



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
10.06.1998 Bulletin 1998/24

(51) Int Cl. 6: **E04H 17/16, E04F 11/18**

(21) Application number: **97309888.2**

(22) Date of filing: **08.12.1997**

(84) Designated Contracting States:
**AT BE CH DE DK ES FI FR GB GR IE IT LI LU MC
NL PT SE**
Designated Extension States:
AL LT LV MK RO SI

- **Dinnessen, Christiaan Gerardus**
1013 JP Amsterdam (NL)
- **Eenhoorn, Gerardus Johannes**
2628 SX Delft (NL)
- **Schoonhoven, Sophia Maria**
2613 VB Delft (NL)
- **Strijbosch, Eveline Dympha Maria**
1072 LB Amsterdam (NL)

(30) Priority: **06.12.1996 EP 96203396**

(71) Applicant: **HUNTER DOUGLAS INDUSTRIES B.V.**
NL-3071 EL Rotterdam (NL)

(74) Representative: **Allen, William Guy Fairfax et al**
J.A. KEMP & CO.
14 South Square
Gray's Inn
London WC1R 5LX (GB)

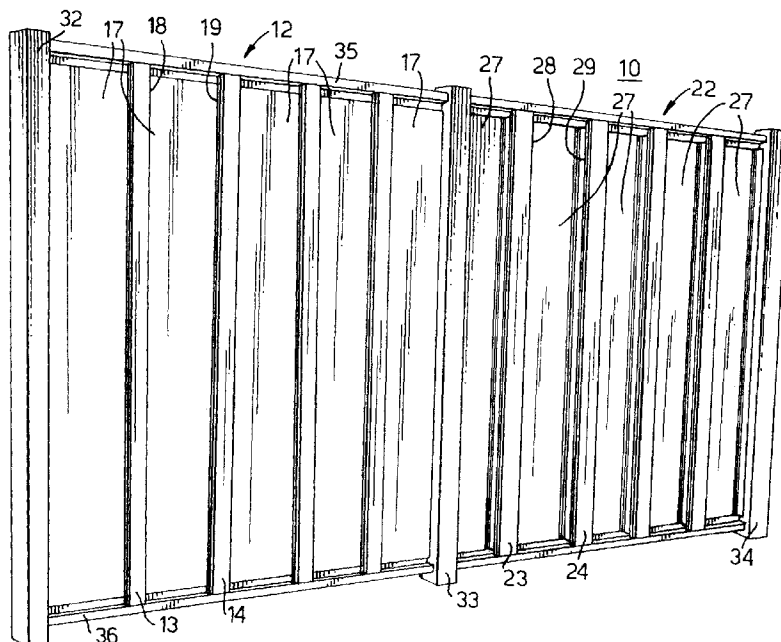
(72) Inventors:
• **Ten Bok, Marco Wilhelmus Gerhardus**
2628 HH Delft (NL)

(54) **Garden fence**

(57) A garden fence (10) having at least one screen (12) provided with a first and a second rail (18,19), characterised in that the first and the second rails (18,19) include first and second grooves (15,16), respectively,

and the screen (16) is further provided with at least one metal panel (17) with one edge inserted in the first groove (15) and an opposite edge inserted in the second groove (16).

Fig.1A.



Description

This invention relates to garden fences which can be used, for example, to separate neighbouring gardens to provide privacy.

Commonly known garden fences are made from several screens, each of which is mounted between two posts. The lower end of each post is buried in the ground and the posts provide stability and support for the screens. The posts and screens of such fences are generally made from treated wood which provide a pleasing traditional or rural appearance, whether painted or unpainted, in a garden.

A disadvantage of such garden fences has been that, although they have been made from a relatively inexpensive, readily available material, that is wood, they have been rather expensive in terms of: (i) the substantial treatments required to protect them from rapid deterioration caused by the weather (e.g., impregnation to prevent rotting) and by termites, fungi and other sources of decay, (ii) the substantial periodic maintenance required to keep them in good condition and (iii) the significant time and effort required to install them in a garden and, when necessary, replace damaged portions thereof. Painted wooden garden fences have been particularly expensive in terms of periodic maintenance and repainting required to keep their appearance satisfactory. Also, the treatments generally used for protecting and preserving wood have often been objectionable from an environmental point of view, and the use of certain woods for fences has often been objectionable for placing high demands on scarce tropical rain forests.

An object of this invention is to provide a garden fence, which substantially retains the pleasing appearance of previous wooden garden fences but overcomes their disadvantages.

A garden fence according to this invention comprises at least one screen supported by parallel spaced apart first and second rails and characterized in that said first and second rails comprise a first and a second groove respectively, and in that said screen is in the form of at least one metal panel with a first edge engaged in said first groove and a second edge inserted in said second groove. The metal panels of this fence do not require: (i) special treatment to protect them from rapid deterioration caused by the natural outdoor environment or termites, fungi or other decay, (ii) periodic maintenance or (iii) significant time and effort to install them in a garden and, when necessary, replace damaged portions thereof.

The metal panels of the screen of the garden fence of the invention are preferably made of aluminium, which may be solid or perforated. The fabrication and assembly of aluminium panels in the screen of the garden fence can be carried out in a relatively inexpensive manner, and little or no maintenance of such aluminium panels is necessary. This advantage of aluminium is particularly significant for painted garden fences be-

cause the satisfactory appearance of painted aluminium is easier to provide initially and requires almost no maintenance or periodic repainting to retain.

In order that the present invention may more readily be understood, the following description is given, merely by way of example, reference being made to the accompanying drawings in which:-

Figure 1A is a perspective view of a first embodiment of a garden fence of the invention,

Figure 1B is an exploded view of a portion of the structure of the first embodiment,

Figure 1C is an exploded detail of a further portion of the first embodiment,

Figure 1D shows the portion of Figure 1C in an assembled condition,

Figure 1E is another exploded detail of part of the structure of the first embodiment,

Figure 1F shows the portion of Figure 1E in an assembled condition,

Figure 2A is a perspective view of a second embodiment of a garden fence of the invention,

Figure 2B is an exploded view of a portion of the structure of the second embodiment,

Figure 3A is a front view of a third embodiment of a garden fence of the invention,

Figure 3B is an enlarged section of a detail of the structure of the third embodiment,

Figure 4A is a back view of a fourth embodiment of a garden fence of the invention,

Figure 4B is an exploded view of part of the structure of the fourth embodiment,

Figure 4C is an assembled view of a portion of the structure of the fourth embodiment,

Figure 5A is a perspective view of a fifth embodiment of a garden fence of the invention,

Figure 5B is an exploded view of the structure of the fifth embodiment, and

Figure 5C is an assembled view of part of the structure of the fifth embodiment.

Figures 1A-1F show a first embodiment of a garden fence 10 in accordance with this invention with an upstanding first screen 12. The first screen 12 is provided with a plurality of upstanding parallel rails, including an upstanding first rail 13, and an upstanding second rail, generally 14. The first rail 13 and the second rail 14, as well as the other upstanding rails, each have a first vertical groove 15 and a second vertical groove 16 in their sides, extending along substantially their full height. The first screen 12 also includes an upstanding metal panel 17 with a first side edge 18 inserted in the first groove 15 of the first rail 13 and a second opposite side edge 19 inserted in the second groove 16 of the second rail 14. A plurality of other upstanding metal panels 17 are also provided with their opposite side edges 18 and 19 inserted in the vertical grooves 15 and 16 in the sides of the other adjacent upstanding rails.

In Figure 1A the first screen 12 is shown in front view, and a second screen 22, is shown in rear view. The second screen 22 is also provided with a plurality of upstanding rails, including a third rail 23 and a fourth rail 24. The third and fourth rails 23 and 24, as well as the other upstanding rails, also have vertical first and second grooves 15 and 16 in their sides. The second screen 22 also includes several metal panels 27, each with a first upstanding side edge 28 inserted in a first vertical groove 15 and a second upstanding side edge 29 inserted in a second vertical groove 16 of adjacent upstanding rails.

The first screen 12 is fixed in a conventional manner between an upstanding first post 32 and an upstanding second post 33, and the second screen 22 is fixed in a likewise conventional manner between the second post 33 and an upstanding third post 34. Each outer or end rail of each screen 12 and 22 is fixed to a post 32-34 in a similar conventional manner. The lower ends of these posts 32-34 will be buried in the ground in a conventional manner.

In accordance with this invention, the vertical grooves 15 and 16 of the rails 13, 14, 23 and 24 of the screens 12 and 22 hold the first side edges 18 and 28 and second side edges 19 and 29 of their respective metal panels 17 and 27 securely to the posts 32-34, so that the fence 10 will be strong and stable under the conditions of weather and terrain, to which it will be subjected in use in a garden. The rails of the fence are preferably made of wood, in particular wood which has been treated to make it weather, insect and fungus resistant, and its metal panels 17 are preferably made of aluminium.

Each of the screens 12 and 22 also has a top cover strip 35 and a bottom cover strip 36, with their longitudinal edges fixed respectively to top and bottom edges of the rails 13, 14, 23 and 24. In this regard, Figures 1E and 1F show the insertion of the bottom of an intermediate part 39 of a rail (e.g., rail 13, 14) into a horizontal groove 40 in the bottom of the top cover strip 35, so as to hold securely the intermediate part 39 and its first rail 13.

As best seen from Figure 1B, the first rail 13 and the second rail 14, as well as the other upstanding rails, of the fence 10 each consist of a front part 37, a rear part 38 and an intermediate part 39. The first and second grooves 15 and 16 each extend vertically between the front part 37 and the rear part 38 of the rails and are on opposite sides, and separated by, the intermediate part 39 of the rails. The top cover strip 35 and the bottom cover strip 36 each have a groove to receive, and hold securely, the top and bottom of the intermediate part 39 of each rail.

Figures 1C and 1D show the assembly of the rails (e.g., rail 13, 14) with first and second vertical grooves 15 and 16 formed between their front parts 37, rear parts 38 and intermediate parts 39. Each rear part 38 has two vertical retaining grooves 42 to hold adjacent metal pan-

els 17 in the grooves 15 and 16 as shown in Figure 1D. In this regard, Figure 1D shows two positions during installation of the panel 17, in which the panel 17 engages in the retaining groove 42 and abuts against the front part 37 of the rail. Of course, the panel 17 may also be held by the rails 13 and 14 in a different manner as described below with reference to Figures 2-5.

Figures 2A-2B show a second embodiment of garden fence 50 in accordance with the invention with two of its upstanding screens 52. Each screen 52 is provided with a pair of parallel rails, a horizontal top rail 66 and a horizontal bottom rail 68. The top rail 66 consists of a horizontal rear part 53 having a plurality of separate first vertical grooves 55 formed in the front of it and a horizontal front part 54 having a plurality of separate second vertical grooves 56 formed in the rear of it. Each first groove 55 is positioned to face a second groove 56. The top rail 66 is perpendicular to a plurality of side-by-side pairs of upstanding metal, rear and front panels 57 and 58, respectively, in face-to-face relationship. Each pair of facing, first and second grooves 55 and 56 receives the top edges 59 and 60, respectively, of a pair of facing metal panels 57 and 58, respectively. To separate the facing panels 57 and 58 of each pair and hold them securely within the facing, first and second grooves 55 and 56, a vertical intermediate rail 61 is also provided in each top rail 66, between its front and rear parts 53 and 54.

Bottom edges (not shown) of metal panels 57 and 58 of the second fence 50 are similarly received in the vertical grooves of the front and rear parts of the bottom rail 68, the structure of which corresponds to that of the top rail 66.

As also shown in Figures 2a and 2B, a pair of horizontal cover strips 62 are provided on top of the top rail 66 and on the bottom of the bottom rail 68 to cover the top and bottom of the rear, front and intermediate parts of these rails and the top and bottom edges of the upstanding pairs of metal panels 57 and 58. Also, an upstanding pair of cover strips 63, on opposite sides of each screen 52, are provided to cover the side edges of the rear, front and intermediate parts of the top and bottom rails 66 and 68 and the side edges of the upstanding pairs of metal panels 57 and 58. The top and bottom rails 66 and 68 of each screen 52 can be connected in a conventional manner to posts of the garden fence 50, the lower ends of which will be buried in the ground as described above.

Figures 3A-3B show an upstanding screen 71 for a third embodiment of garden fence 70 according to the invention. The screen 71 has a plurality of parallel rails, including a horizontal first rail 72 and a horizontal second rail 73, between which are positioned a plurality of horizontal metal panels, including a pair of adjacent metal panels 74 and 75.

As seen in Figure 3B, each rail, including the second rail 73, has a front part 77 and a rear part 78, and the rear part 78 has a single horizontal groove 79 formed in it to receive and hold intumed flanges 74a and 75a

on the bottom and top edges of the adjacent metal panels 74 and 75 securely in the screen 71. The front and rear parts 77,78 are held together by a suitable securing arrangement on the posts.

Each screen 71 can be attached to other screens 71 and to posts as described above to form the third garden fence 70.

Figures 4A-4C show an upstanding screen 81 for a fourth embodiment of garden fence 80 in accordance with the invention. The screen 81 has an upstanding first side rail 89 with an upstanding rear part 82 and an upstanding front part 83 and a second upstanding side rail 90 with an upstanding rear part 84 and an upstanding front part 85 that are all perpendicular to a plurality of horizontal metal panels 86. Parts 82 and 84 are L shaped in cross-section and define, with parts 83 and 85, respectively, grooves 82a and 84a. The screen 81 also has a first upstanding strip 87 and a second upstanding strip 88 that are perpendicular to the panels 86 and can be fixed to the posts (not shown) of the fence. The screen 81 also has a third horizontal strip 92 and a fourth horizontal cover strip 93, which together with the upstanding strips 87 and 88 form a frame for the screen and keep it in a planar configuration.

As shown in Figures 4B and 4C, the rear part 82 of the upstanding first rail 89 cooperates with the front part 83 of the first rail to hold the side edges of the horizontal metal panels 86 in the groove 82a. Similarly the rear part 84 of the upstanding second rail 90 cooperates with the front part 85 of the second rail to hold the opposite side edges of panels 86 in the groove 84a.

As also shown in Figures 4B and 4C, the metal panels 86 have a generally corrugated S-shape or zig-zag configuration when viewed from the side. To hold the panels securely, the front parts 83 and 85 of the parallel, first and second rails 89 and 90 preferably have separate rearwardly extending, spaced projections which can mate with and securely engage the zig-zag configuration of the metal panels 86.

Each screen 81 can be attached to other screens 81 and to posts as described above to form the fourth garden fence 80.

Figures 5A-5C show a fifth embodiment of garden fence 100 in accordance with the invention with two of its upstanding, first and second screens 101 and 102. The first screen 101 is formed between a first upstanding rail 103 and a second upstanding rail 105, and the second screen 102 is between the second upstanding rail 105 and a third upstanding rail 107. Both screens 101 and 102 are formed by a plurality of vertically aligned, horizontal metal panels 108. Horizontal rails 109 and 110 are provided at the top and bottom of the screens 101 and 102, parallel to the panels 108. Each outer, first and third rail 103 and 107 is fixed to posts 132 and 133.

As best seen in Figure 5B and 5C, the first rail 103 consists of a front part 111 and a rear part 112, and the second rail 105 consists of a front part 113 and a rear

part 114. A plurality of separate grooves 115 are provided in the rear of the front part 111 of the first rail 103, and a plurality of separate grooves 116 are provided in the rear of the front part 113 of the second rail 105. Each one of the grooves 115 in the first rail 103 is horizontally aligned with one of the grooves 116 in the second rail 105. In addition, a plurality of separate grooves 117 are provided in the front of the rear part 112 of the first rail 103, and a plurality of separate grooves 118 are provided in the front of the rear part 114 of the second rail 105. Each one of the grooves 117 in the rear part 112 of the first rail 103 is horizontally aligned with one of the grooves 118 in the rear part 114 of the second rail 105. Likewise, the third rail 107 consists of front and rear parts with grooves horizontally aligned with grooves 115, 116, 117 and 118.

As best seen in Figure 5C, the metal panels 108 each have a generally horizontal corrugated S-shaped or zig-zag configuration, when viewed from the side, so that they can be nested between, and held securely by, the front parts 111 and 113 and the rear parts 112 and 114 of each of the parallel rails 103 and 105, in the grooves 115-118 thereof. To better hold the metal panels between the front and rear parts of the rails 103 and 105, a strip 125 is preferably inserted between the front and rear parts of the rails at the top and bottom thereof and/or at the centre thereof.

The invention is, of course, not limited to the above-described embodiments which may be modified without departing from the scope of the invention or sacrificing all of its advantages. For example, the metal panels need not be solid and can be suitably perforated. Similarly, the rails 89,90 of Figure 4 and 103,105 of Figure 5 can be formed in one piece rather than the two piece structures described.

Claims

1. A garden fence comprising at least one screen supported by parallel spaced apart first and second rails and characterized in that said first and second rails comprise a first and a second groove, respectively, and in that said screen is in the form of at least one metal panel with a first edge engaged in said first groove and a second edge inserted in said second groove.
2. A fence according to claim 1, characterised in that screen comprises a plurality of said metal panels and said three or more rails, each rail having separate, first and second grooves, respectively, in each of which are engaged the edges of one of said metal panels.
3. A fence according to claim 1 or 2, characterised

in that first and second rails are made of wood.

4. A fence of according to any preceding claim, characterised in that metal panels are formed from aluminium. 5
5. A fence of according to any preceding claim, characterised in that screen further comprises parallel, first and second cover strips, perpendicular to said rails; an end of each of said cover strips being attached to an end of said first or second rail. 10
6. A fence of according to any preceding claim, characterised in that first and second rails each comprise front and rear parts, said first and second grooves being in said front parts, said rear parts or both. 15
7. A fence of according to claim 6, characterised in that first and second rails each further comprise an intermediate rail, located between said first and second rails, said intermediate rail comprising front and rear parts and a plurality of separate grooves in said front parts, said rear parts or both. 20
25
8. A fence according to claim 6 or 7, characterised in that grooves are in both said front and rear parts of said rails.
9. A fence according to claim 6 or 7, characterised in that grooves are only in said front parts of said rails. 30
10. A fence according to claim 6 or 7, characterised in that alternate ones of said grooves are only in said front parts of said rails and the other ones of said grooves are only in said rear parts of said rails, and said metal panels have a zig-zag configuration, when viewed from the side, which can nest in said grooves. 35
40
11. A fence according to any preceding claim, characterised in that the metal panel is perforated. 45
50
55

Fig.1A.

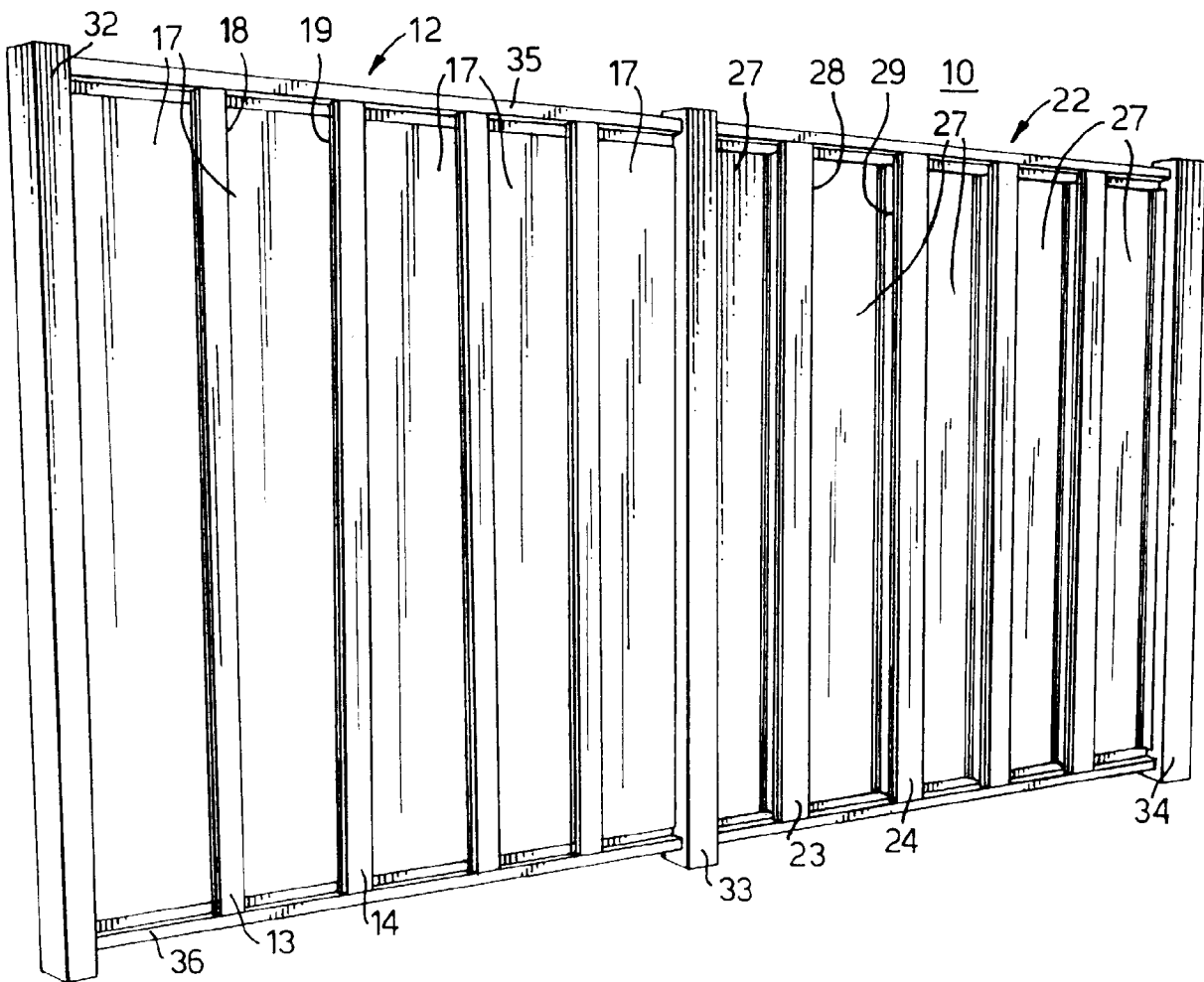


Fig. 1B.

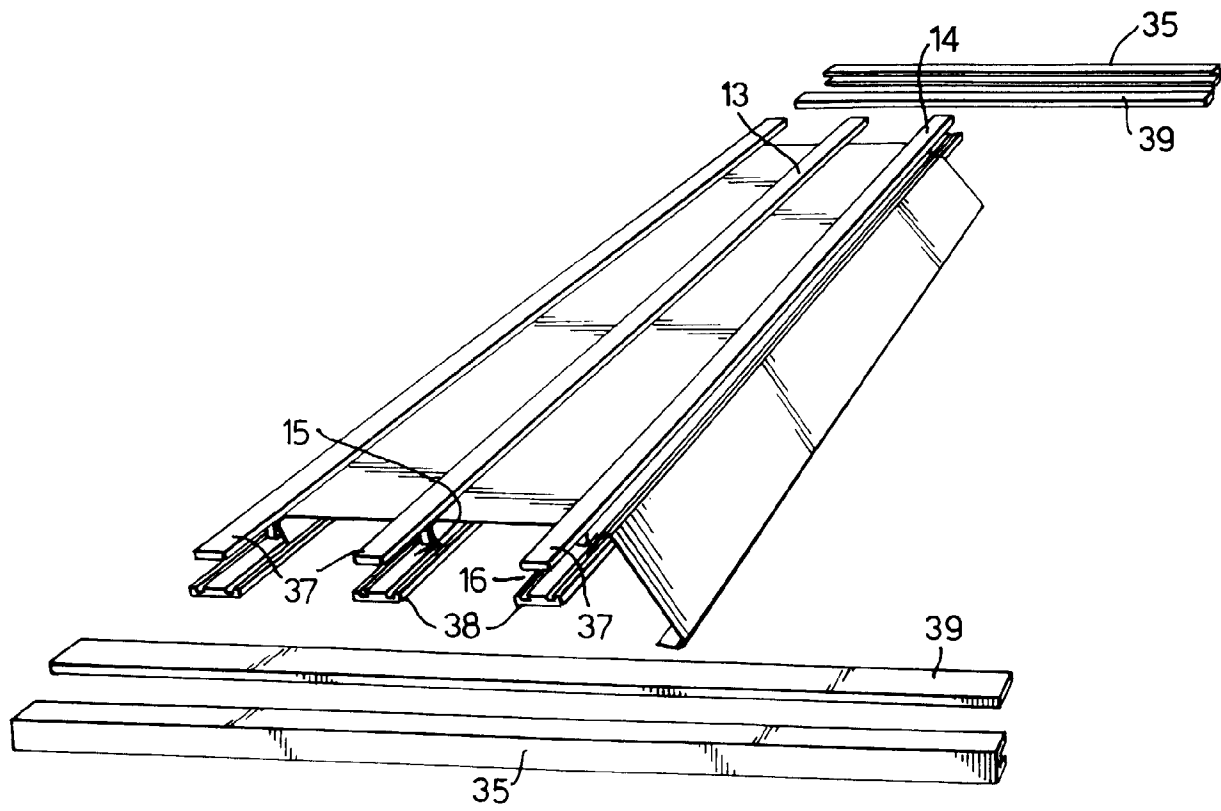


Fig.1C.

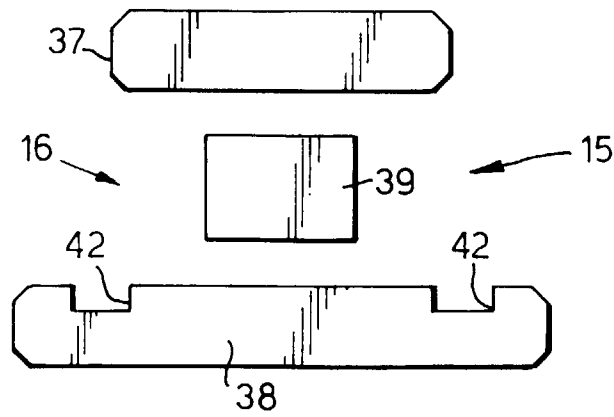


Fig.1D.

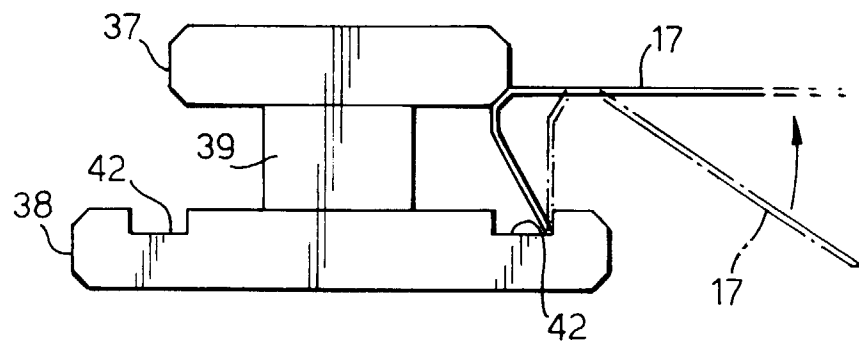


Fig.1E.

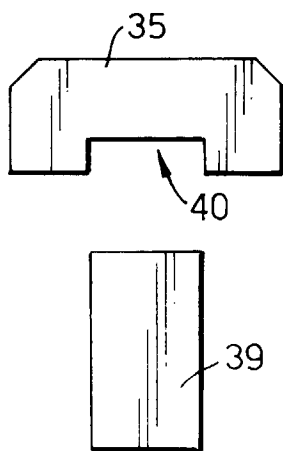
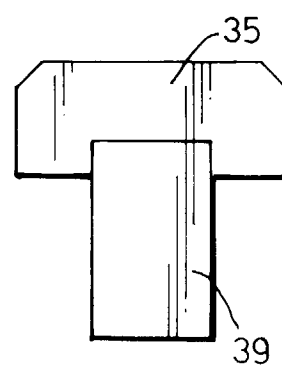


Fig.1F.



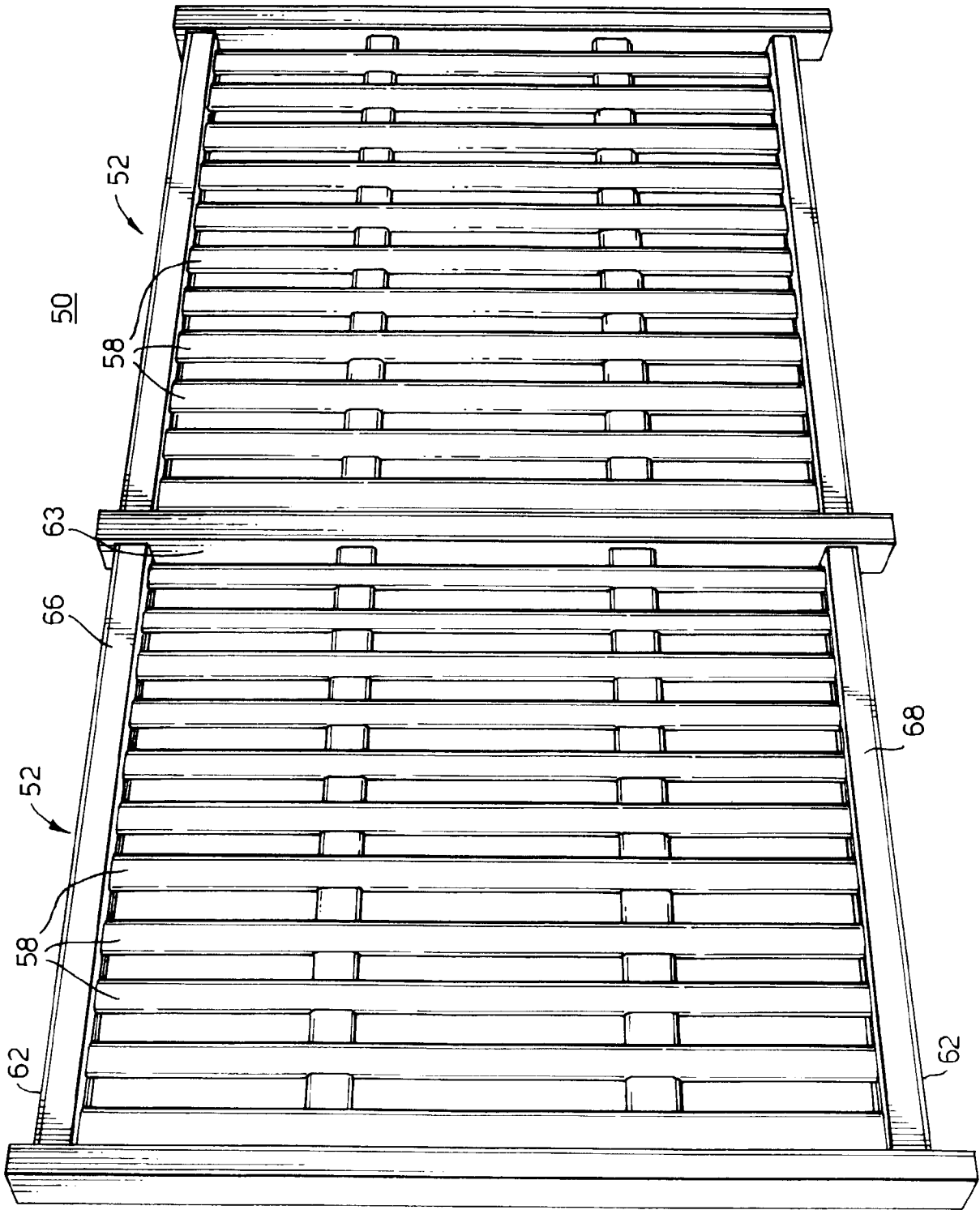


Fig.2A.

Fig.2B.

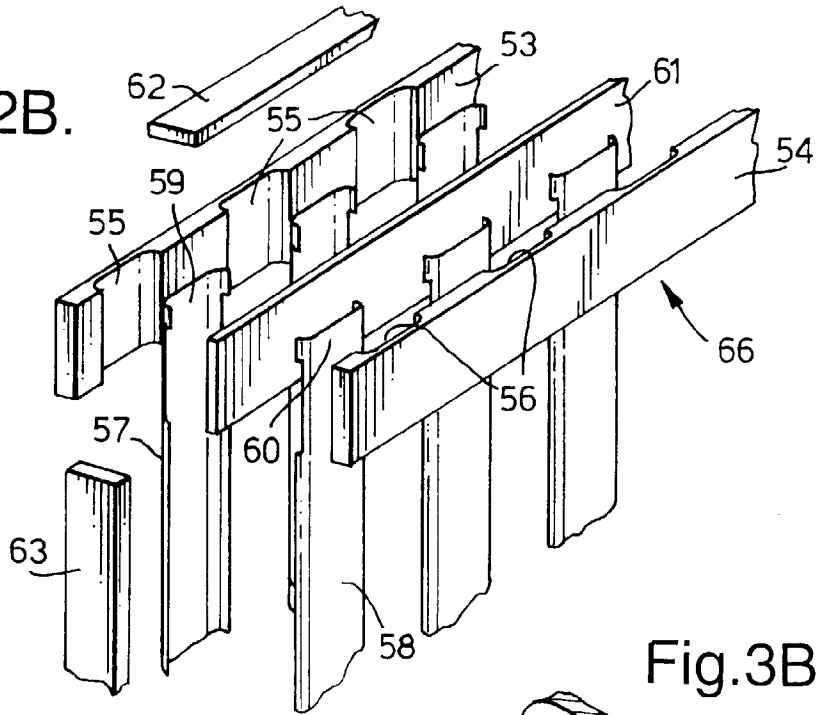


Fig.3B.

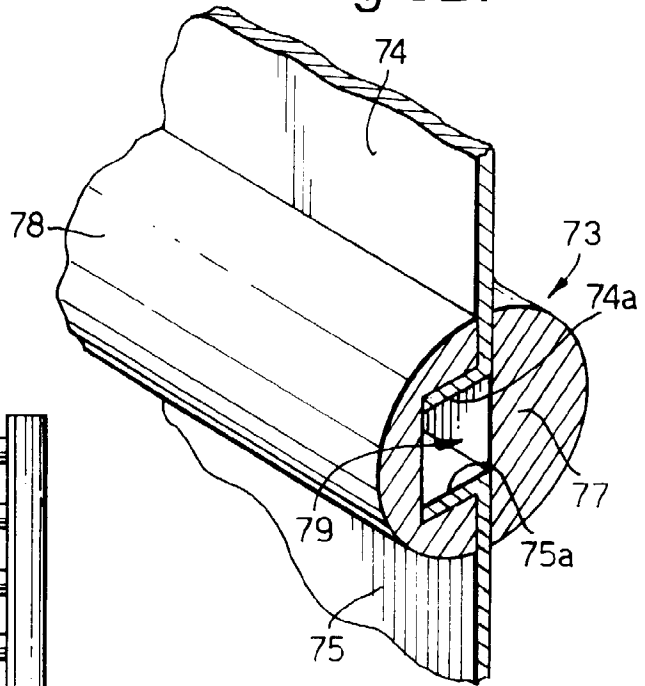


Fig.3A.

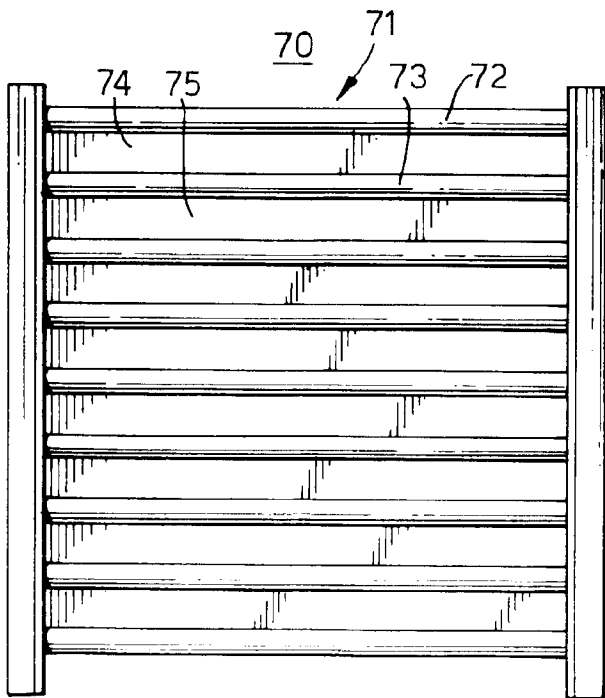


Fig.4A.

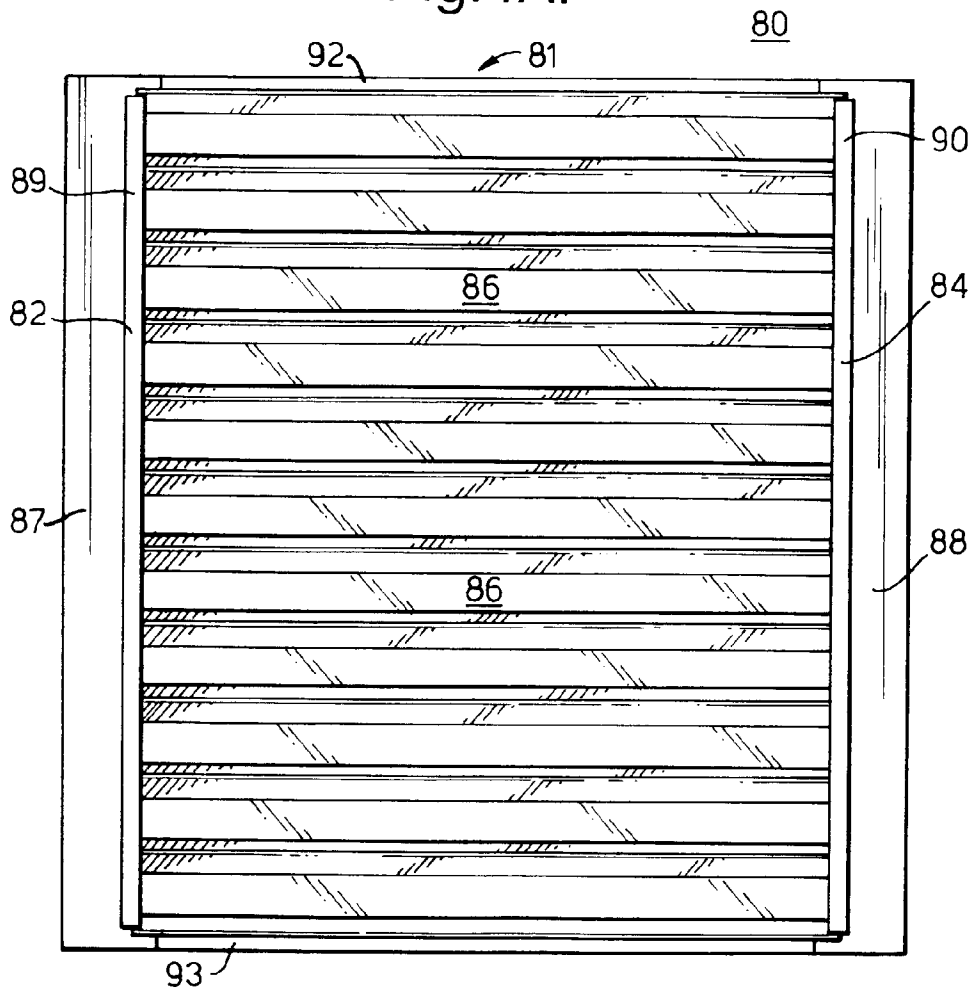


Fig.4C.

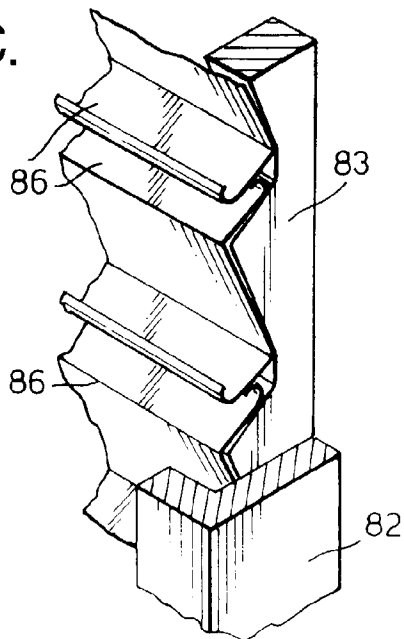


Fig. 4B.

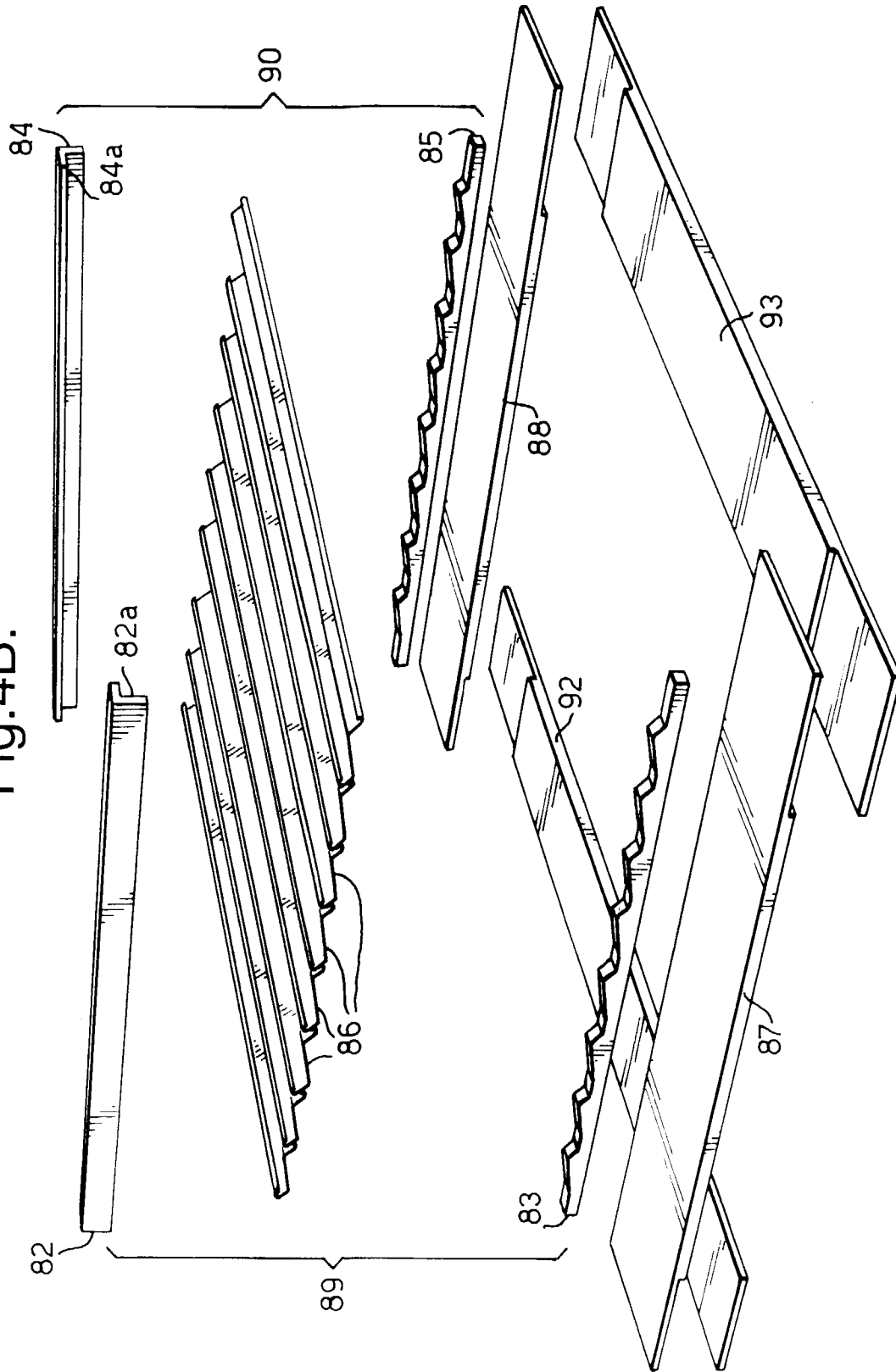


Fig.5A.

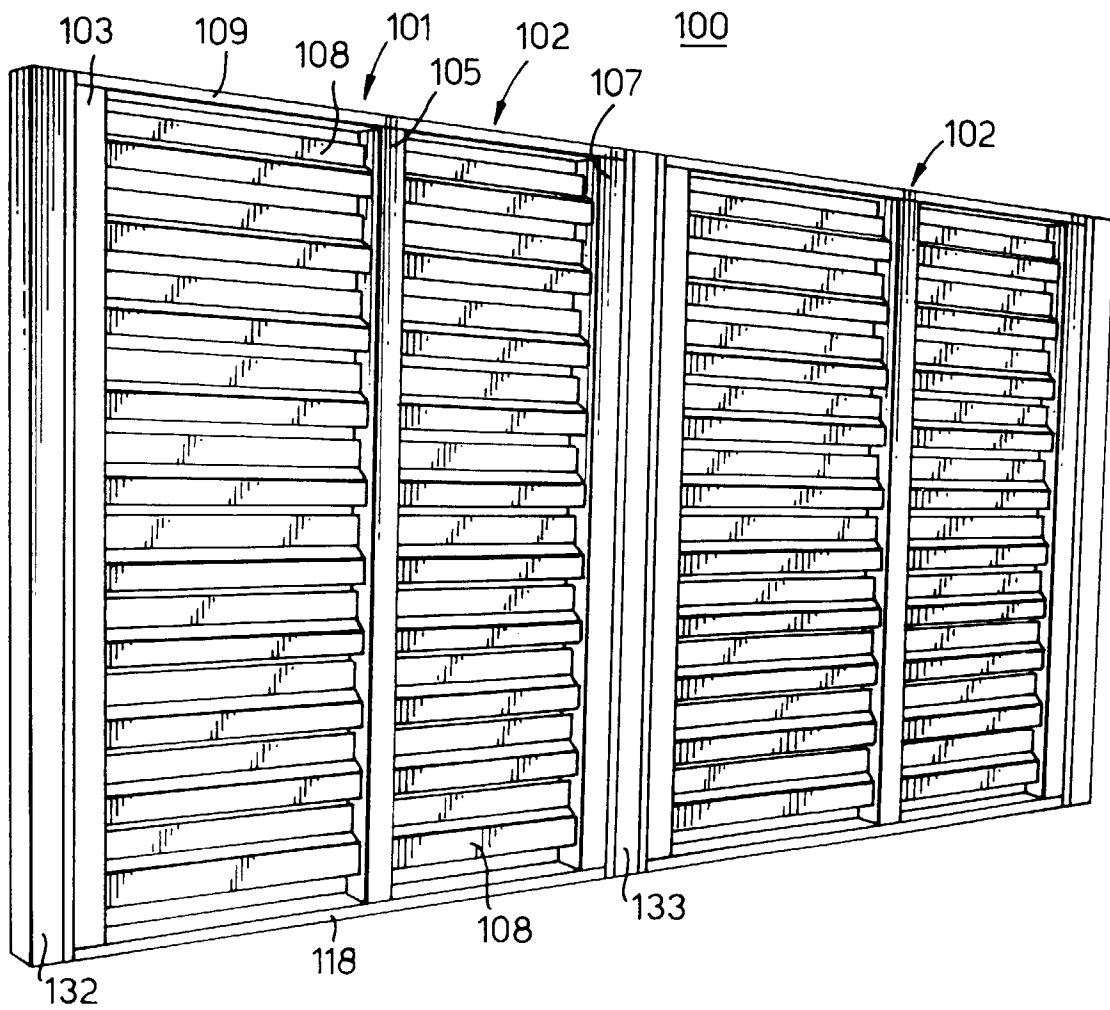


Fig.5B.

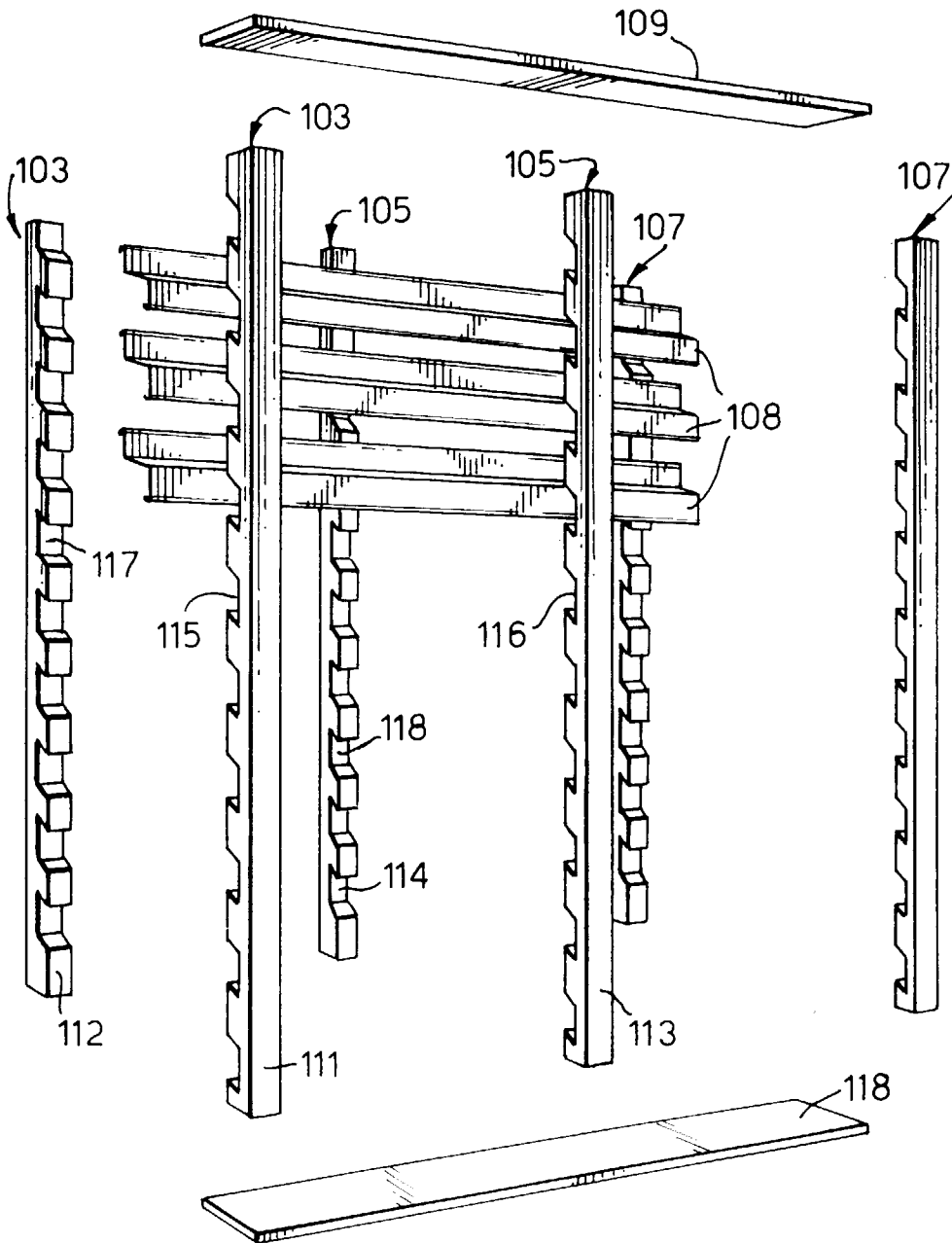
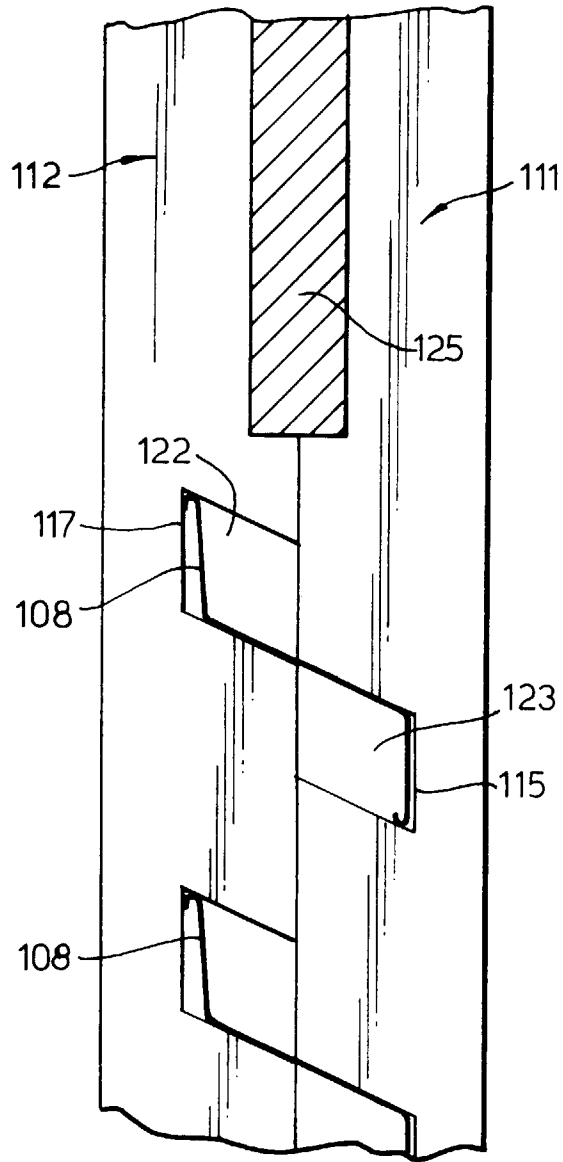


Fig.5C.





European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 97 30 9888

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.6)
X	AU 21131 83 A (JOHN LYSAGHT LTD) * the whole document *	1,4	E04H17/16 E04F11/18
Y	---	6,8,10	
X	US 4 188 019 A (H. F. MEREDITH) * the whole document *	1	
A	---	4	
X	US 5 494 261 A (E. P. GANDARA) * the whole document *	1,5	
A	---	2	
X	DE 295 07 301 U (SEIDL + MAYER LOCHBLECHE GMBH) * the whole document *	1,11	
X	US 4 369 953 A (W. H. GREINER ET AL) * column 4, line 39 - column 5, line 8; figures 6-8 *	1	
A	---	6,8,10	TECHNICAL FIELDS SEARCHED (Int.Cl.6)
Y	GB 1 114 853 A (HEKALU N. V.) * the whole document *	6,8,10	
A	GB 2 094 371 A (M. R. BRUNO) * page 1, line 1 - page 2, line 22; figures 1,2 *	1-3	E04H E04F E01F
A	US 4 214 734 A (R. T. STAFFORD) * the whole document *	1	
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 12 March 1998	Examiner Delzor, F
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

EPO FORM 1503 03/82 (P4/C01)