metal wires are disposed at regular intervals and to which upper and lower ends of the springs 1 are fixedly supported so that the springs may perform a function of absorbing external shock or vibration; pad layers 3 stacked on the top and bottom sides of the spring frame 2; a pair of side sheets 4 for surrounding four peripheral sides of the spring frame 2; a pair of first seaming sheets 5 for enveloping outer peripheral ends of the pad layers 3 and ends of the side sheets 4 which are also overlapped with the outer peripheral ends of the pad layers 3; a pair of cushion members 8 composed of compressed pad layers 6 stacked on respective top and bottom surfaces of the pad layers 3 and sponge sheets 7 which are thicker than the compressed pad layers 6; a pair of cover sheets 12 composed of non-woven fabrics 9 stacked on respective top and bottom surfaces of the sponge sheets 7, sponge sheets 10 and cloths 11; and a pair of second seaming sheets 13 for enveloping ends of envelope sheets 14 for surrounding the pad layers 3, cushion members 8 and outer peripheral ends of cover sheets 12, which are overlapped with the ends of the envelope sheets 14. Such a mattress is known in the art (see the EPC Patent Application No. 01306475.3).

[0003] However, in the aforementioned mattress, the outer peripheral ends of the pad layers 3 and the top and bottom ends of the side sheets 4 for surrounding the spring frame 2 are enveloped by and stitched together with the first seaming sheets 5, and the ends of the envelope sheets 14 for surrounding the cushion members 8 and the outer peripheral ends of the cover sheets 12 are enveloped by and stitched together with the second seaming sheets 13. That is, the above finishing touches should be made separately. Therefore, working efficiency is remarkably reduced due to increase of the number of working process, and thus, workability and productivity are lowered. Consequently, there is a problem in that overall production costs of a bed are increased.

[0004] In addition, since internal members of the mattress are enveloped by using the side sheets 4 and the seaming sheets 5 and 13, several stitched portions are exposed to the outside. Thus, great attention should be paid when stitching those portions. However, since poor stitching state and the like are liable to be produced due to inexperience or carelessness of the worker, there is a problem in that external appearance of the bed is not so good. Thus, in order to solve the problem, a lot of manual finishes should be made.

SUMMARY OF THE INVENTION

[0005] Accordingly, an object of the present invention is to simplify the manufacturing process of a bed mattress, thereby improving the workability and productivity.

[0006] Another object of the present invention is to provide a bed mattress wherein production costs thereof can be reduced by mass-production.

[0007] A further object of the present invention is to provide a mattress wherein external appearance thereof is improved by enveloping the body of the mattress with only one cover.

[0008] In order to achieve the aforementioned objects of the present invention, there is provided a bed mattress, including a spring frame having a plurality of springs, pad layers mounted to upper and lower sides of the spring frame and at least one cushion member mounted on either one or both of the upper and lower pad layers, the improvement comprising: a mattress body as a combination of the spring frame, the pad layers and at least one cushion member, and a wall member formed through a foam molding process for enclosing the perimeter of the mattress body therein, and a mattress cover which may have only one stitched portion or line.

[0009] According to the present invention, obtained is a bed mattress with a firm structure, resiliences of which are not so much affected by the wall member as the thickness thereof is relatively thin in comparison with the whole area of the bed mattress surface.

BRIEF DESCRIPTION OF THE DRAWINGS

[0010] FIG. 1 is a schematic sectional view of a conventional bed mattress.

[0011] FIG. 2 is a partial schematic sectional view showing major parts of a bed mattress according to an embodiment of the present invention.

[0012] FIG. 3 is a partial cut-away perspective view of the bed mattress shown in FIG. 2.

[0013] FIG. 4 is a schematic view of an apparatus for manufacturing the bed mattress according to the present invention.

[0014] FIG. 5 is a partial perspective view of the bed mattress according to the present invention.

DETAILED DESCRIPTION FOR PREFERRED EMBODIMENT

[0015] Hereinafter, a preferred embodiment of the present invention will be described in detail with reference to the accompanying drawings. It should be understood that the embodiment will be described for illustrative purposes only so that those skilled in the art can easily work the present invention and does not limit the technical spirit and scope of the invention.

[0016] As shown in FIGS. 2, 3 and 5, a bed mattress according to an embodiment of the present invention comprises a spring frame 50 in which springs 50' made of metal wires are kept at regular intervals between upper and lower spring rims 51 such that the springs 50' can perform a function of absorbing external shock or vibration; pad layers 52 of a felt fabric mounted on the respective top and bottom sides of the spring frame 50 and two cushion members 53 and 53' of a sponge sheet bonded to the surface of the pad layers. The pad layer and the sponge sheet are preferably to have a thickness of 15 to 25 mm and 25 to 35 mm respectively, while it is preferable that a high density sponge sheet is used on one side and a low density one is used on the other side. Further, the spring frame 50, the pad layers 52 and the cushion member 53 are enveloped by only one mattress cover. As already described with reference to FIG. 1, a mattress body as a combination of the spring frame, pad layers and cushion member(s) are known in the art.

[0017] According to a preferred embodiment of the present invention, there is provided a bed mattress comprising a spring frame 50; a wall member 55 which is formed through a foam molding process and coupled with the mattress body as a combination of the spring frame 50, the pad layers 52 and 52' and the cushion members 53 and 53' by enveloping four peripheral sides of the mattress body therein and a mattress cover having upper and lower cover sheets 54' and 54" which can hold the structural elements of the mattress therein.

[0018] Hereinafter, a method of manufacturing the bed mattress according to the present invention will be explained in detail with reference to the accompanying drawings.

[0019] As schematically shown in FIGS. 2~4, an isolating sheet 56 preferably made of a non-woven fabric was fixed to the four peripheral sides of the spring frame 50. The pad layers 52 having a predetermined thickness were bonded to the top and bottom sides of the spring frame 50. The cushion member 53 of a low density sponge sheet was bonded to the surface of the upper pad layer 52, whereas the cushion member 53' of a high density sponge sheet was bonded to the surface of the lower pad layer 52'.

[0020] Since the cushion members 53 and 53' having resiliences different from each other were bonded to the upper and lower pad layers 52 and 52' in such a way, two types of cushioning feelings, soft or hard, could be provided by one mattress.

[0021] Then, the mattress body A in which the pad layers 52 and 52' and the cushion members 53 and 53' were bonded to the top and bottom surfaces of the spring frame 50 was secured into a foaming mold 57 with the top thereof being opened. Since there was a difference in sizes between the mattress body A and the mold 57, a space B was defined around between the peripheral sides of the mattress body A and the inner walls of the mold 57.

[0022] Thereafter, the top of the mold 57 was covered with a cover 58 that could open and close the mold 57, and the cover was locked and fixed to the mold. Then, a foaming material was injected into the space B defined between the mattress body A and the mold 57 through injection holes 60 formed through the cover 58 and was foamed to allow a wall member 55 to be molded in the space. As the wall member 55 was cured, it was integrally coupled with the mattress body of the spring frame 50, the pad layers 52 and the cushion members 53 and 53'.

[0023] As such, when the wall member 55 was form-molded, the isolating sheet 56 surrounding the four peripheral sides of the spring frame 50 prevented the foaming material from being introduced into the space in the spring frame 50 and adhering to the springs 50'. Thereafter, the integrally molded structure obtained in such a manner was covered with the upper and lower cover sheets 54' and 54". The upper cover sheets 54' was put on the top and four peripheral sides of the integrally molded structure, while the bottom side thereof was held by the lower cover sheet 54". Then, after the rim of the upper cover sheet 54' was brought into contact with the rim of the lower cover sheet 54", the overlapped portions of the two cover sheets was stitched together with a rim 61. Thus, the manufacture of the mattress was completed.

[0024] Although the spring frame, felt fabrics, sponge sheets, etc. were utilized as the structural elements of the mattress in the preferred embodiment of the present invention, some of them may not be used or may be replaced by the other materials. Further, it is apparent that the material or the structure of the cover may be modified, while the isolating sheet may not be used if the wall member is foam-molded separately for being assembled with the mattress body thereafter.

[0025] According to the present invention, the perimeter or the four peripheral sides of the combined structure formed by bonding the cushion members such as sponge sheets to the top and bottom sides of the spring frame are surrounded by the foam-molded wall member. Then, the integrally molded structure obtained as such is covered with only the upper and lower cover sheets which in turn are stitched together. Thus, the process of manufacturing the bed mattress is greatly simplified, and workability and productivity are enhanced.

[0026] Accordingly, since the throughput of the mattresses per unit time is increased, the mattress can be mass-produced and production costs thereof can be re-

duced.

[0027] In addition, since the conventional side sheets need not to be used and the structural members of the mattress can be enveloped by only one cover, the portion to be stitched can be minimized to one portion. Thus, the manual works needed for making the fine appearance of the stitched portions are reduced and bed mattresses with a better appearance can be obtained.

Claims

1. A bed mattress of a mattress body having a spring frame with several springs disposed with a certain intervals therein, two pad layers on the top and bottom sides of said spring frame and at least one cushion member disposed on either or both surfaces of said two pad layers, further comprising;

   a foam-molded wall member for surrounding said mattress body; and
   a mattress cover for covering the structural body of said mattress body and said wall member.

2. The bed mattress as claimed in claim 1, wherein said wall member is disposed around the sides of said mattress body after being separately foam-molded.

3. The bed mattress as claimed in claim 1, wherein said wall member is foam-molded around the sides of said mattress body.

4. A method for manufacturing a bed mattress comprising the steps of;

   fixing an isolating sheet around a spring frame of said bed mattress;
   disposing two pad layers on the top and bottom sides of said spring frame and further at least one cushion member on either or both surfaces of said two pad layers for making a mattress body; and
   foam-molding a wall member into a predetermined form to surround said mattress body for completing a structural body of said bed mattress.

FIG. 1

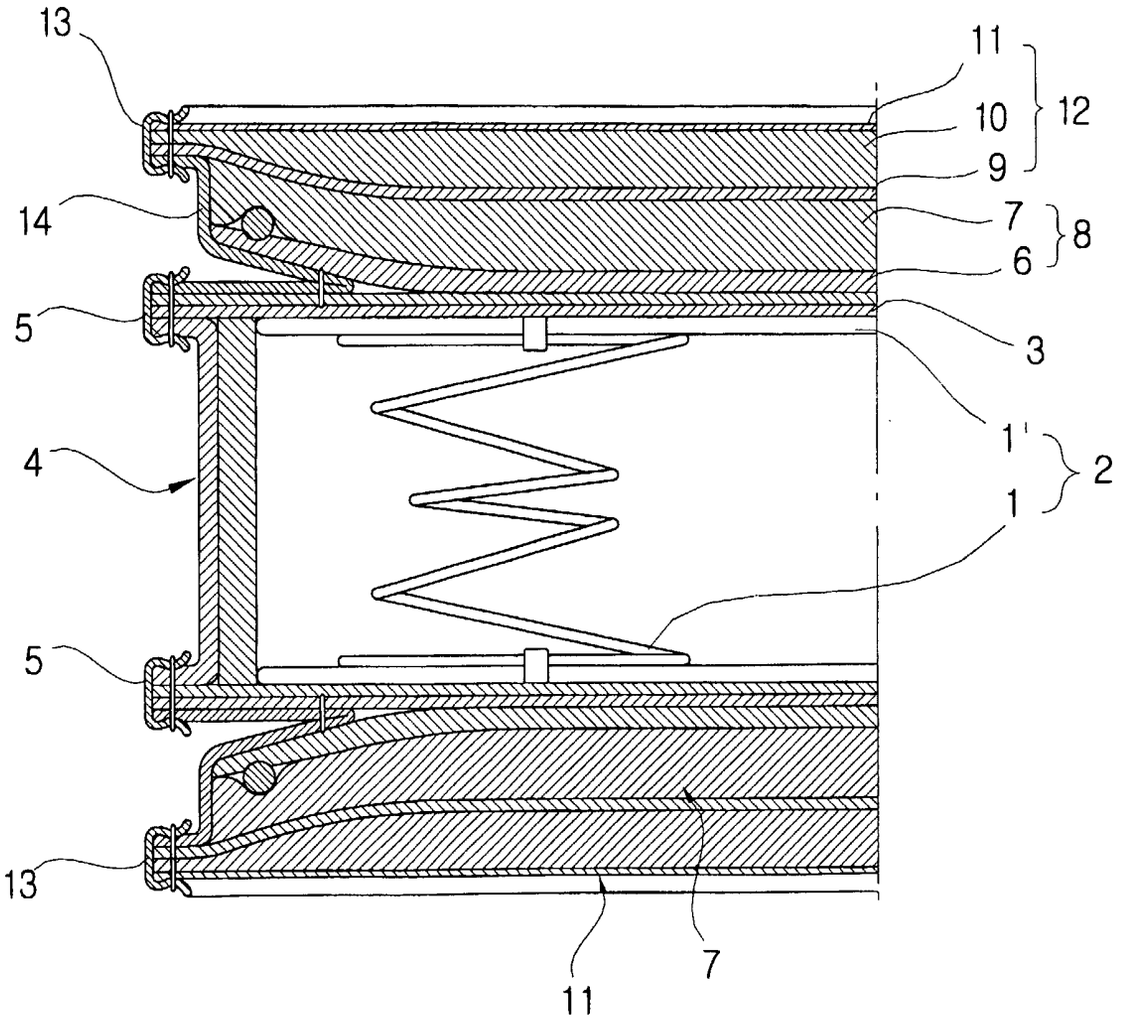


FIG. 2

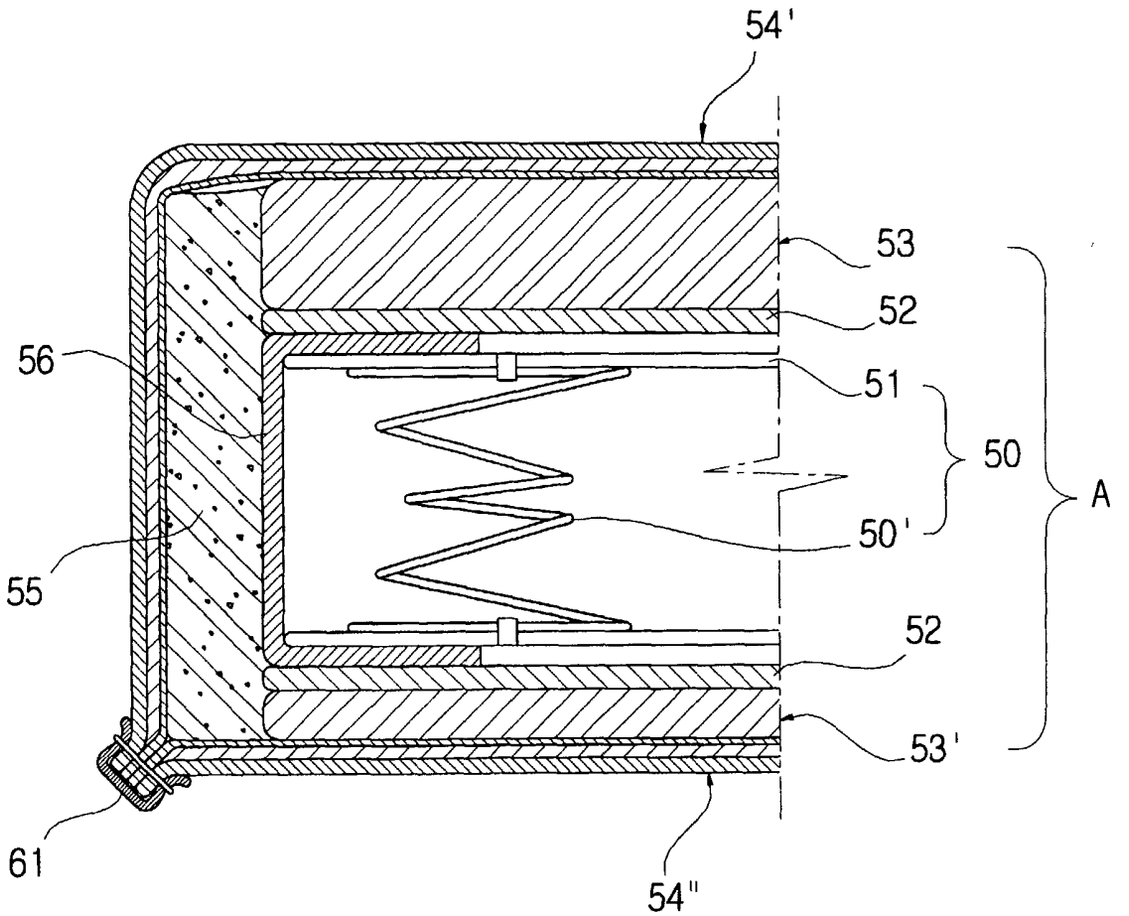


FIG. 3

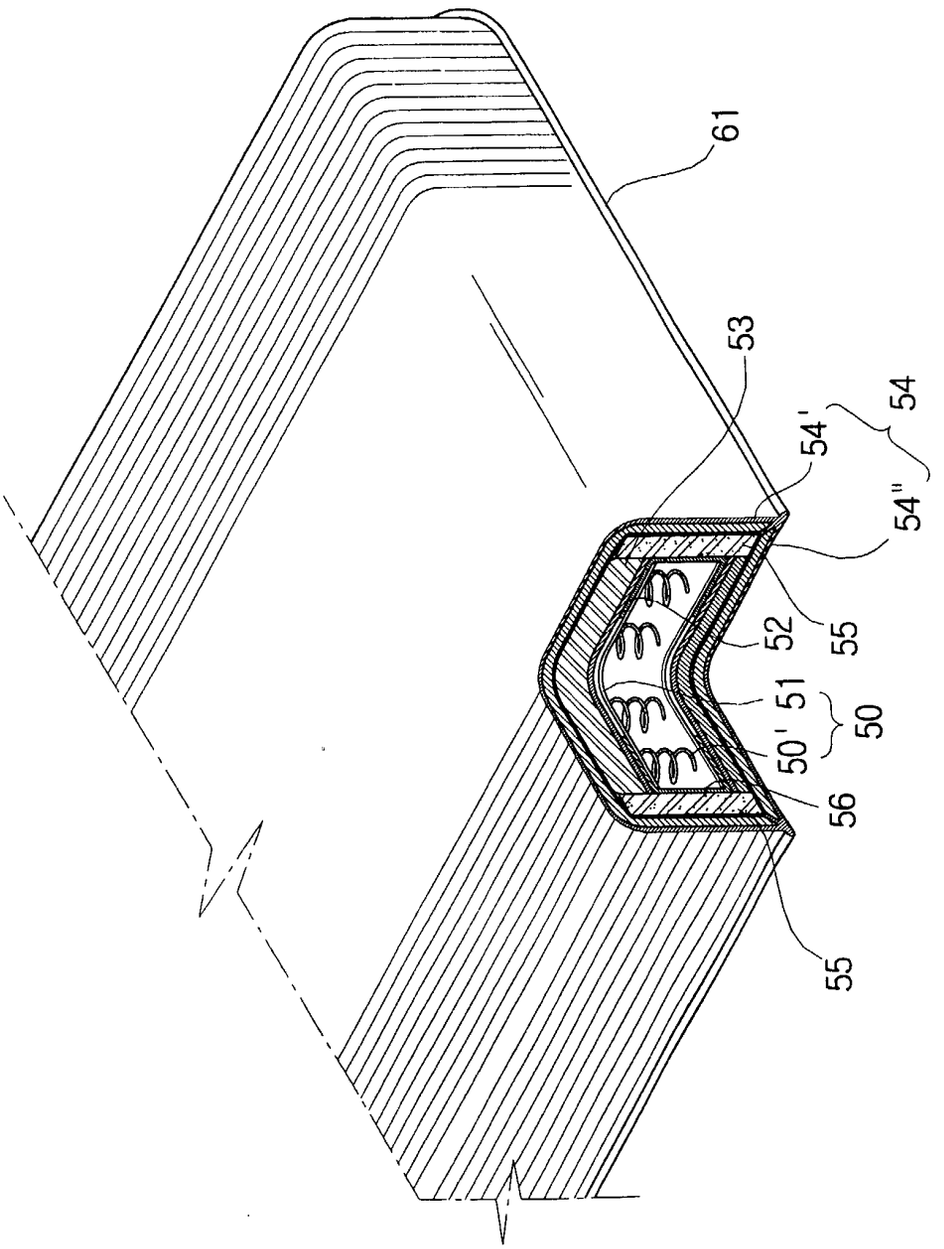


FIG. 4

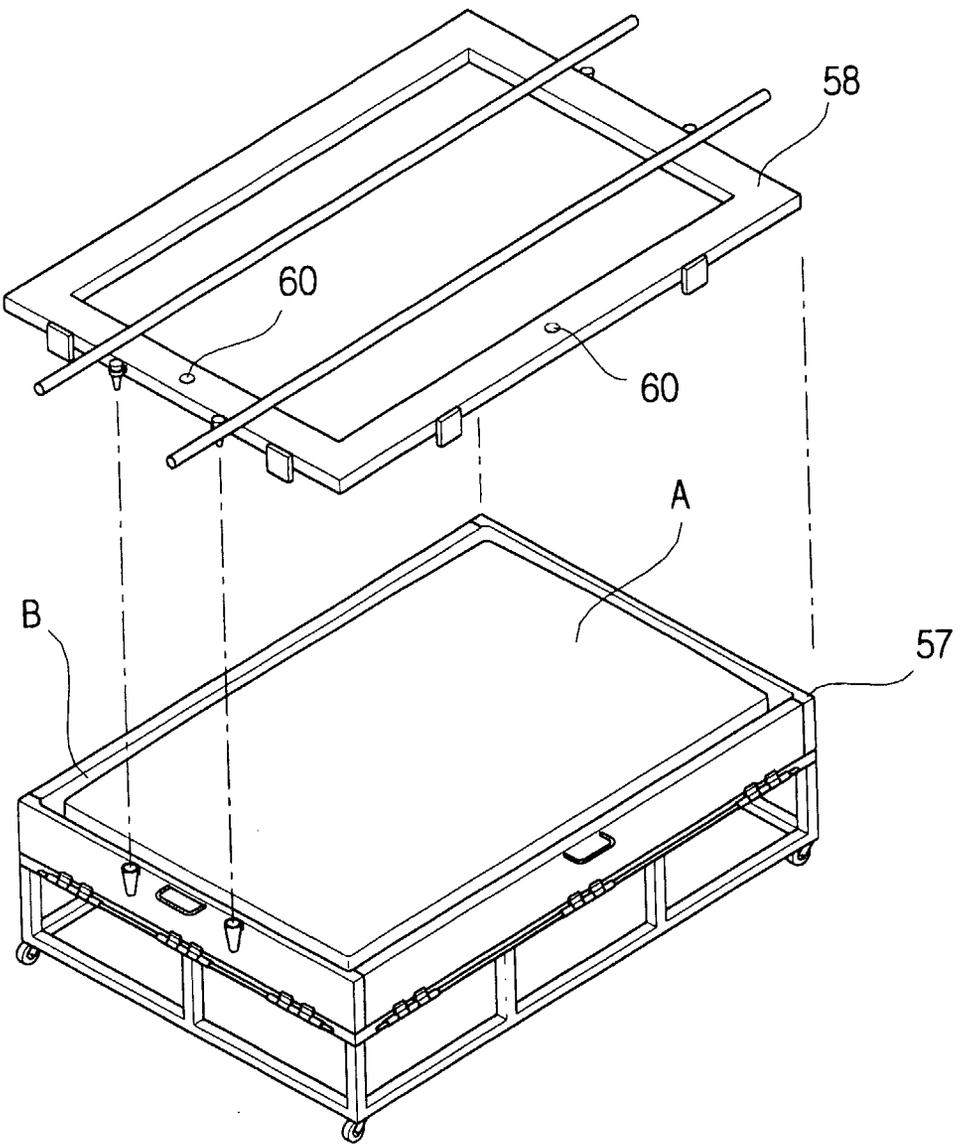
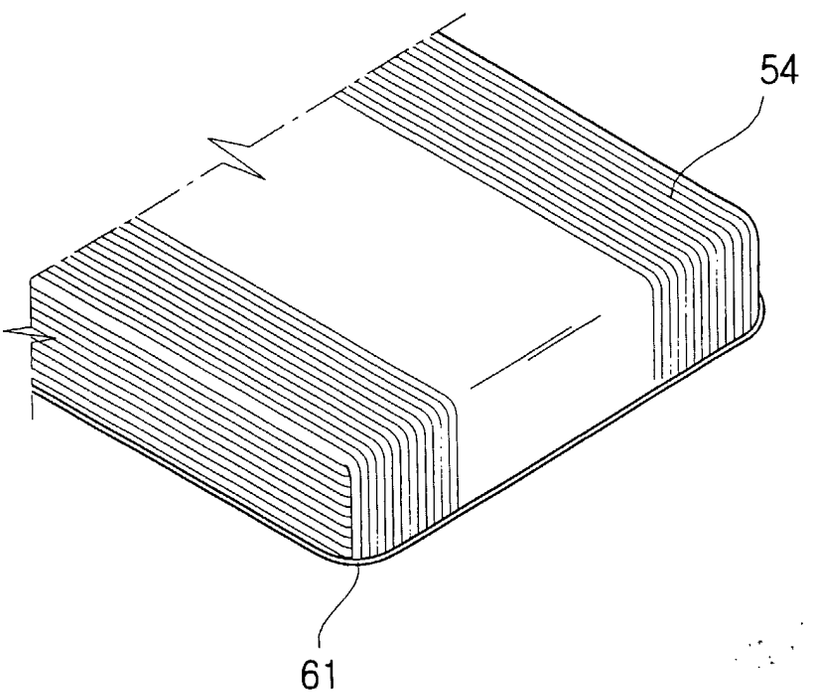


FIG. 5



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EUROPEAN SEARCH REPORT

Application Number
EP 02 25 0223

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.7)
A	GB 1 328 222 A (MIRABED AG) 30 August 1973 (1973-08-30) * column 3, line 18 - column 4, line 97; claim 1; figures *	1-4	A47C27/05 A47C27/04
A	FR 2 229 194 A (PLASSE ROBERT) 6 December 1974 (1974-12-06) * page 4, line 18-36; claim 1; figures *	1-4	
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A	FR 2 563 421 A (JYDOR SA MATELAS) 31 October 1985 (1985-10-31) * abstract; figures *	1	

TECHNICAL FIELDS SEARCHED (Int.Cl.7)

A47C

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	8 August 2002	Amghar, N

CATEGORY OF CITED DOCUMENTS

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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 02 25 0223

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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08-08-2002

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82