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(54) Improvements in or relating to cases or the like

(57) A case having a lid and a base, at least one of the lid and base being formed from frame members connected together by corner brackets wherein the corner brackets including tapered ribs.

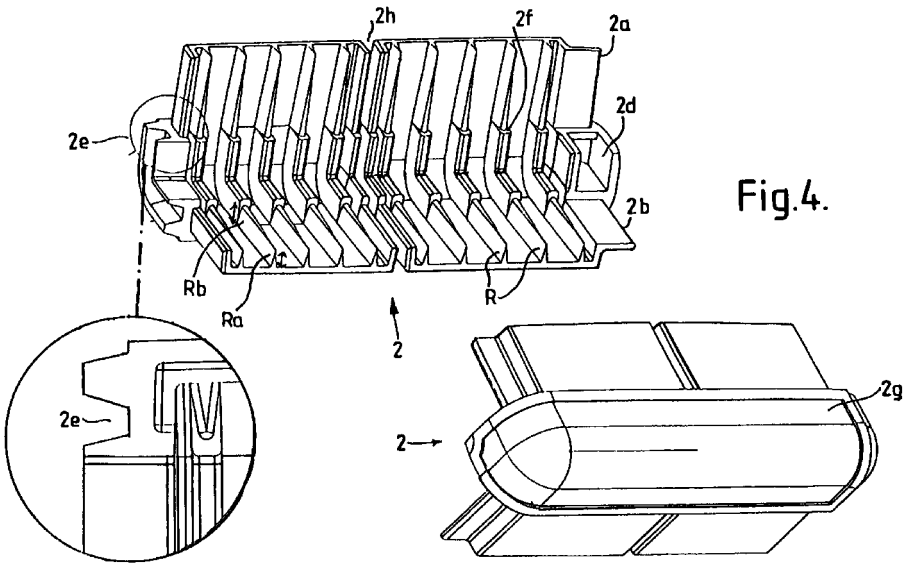

Fig.4.

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Description

[0001] This invention relates to improvements in or relating to cases and is more particularly but not exclusively concerned with assembly of attaché cases.

[0002] These days attaché cases or briefcases may be made out of many materials and not just traditional leather or plastics material. There has been a demand for strong, durable, rigid cases of this style which are lightweight and which can be constructed in a quick, easy and convenient manner in order to provide a stylish briefcase at a generally low cost. It is known to provide such briefcases which are of modular construction generally having a lid hinged to a bottom or base portion to which a carrying handle is attached. The hinges or hinge means may be screwed onto the outside of the lid and bottom portion and supported by riveting and perhaps including a stop to limit the opening angle of the lid to the case, for example to just greater than 90°. In a case of such modular construction, the lid may be made up of a hollow extruded aluminium section comprising four pieces or members cut and sized to make a supporting frame joined at the corners by plastics corner joints. The extruded cross-section includes a channel for receiving the edge of a flat, rectangular top part of the lid made for example of rigid plastics or a sandwiched material. The downwardly depending edge of the lid defined by the frame members is shaped suitably to mate with a complementary edge contour of aluminium extruded section material arranged in a frame to form the bottom or base of the case. The bottom or base of the case may be made up of similar extruded sections and plastics and/or aluminium corner brackets joining the frame members but the precise make-up of the bottom of the case may be varied to suit according to the particular depth of base and/or aesthetic characteristics or cost. For example, the upstanding side walls of the base need not be constructed from an aluminium extruded section which is the full height of the side wall (as with the lid) but rather, for saving in costs, the upstanding side walls themselves may be constructed by frame members shaped to support and hold in place flat; rectangular side walls of similar plastics construction to the flat bottom wall of the base of the case. However, the applicant has perceived that there may be certain disadvantages to such modular construction attaché cases or briefcases or at least it is believed that a more versatile construction could be engineered.

[0003] The plastics corner brackets themselves are provided with projections or male mating parts that engage in holes (or slots) or female mating parts in the aluminium extruded frame sections. The frame sections are held together by the force fit engagement of the corner brackets in the holes/slots in said frame sections. Owing to the nature of said engagement, it has been found in practice that the height of corner bracket that can be employed is limited more particularly to about 20mm and that if any such corner bracket is employed having a height greater than that there are problems in the corner brackets being retained properly in the frame members bearing in mind that the idea of the construction method is not to employ adhesives and in any event the application of such adhesives may not be suitable in view of the stresses involved on the structure overall in any case both in manufacturing and in use.

[0004] Owing to the height restriction of about 20 mm. it tends to be disadvantageous that the base of the briefcase is often constructed with three part corner sections to cater for the height required and thus overall the assembly method is believed to be much more complex than need otherwise be the case. Thus, in certain situations in constructing either the lid or the base of the case each corner has been made up of a plurality of corner brackets and owing to the particular construction involved the base may not have side walls which are each made up of a single length of extruded aluminium section unlike the lid. Additionally, the plastics corner sections clearly stand out in such a case and this may not be the most aesthetic appearance that could be achieved.

[0005] Additionally, it is believed that improvements may be made to the overall aesthetics of the case and particularly in relation to the corner brackets.

[0006] An object of the present invention is to at least alleviate one or more of the aforementioned, or other, disadvantages associated with modular case construction.

[0007] According to one aspect of the present invention there is provided a case having a lid and a base, at least one of the lid and base being formed from frame members connected together by corner brackets, the case having one or more of the following features:

a) the corner brackets including tapered ribs;
b) the corner brackets being of single piece construction;
c) the corner brackets having a height greater than 20mm;
d) both frame members of the side walls of the lid and base extending the full height of the side walls, and
e) the corner bracket having means for maintaining (preferably indentations) a decoration material (e.g. aluminium sheet).

[0008] According to another embodiment of the invention there is provided a case having a lid and a base, at least one of the lid and base being formed by frame members connected together by corner brackets, the case having corner brackets including flange means extending in three mutually orthogonal directions.

[0009] Where each corner bracket includes tapered ribs, said ribs are preferably tapered in cross-section as well as longitudinally and preferably are tapered in three mutually orthogonal directions, said ribs tapering from an inner location of the corner bracket to the outside of

the corner bracket. In practice, said tapered ribs will define an edge surface engaging walling of the frame members defining a slot or hole for reception of connection flanges on the corner brackets defining the tapered ridge.

[0010] In one embodiment of the present invention the case is made up of a lid and base, the lid including four frame member sections, each frame member section corresponding to the height of a side wall of the lid, connected together by corner brackets, each corner bracket having the same height extending the height of the side wall. Additionally, the base may comprise a four frame member sections of a similar height as used on the lid or greater joined together by four corner brackets having a height equal to the height of the side walls of the base.

[0011] Thus, the briefcase may include a lid made up of four frame member sections, four corner joints and a flat top part in addition to a base made up of four frame member sections, four corner brackets and a flat bottom part to the base. Each corner bracket may be constituted by the integral moulding and there may be only two types of corner bracket provided in a construction.

[0012] Preferably, each of the flange means includes tapered ribs such that the narrowest tapered edge engages walling of a slot in an extruded frame member section of said case.

[0013] Further according to the present invention there is provided a case of modular construction having double sided frame members and corner brackets having:-

a) flange means extending in three mutually perpendicular directions engaged in said frame members or

b) flange members having locally deformable or collapsible rib means, such as tapered ribs or frangible membranes.

[0014] Further according to the present invention there is provided a kit of parts for a case in accordance with the preceding statements of invention.

[0015] Many other advantageous features of the present invention will be evident from the following description and drawings.

[0016] Embodiments of an attaché case or briefcase will now be described, by way of example only, with reference to the FIGURES of the accompanying diagrammatic drawings in which:

FIGURE 1 shows a view of a prior art case in a closed position;

FIGURE 2 shows a view of a first embodiment of the case in accordance with the present invention also in closed position;

FIGURE 3 shows an enlarged perspective open view of a case similar to that shown in FIGURE 2;

FIGURE 4 shows two perspective views and an enlarged portion of the corner bracket utilised in the lid portion of the case shown in FIGURE 3;

FIGURE 5 shows a section through an extruded aluminium upper side frame member taken on line IV - IV of FIGURE 3;

FIGURE 6 shows a section through an extruded aluminium lower side frame member taken on line V-V of FIGURE 3;

FIGURE 7 shows a section through another extruded aluminium lower side frame member that may be used instead of that depicted in FIGURE 8;

FIGURE 8 shows a section through an extruded aluminium lower side frame member taken on line IV - IV of FIGURE 3 with guidance as to how ribs on the corner brackets shown in FIGURE 4 fit thereinto;

FIGURE 9 shows perspective view and an enlarged portion of a complementary corner bracket utilised base portion of the case shown in FIGURE 3;

FIGURE 10 shows an interior view of a corner bracket for use in a second embodiment of the attaché case or briefcase according to the present invention;

FIGURE 11 shows an exterior view of the corner bracket of FIGURE 10;

FIGURES 12, 13 and 14 show views of a second corner bracket according to the present invention that may be employed at the corner of an open-top on the base of the second embodiment of the briefcase;

FIGURE 15 shows a section through a top wall portion of a side wall of a base of the second embodiment of a briefcase and,

FIGURE 16 shows a sectional view through a bottom extruded aluminium frame member of a base of the second embodiment of the briefcase.

[0017] Referring to FIGURE 1 of the drawings a briefcase of known construction has a lid 101 hinged to a base or bottom 102 with a handle 103. The lid 101 is made up from four frame members 104 (only two shown) of hollow extruded aluminium joined at their ends by plastics corner brackets 105 (only three corners shown) and a flat rectangular top part 106.

[0018] The base 102 utilises corner brackets 107, of two part construction, being split up into components 107a, 107b. Component 107b is of about 20mm in height and is a push-fit engagement into the hollow slots provided in the extruded aluminium frame member sections 111 and 112. The four aluminium sections 104 are provided with a U-shaped longitudinal channel opening inwardly receiving a flat rectangular top panel 106. A flat rectangular base panel (not shown) is similarly framed and held in the channels of four extruded frame member sections 111 of reduced height compared to frame members 104.

[0019] As should be evident from FIGURE 1, the

side walls of the bottom 102 of the case are not constructed entirely of an aluminium extruded material. Instead, each side wall includes a flat rectangular panel 108 and each corner bracket 107a and 107b has a central aluminium corner bracket piece 110

[0020] In assembly of the case shown in FIGURE 1 in order to preserve the strength of the structure, the corner bracket means 105 and 107, in each case have to be less than 20mm in height or otherwise the lid or base of the case may be prone to coming apart and it is believed that restrictions on the height of each corner bracket means unnecessary limits the design feature of the case.

[0021] FIGURES 2 and 3 show views of an attaché case or brief case 1 constructed in accordance with a first embodiment of the present invention. Referring to FIGURE 3 each corner bracket means 2 at each corner on the lid 3 is a one-piece plastics moulding having a height or depth substantially larger than 20mm and in practice up to virtually whatever dimension may be required. The base 4 is constructed in a similar fashion to the lid 3 except that the height of the side walls is greater and the height of the corner bracket means 5 has been increased accordingly. The lid 3 is formed from four hollow extruded aluminium frame member sections 6 held together by a force-fit with the corner bracket means 2, in a manner to be described, and the base 4 has been constructed in a similar manner except that the height of the extruded aluminium frame member section 7 is greater than the height of the aluminium section 6 used for the lid. The cross-section of the frame member section 7 is similar (but larger) to the cross-section of frame member 6. The frame member sections 6 of the lid have inwardly directed longitudinal U-shaped channels U (see FIGURES 5 and 6) to snugly receive a rectangular top panel 8 of the lid. Similarly, in the bottom part of the case, the hollow external aluminium section frame members 7 have similarly inwardly directed channels to receive edge portions of the plastics rectangular base panel 9. A handle H is provided on the base 4 of the case in known manner.

[0022] FIGURE 4 shows perspective views of one of the corner brackets 2 used for the lid and it can immediately be seen that each corner bracket 2 has mutually perpendicular connecting flanges 2a and 2b which are a force-fit into appropriate slots T (see FIGURE 5) in the aluminium extruded section frame members 6 in a manner which should be generally evident from the drawings. Each corner bracket is divided up into two portions and each portion includes a number of spaced tapered ribs R which, as shown, are tapered in two directions at right-angles and the height Ra of the tapered rib on the outside of the corner bracket is slightly less than the internal height Rb of the tapered rib more particularly as should be evident from FIGURE 4 of the drawings. FIGURE 8 shows the rib R pattern superimposed in the engagement position in slots T. It is to be noted (see FIGURE 4) that the top of the corner bracket 2 is provided with a slot 2d which, in use, receives the corner of a flat rectangular plastics panel or the like of the lid. The corner bracket 5 used for the base (see FIGURE 9) is provided with a channel formation 5e of complementary channel configuration to the upper mating edge 2e of corner bracket 5 (see FIGURE 4). The ringed details on FIGURE 4 and FIGURE 9 show how the overlapping channel configurations mate. The corner bracket 5 is very similar to corner bracket 2 and so will not be described in great detail since the only feature of difference apart from the complementary channel shape 5e is the length of the bracket.

[0023] The tapered rib design is extremely important since it allows a significant holding force in the slots provided in the aluminium extruded section to such an extent that the length of corner brackets provided may be much greater (very much greater than 20 mm.provided for in prior art construction). Thus, advantageously, by the aforedescribed embodiment of the present invention, the side walls on brief cases can be provided to virtually any reasonable height requirement and each of the corner bracket means need only be produced in one piece as a one piece moulding rather than necessarily having to employ a plurality of shorter height component corner brackets.

[0024] Thus, it is believed that the tapered rib or fin arrangements R are very important as are flat stop surfaces 2f and 5f provided at the ends of the tapered ribs. Thus, a case can be constructed with having a bottom or base with quite high side walls with the aluminium extruded frame member sections extending the full height of the side walls.

[0025] Additionally, and importantly it is to be noted that each corner bracket is provided with an indented outer surface, for example surface 2g on corner bracket 2 (see FIGURE 4) for mounting a sheet of decorative material (e.g. aluminium finished to match the aluminium outer appearance of the case for enhanced aesthetics).

[0026] FIGURES 5 and 6 show typical sections through the upper of lower side frame members. Both FIGURES 5 and 6 show a side frame member with an inner wall 121 and an outer wall 122 each of thickness X mm., these walls being parallel and spaced apart by a separation distance W mm. The side frame members may be made of metal, aluminium being particularly suitable. When using aluminium it has been found that a wall thickness X in the range 1 to 2 mm, preferably about 1.6 mm., combined with a separation distance W between 4 and 30mm., and preferably between 8 to 15mm. provide walls of the required strength and rigidity.

[0027] For deep side frame members (see FIGURE 7) it has been found that sufficiently sufficient strength for many applications can be achieved without the need for an inner wall 121 along the entire depth of the side frame member. Thus, in this case upper and lower sections 123 and 124 have two walls while the centre sec-

tion 125 has a just an outer wall 122. In this instance a space 2h (see FIGURE 4) and 5h (see FIGURE 9) is substantially longer than shown being sized to be slightly longer than the vertical depth of section 7h (see FIGURE 7).

[0028] Another embodiment of the invention will now be described by reference to FIGURES 10 to 16. This embodiment is particularly concerned with the production and assembly of a briefcase of a general form as shown in FIGURE 1 of the drawings but on a much larger scale. As previously mentioned in relation to FIGURE 1 of the drawings the components 105 and 107 are limited to a height of about 20mm., but in accordance with the further developments made by the Applicant, no such limitation need be applied and each corner bracket 105, 107 could for example be of a height of 40 mm.enabling a much larger case to be provided. Using the corner brackets shown in FIGURE 10 to 14 brackets 200 effectively replace the lower components 107b positioned on the base of the case shown in FIGURE 1 and the corner brackets 300 would replace the upper components 107a on the upper open part of the base 102.

[0029] Most importantly, each mounting bracket 200 and 300has mutually perpendicular connecting flanges or flange means 201, 202 etc., which are a force fit into appropriate slots S1 and S2 (see FIGURE 16) in the aluminium extruded section frame member 400, which is similar to the frame members 111 defined in the bottom of the base 102.

[0030] Owing to the tapered rib design of the flanges 201, 202 the height of the corner bracket 200 can be above 20mm (for example 40mm) and the required holding force of the flanges in the slots in the extrusion will still be entirely sufficient.

[0031] Additionally, and most importantly each corner bracket 200 has a third flange or flange means 203 projecting mutually perpendicular to the other two flanges 201, 202, said third flange being receivable in an appropriate aluminium extrusion corner bridge piece similar to central aluminium corner bracket piece 110.

[0032] As far as the Applicant is aware, it is a brand new concept to provide such a flange means extending in a third dimension to interfit with such a central aluminium extruded corner piece or indeed another corner piece. Obviously, such engagement in the third dimension enables a much stronger construction to be employed and the format of the flange means 203 is similar to the flange means 201, 202.

[0033] Corner bracket 300 is of a generally similar format to corner bracket 200. Corner bracket 300 has two mutually perpendicular flange means 301, 302 to extend within the associated exterior aluminium section and also a third mutually perpendicular flange means 303 similar to the flange means 203 (provided on corner bracket 200). However, instead of the corner bracket 300 being provided with a smooth corner portion opposite the flange means 303, it is provided with a lipped edge to receive an appropriately lipped edge 304 of the lid in a manner which should be self-explanatory.

[0034] The tapered ribs R1 of the flange means 201, 202, 203, 301, 302, 303 are surrounded by longer L-shaped section or U-shaped section portions as the case may be.

Claims

1. A case having a lid and a base, at least one of the lid and base being formed from frame members connected together by corner brackets wherein the corner brackets including tapered ribs.
2. A case according to Claim 1 wherein said ribs are tapered in three mutually orthogonal directions, said ribs tapering from an inner location of the corner bracket to the outside of the corner bracket.
3. A case according to any preceding claim wherein the corner brackets are of single piece construction.
4. A case according to any preceding claim wherein the corner brackets have a height greater than 20mm.
5. A case according to any preceding claim wherein both frame members of the side walls of the lid and base extend the full height of the side walls.
6. A case according to any preceding claim wherein the corner bracket have means for maintaining a decoration material, said means preferably being indentations.
7. A case according to any preceding claim wherein said ribs are tapered in cross-section and longitudinally.
8. A case according to Claim 7 wherein the height of a rib (Ra) at the inner location of the corner bracket is slightly greater than the height of that rib (Rb) at the outside corner of the bracket.
9. A case according to any preceding claim wherein the tapered ribs define an edge surface engaging walling of the frame members defining a slot or hole for reception of connection flanges on the corner brackets defining a tapered ridge.
10. A case according to any preceding claim wherein the tapered fibs are triangular in cross section
11. A case according to any preceding claim wherein the tapered fibs of the corner brackets engage at least one rectangular slot in a side wall frame member.

12. A case according to Claim 11 wherein the rectangular slot is formed partly by inner and outer wall portions of the frame member.

13. A case according to Claim 12 wherein each wall potion has a thickness of between 1 and 2 mm.

14. A case according to Claim 12 or 13 wherein the inner and outer walls are coplanar and separated by a distance of between 4 and 30mm, preferably a distance between 8 and 15mm.

15. A case having a lid and a base, at least one of the lid and base being formed from frame members connected together by corner brackets wherein the corner brackets are of single piece construction.

16. A case according to Claim 15 wherein the corner brackets have a height greater than 20mm.

17. A case according to Claim 15 or 16 wherein both frame members of the side walls of the lid and base extend the full height of the side walls.

18. A case according to Claim 15,16 or 17 wherein the corner brackets have means for maintaining a decoration material, said means preferably being indentations.

19. A case having a lid and a base, at least one of the lid and base being formed from frame members connected together by corner brackets wherein the corner brackets have a height greater than 20mm.

20. A case according to Claim 19 wherein both frame members of the side walls of the lid and base extend the full height of the side walls.

21. A case according to Claim 19 or 20 wherein the corner brackets have means for maintaining a decoration material, said means preferably being indentations.

22. A case having a lid and a base, at least one of the lid and base being formed from frame members connected together by corner brackets wherein both frame members of the side walls of the lid and base extend the full height of the side walls.

23. A case according to Claim 22 wherein the corner brackets have means for maintaining a decoration material, said means preferably being indentations

24. A case having a lid and a base, at least one of the lid and base being formed from frame members connected together by corner brackets wherein the corner brackets have means for maintaining a decoration material, said means preferably being indentations

25. A case having a lid and a base, the lid including four frame member sections, each frame member section corresponding to the height of a side wall of the lid, connected together by corner brackets, each corner bracket having the same height extending the height of the side wall.

26. A case according to Claim 25 wherein the base comprises four frame member sections of a similar height as used on the lid or greater joined together by four corner brackets having a height equal to the height of the side walls of the base.

27. A case having a lid and a base, at least one of the lid and base being formed by frame members connected together by corner brackets, the case having corner brackets including flange means extending in three mutually orthogonal directions.

28. A case according to Claim 27 wherein each of the flange means includes tapered ribs such that the narrowest tapered edge engages walling of a slot in an extruded frame member section of said case.

29. A case of modular construction having double sided frame members and corner brackets having a flange means extending in three mutually perpendicular directions engaged in said frame members.

30. A case of modular construction having double sided frame members and corner brackets having flange members having locally deformable or collapsible rib means, such as tapered ribs or frangible membranes.

31. A kit of parts for a case according to any preceding claim.

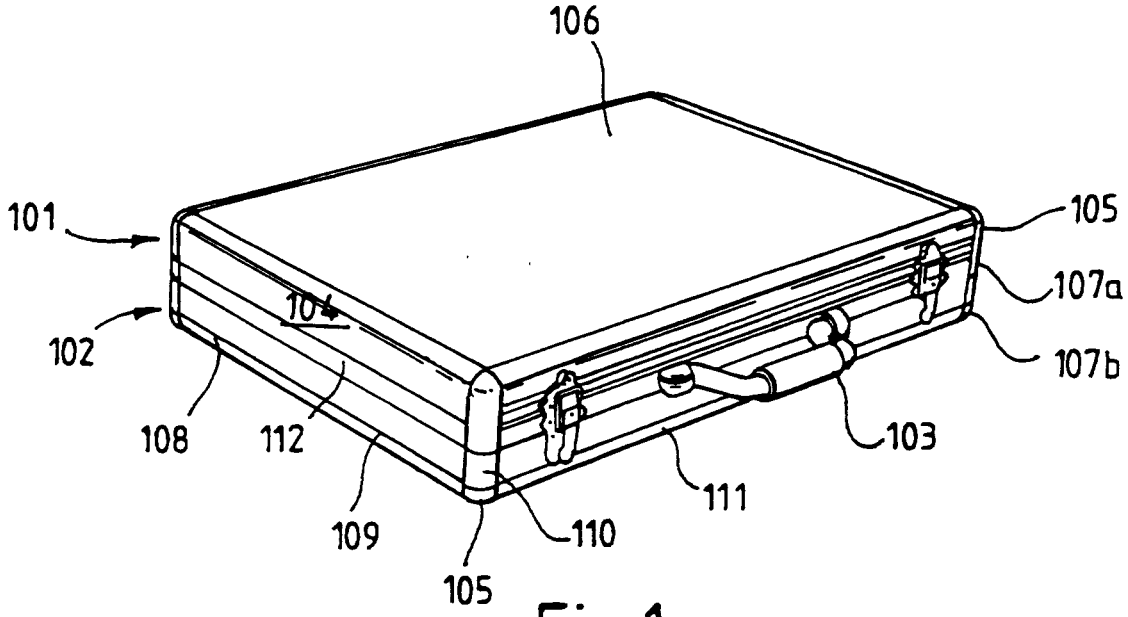


Fig.1.

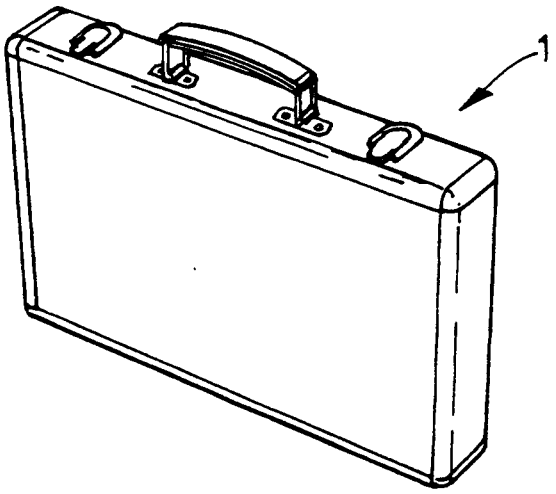


Fig.2.

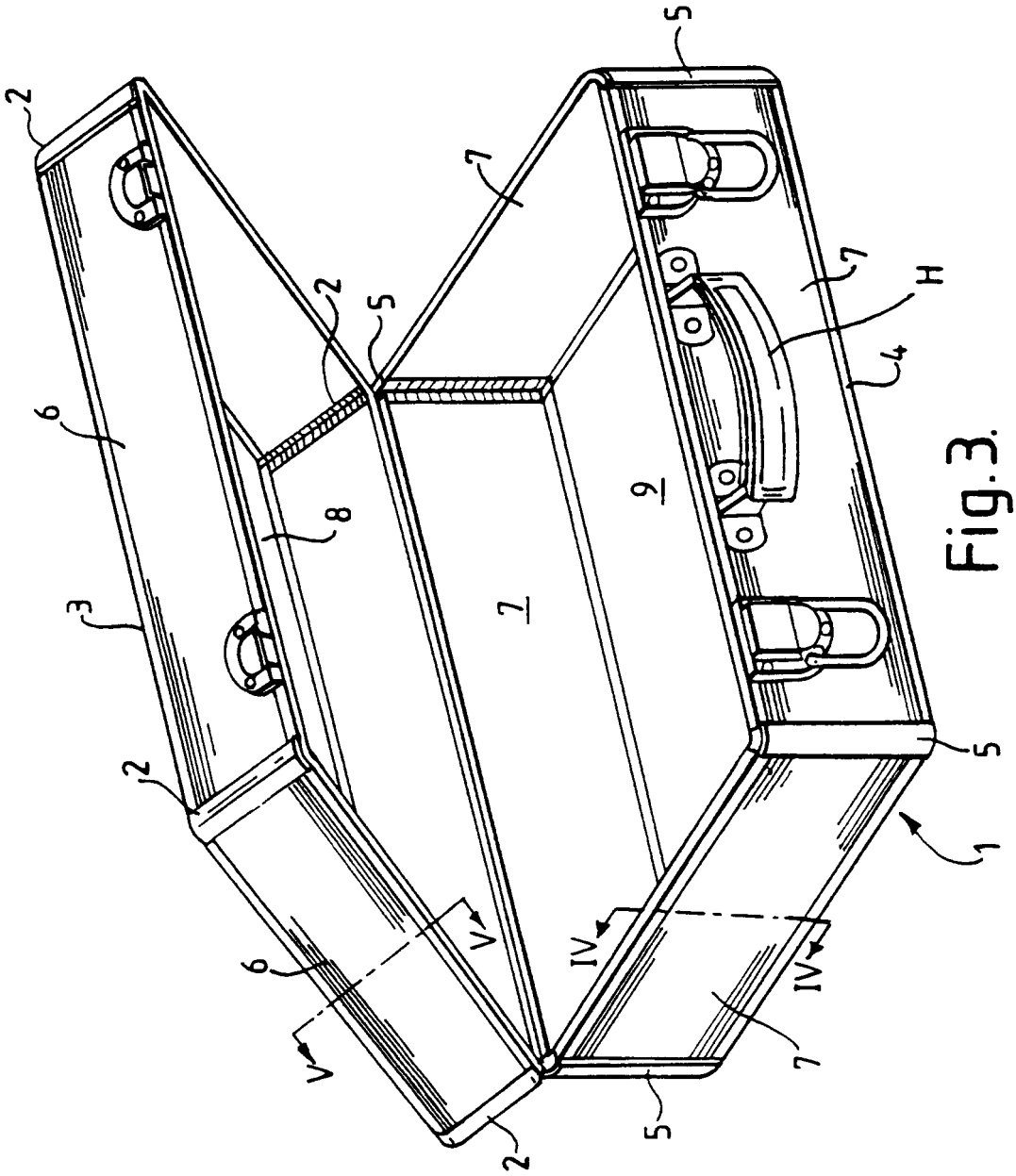
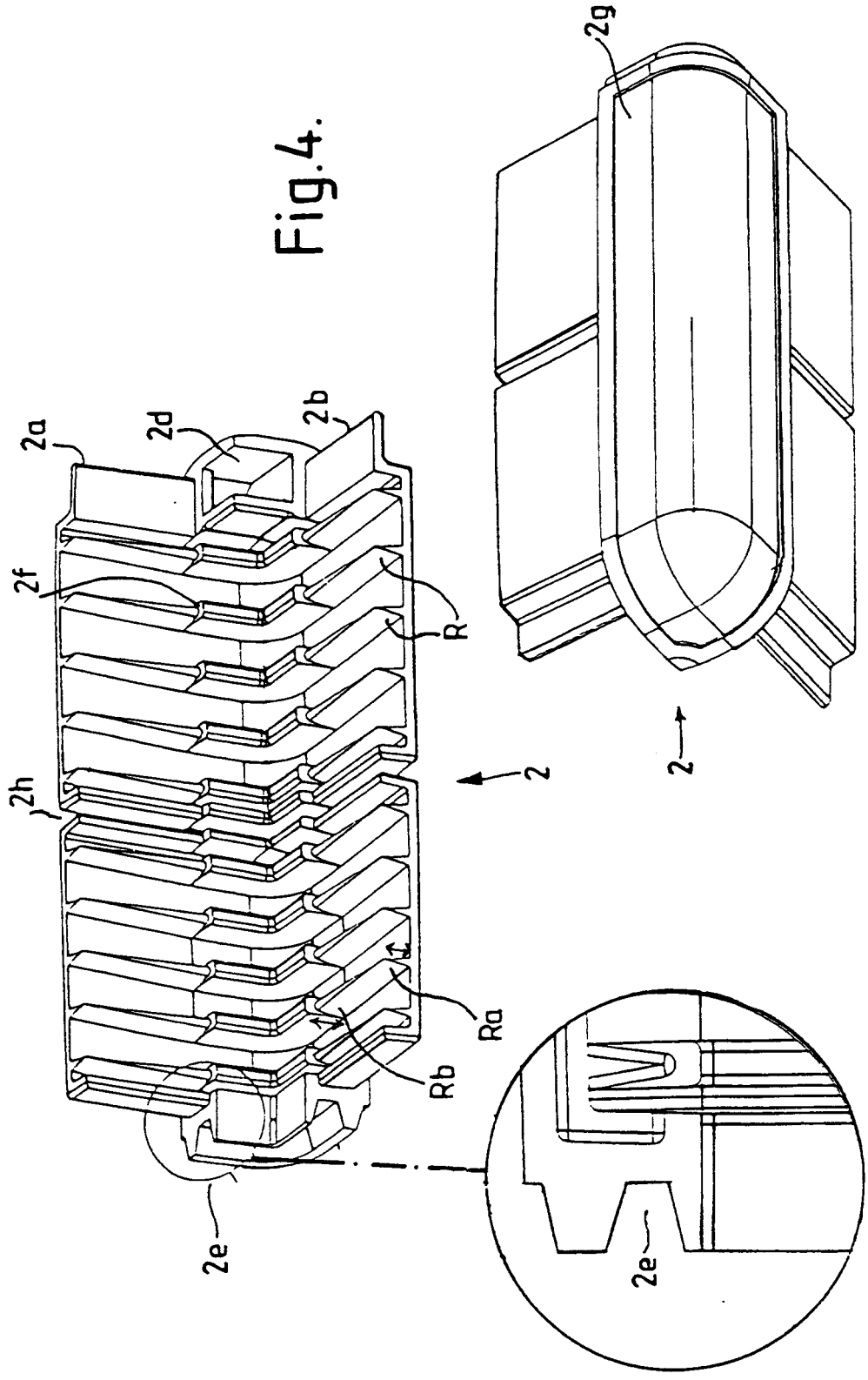


Fig.3.

Fig.4.



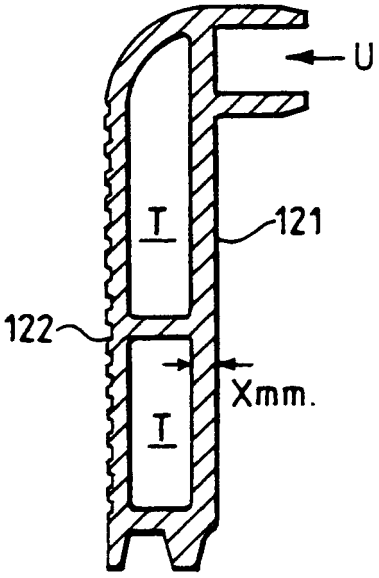


Fig.5.

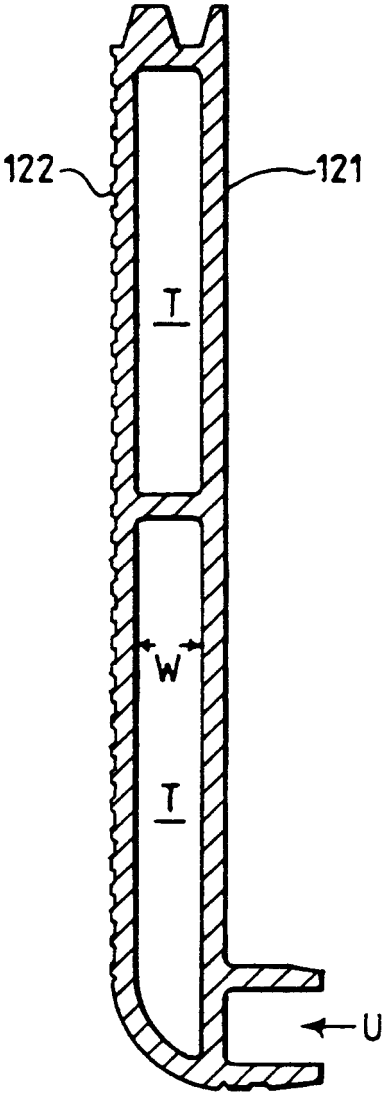


Fig.6.

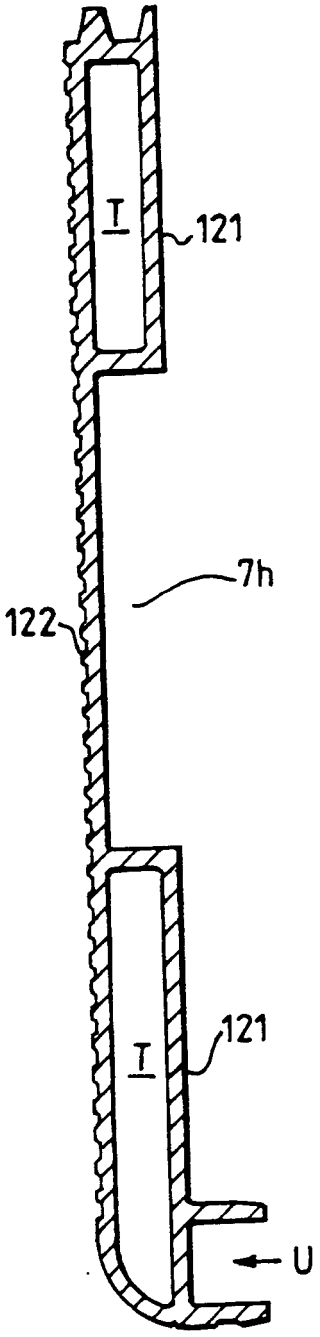


Fig.7.

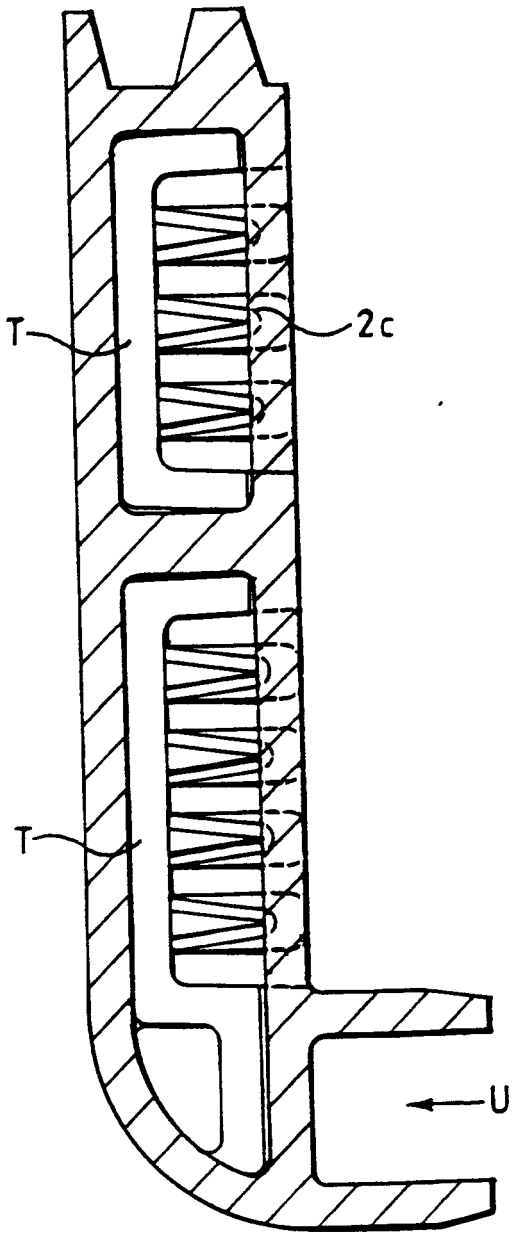


Fig.8.

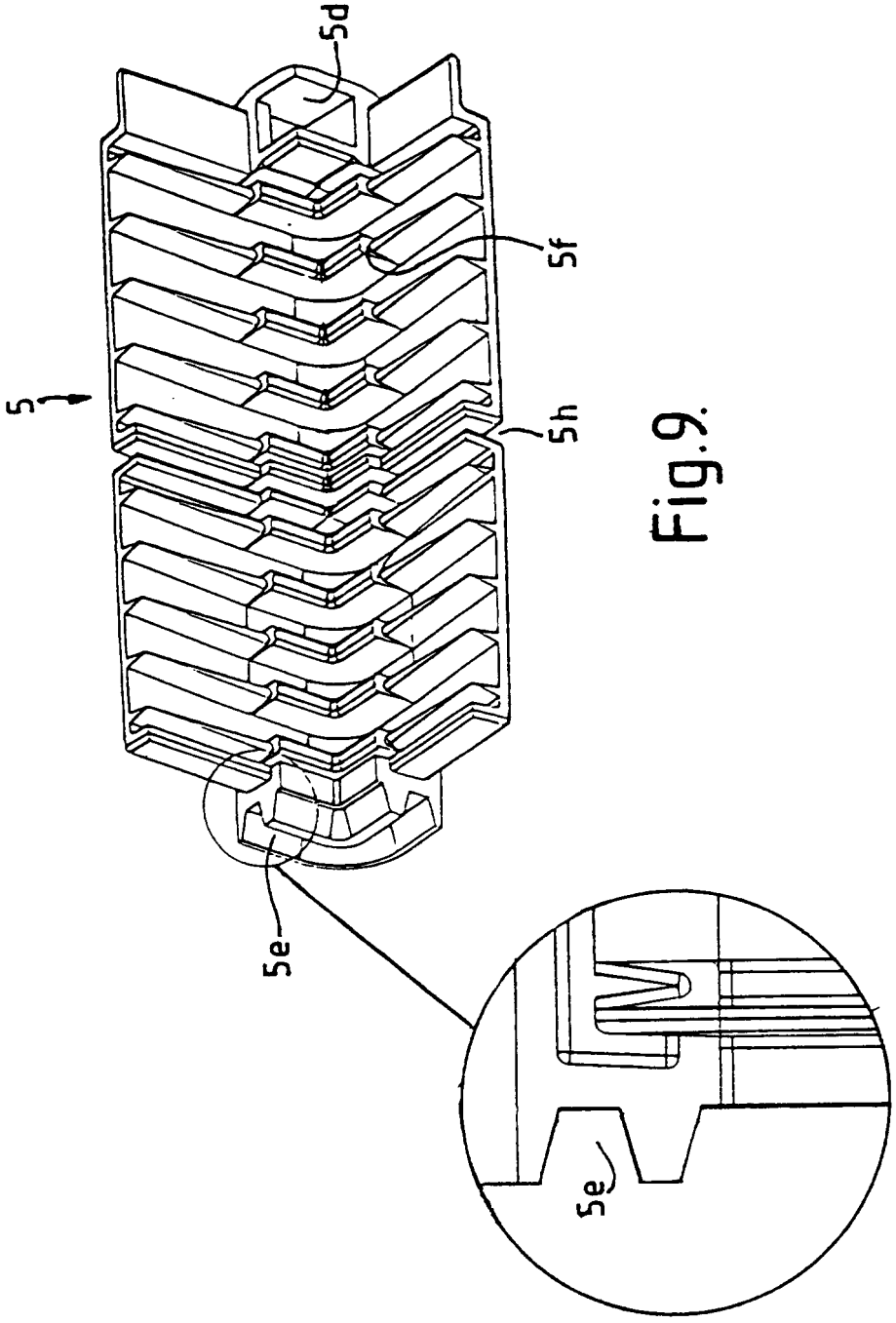


Fig.9.

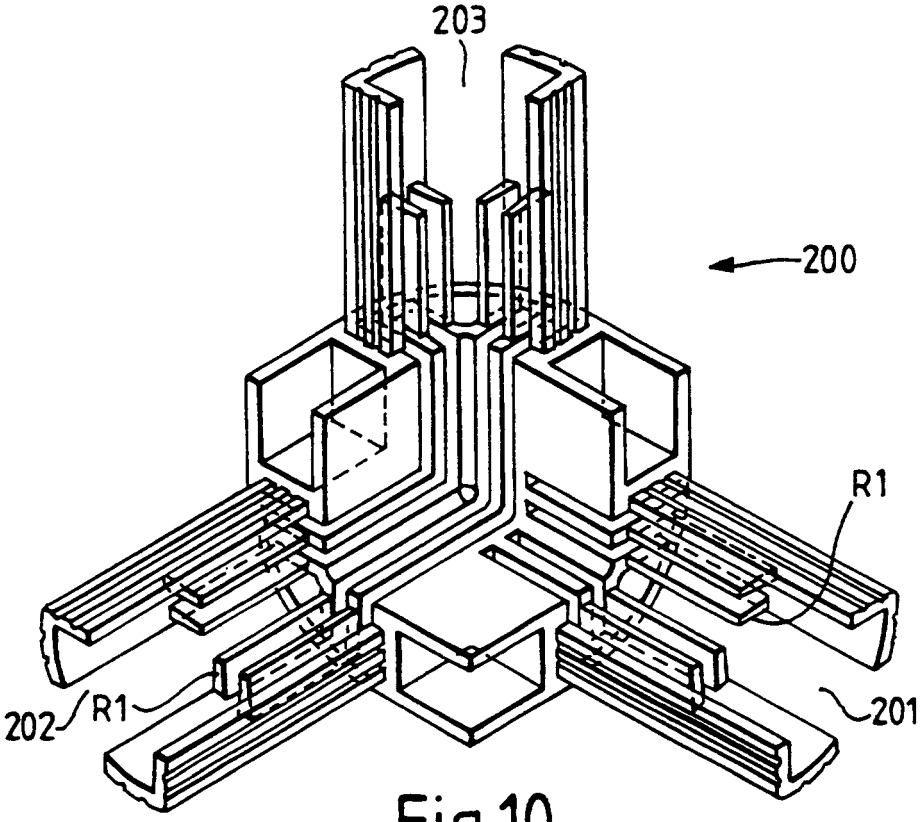


Fig.10.

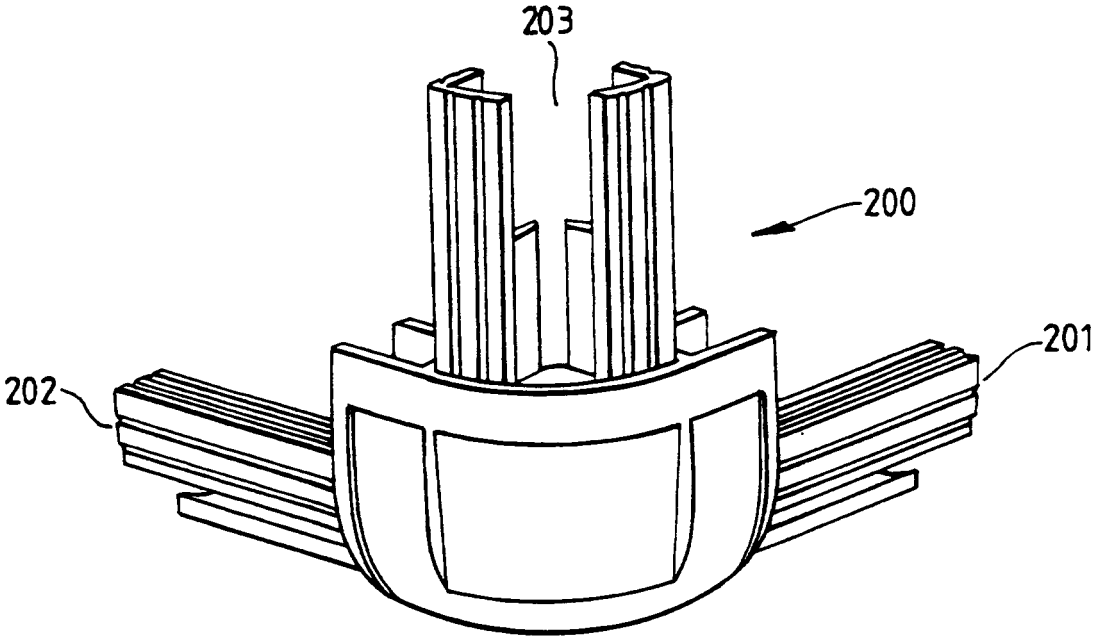


Fig.11.

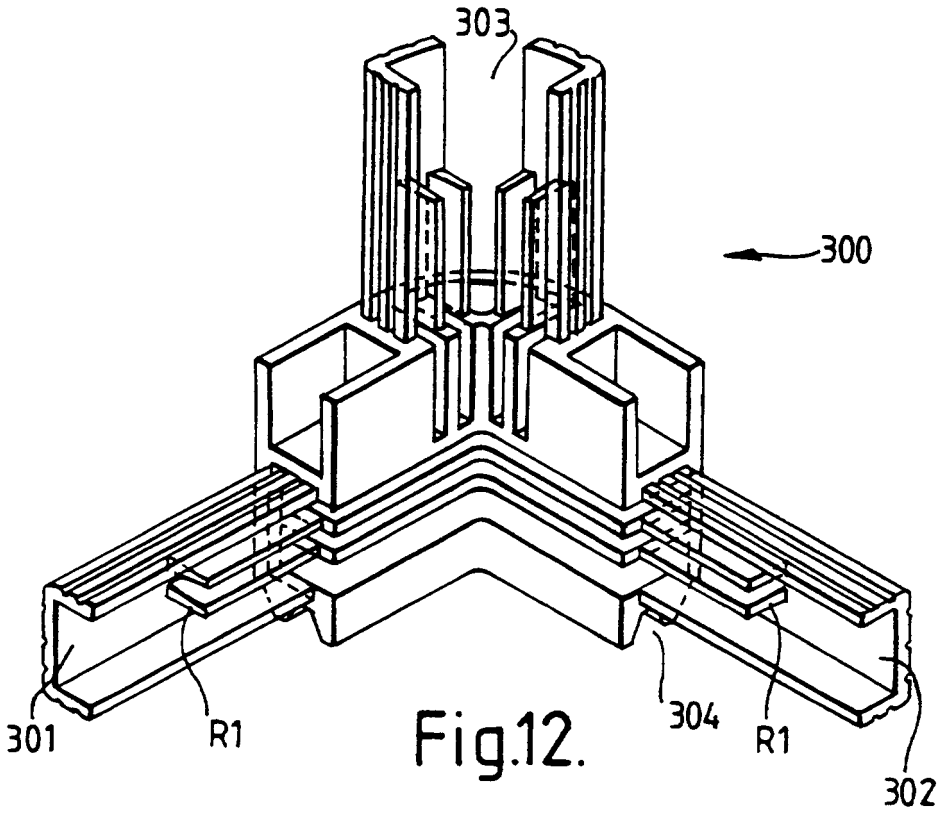


Fig.12.

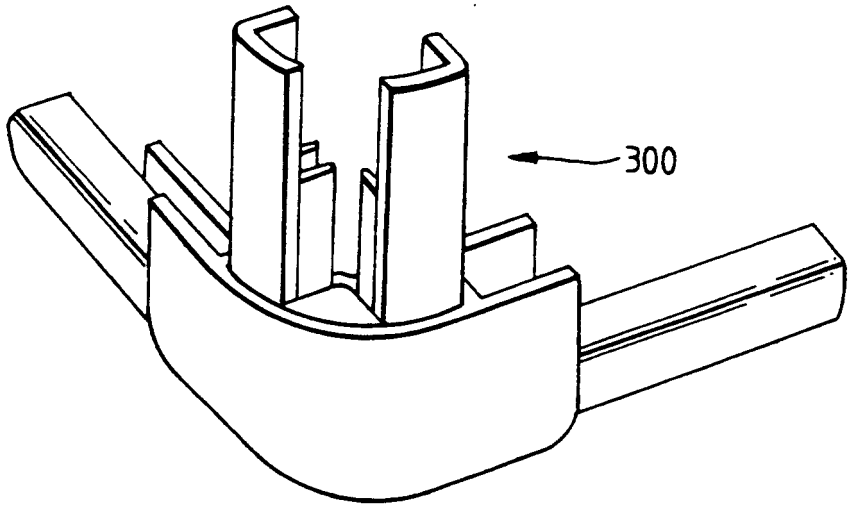


Fig.13.

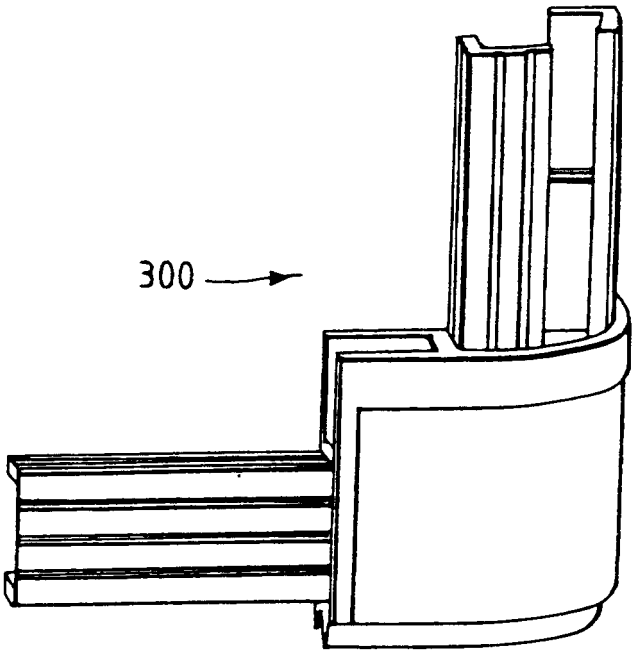


Fig.14.

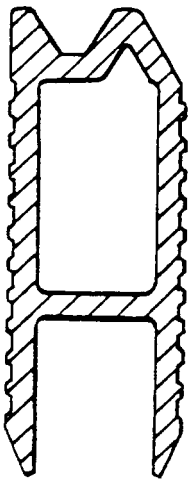


Fig.15.

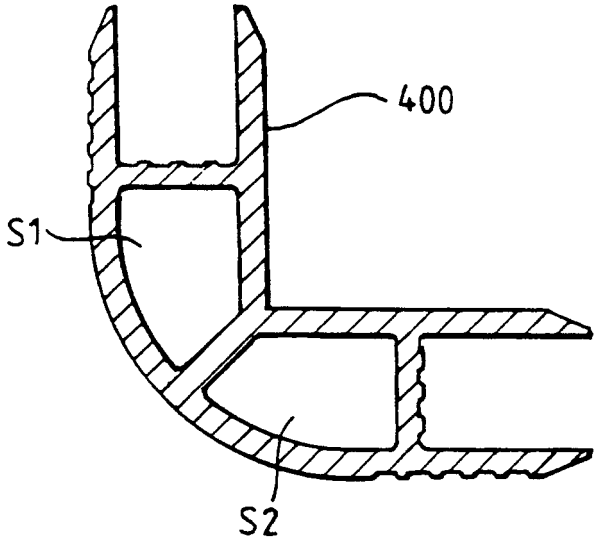


Fig.16.